# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>10</td>
</tr>
<tr>
<td>Undergraduate Students</td>
<td>11</td>
</tr>
<tr>
<td>Academic Opportunities</td>
<td>12</td>
</tr>
<tr>
<td>Auditing Courses</td>
<td>12</td>
</tr>
<tr>
<td>Majors, Minors, and Certificates</td>
<td>12</td>
</tr>
<tr>
<td>Non-Traditional Coursework</td>
<td>13</td>
</tr>
<tr>
<td>Study Abroad</td>
<td>13</td>
</tr>
<tr>
<td>Undergraduate Degree Chart</td>
<td>14</td>
</tr>
<tr>
<td>Undergraduate Degrees</td>
<td>16</td>
</tr>
<tr>
<td>Unique Programs</td>
<td>17</td>
</tr>
<tr>
<td>Academic Policies and Procedures</td>
<td>18</td>
</tr>
<tr>
<td>Admission</td>
<td>18</td>
</tr>
<tr>
<td>Academic and Judicial Discipline</td>
<td>21</td>
</tr>
<tr>
<td>Attendance and Excused Absences</td>
<td>22</td>
</tr>
<tr>
<td>Final Examinations</td>
<td>23</td>
</tr>
<tr>
<td>Grades</td>
<td>24</td>
</tr>
<tr>
<td>Graduation Requirements</td>
<td>25</td>
</tr>
<tr>
<td>Leaves, Withdrawals and Readmission</td>
<td>27</td>
</tr>
<tr>
<td>Name Changes</td>
<td>30</td>
</tr>
<tr>
<td>Registration</td>
<td>30</td>
</tr>
<tr>
<td>Transcript Policies</td>
<td>32</td>
</tr>
<tr>
<td>Transfer Credit</td>
<td>32</td>
</tr>
<tr>
<td>Veterans Information</td>
<td>33</td>
</tr>
<tr>
<td>Student Services and Organizations</td>
<td>34</td>
</tr>
<tr>
<td>Clubs and Organizations</td>
<td>34</td>
</tr>
<tr>
<td>Disability Support Services</td>
<td>35</td>
</tr>
<tr>
<td>Financial Aid</td>
<td>35</td>
</tr>
<tr>
<td>Health, Counseling and Wellbeing</td>
<td>37</td>
</tr>
<tr>
<td>Student Government</td>
<td>39</td>
</tr>
<tr>
<td>Tuition, Fees and Expenses</td>
<td>39</td>
</tr>
<tr>
<td>Undergraduate Student Life</td>
<td>41</td>
</tr>
<tr>
<td>Rights and Responsibilities</td>
<td>43</td>
</tr>
<tr>
<td>Access to Student Records</td>
<td>43</td>
</tr>
<tr>
<td>Code of Student Conduct</td>
<td>44</td>
</tr>
<tr>
<td>Honor System</td>
<td>44</td>
</tr>
<tr>
<td>Student Responsibility</td>
<td>44</td>
</tr>
<tr>
<td>Honors and Distinctions</td>
<td>46</td>
</tr>
<tr>
<td>Academic Honor Societies</td>
<td>46</td>
</tr>
<tr>
<td>Honors Programs</td>
<td>46</td>
</tr>
<tr>
<td>President’s Honor Roll</td>
<td>46</td>
</tr>
<tr>
<td>University Honors</td>
<td>47</td>
</tr>
<tr>
<td>Graduate Students</td>
<td>48</td>
</tr>
<tr>
<td>Academic Opportunities</td>
<td>49</td>
</tr>
<tr>
<td>Auditing Courses</td>
<td>49</td>
</tr>
<tr>
<td>Graduate Degrees</td>
<td>49</td>
</tr>
<tr>
<td>Graduate Degree Chart</td>
<td>50</td>
</tr>
<tr>
<td>Graduate Certificates</td>
<td>53</td>
</tr>
<tr>
<td>Graduate Program Major Concentrations</td>
<td>54</td>
</tr>
<tr>
<td>Non-Traditional Coursework</td>
<td>54</td>
</tr>
<tr>
<td>Academic Policies and Procedures</td>
<td>55</td>
</tr>
<tr>
<td>Admission</td>
<td>55</td>
</tr>
<tr>
<td>All Graduate Students</td>
<td>55</td>
</tr>
<tr>
<td>Doctoral Degrees</td>
<td>64</td>
</tr>
<tr>
<td>Diploma Programs</td>
<td>66</td>
</tr>
<tr>
<td>Non-Thesis Master’s Degrees</td>
<td>66</td>
</tr>
<tr>
<td>Thesis Master’s Degrees</td>
<td>67</td>
</tr>
<tr>
<td>Student Services and Organizations</td>
<td>70</td>
</tr>
<tr>
<td>Clubs and Organizations</td>
<td>70</td>
</tr>
<tr>
<td>Disability Support Services</td>
<td>71</td>
</tr>
<tr>
<td>Financial Aid</td>
<td>71</td>
</tr>
<tr>
<td>Graduate Student Government</td>
<td>73</td>
</tr>
<tr>
<td>Graduate Student Life</td>
<td>73</td>
</tr>
<tr>
<td>Health, Counseling and Wellbeing</td>
<td>74</td>
</tr>
<tr>
<td>Tuition, Fees and Expenses</td>
<td>76</td>
</tr>
<tr>
<td>Rights and Responsibilities</td>
<td>80</td>
</tr>
<tr>
<td>Access to Student Records</td>
<td>80</td>
</tr>
<tr>
<td>Code of Student Conduct</td>
<td>81</td>
</tr>
<tr>
<td>Dispute Resolution</td>
<td>81</td>
</tr>
<tr>
<td>Honor System</td>
<td>83</td>
</tr>
<tr>
<td>Student Responsibility</td>
<td>83</td>
</tr>
<tr>
<td>Non-Traditional Students</td>
<td>85</td>
</tr>
<tr>
<td>Auditors</td>
<td>86</td>
</tr>
<tr>
<td>Rice Learners</td>
<td>87</td>
</tr>
<tr>
<td>Second Bachelor’s Degree for Rice Alumni</td>
<td>88</td>
</tr>
<tr>
<td>Visiting Students (non-degree)</td>
<td>89</td>
</tr>
<tr>
<td>Faculty</td>
<td>92</td>
</tr>
<tr>
<td>Faculty Grading Guidelines</td>
<td>93</td>
</tr>
<tr>
<td>Non-Traditional Coursework</td>
<td>94</td>
</tr>
<tr>
<td>Syllabus Standards</td>
<td>95</td>
</tr>
<tr>
<td>Programs of Study</td>
<td>96</td>
</tr>
<tr>
<td>The School of Architecture</td>
<td>97</td>
</tr>
<tr>
<td>The Jones Graduate School of Business</td>
<td>98</td>
</tr>
</tbody>
</table>

2017-2018 General Announcements
<table>
<thead>
<tr>
<th>Department/Program</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Glasscock School of Continuing Studies</td>
<td>99</td>
</tr>
<tr>
<td>The George R. Brown School of Engineering</td>
<td>100</td>
</tr>
<tr>
<td>The School of Humanities</td>
<td>101</td>
</tr>
<tr>
<td>Interdisciplinary</td>
<td>102</td>
</tr>
<tr>
<td>The Shepherd School of Music</td>
<td>103</td>
</tr>
<tr>
<td>The Wiess School of Natural Sciences</td>
<td>104</td>
</tr>
<tr>
<td>The School of Social Sciences</td>
<td>105</td>
</tr>
<tr>
<td>Departments and Programs</td>
<td>106</td>
</tr>
<tr>
<td>Accounting</td>
<td>109</td>
</tr>
<tr>
<td>Master of Accounting (MAcc) Degree</td>
<td>110</td>
</tr>
<tr>
<td>African Studies</td>
<td>113</td>
</tr>
<tr>
<td>Minor in African Studies</td>
<td>114</td>
</tr>
<tr>
<td>Air Force Science</td>
<td>115</td>
</tr>
<tr>
<td>Ancient Mediterranean Civilizations</td>
<td>116</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in Ancient Mediterranean Civilizations</td>
<td>117</td>
</tr>
<tr>
<td>Anthropology</td>
<td>120</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in Anthropology</td>
<td>121</td>
</tr>
<tr>
<td>Doctor of Philosophy (PhD) Degree in the field of Anthropology</td>
<td>123</td>
</tr>
<tr>
<td>Minor in Anthropology</td>
<td>124</td>
</tr>
<tr>
<td>Applied Physics</td>
<td>126</td>
</tr>
<tr>
<td>Doctor of Philosophy (PhD) Degree in the field of Applied Physics</td>
<td>126</td>
</tr>
<tr>
<td>Architecture</td>
<td>129</td>
</tr>
<tr>
<td>Bachelor of Architecture (BArch) Degree</td>
<td>130</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in Architectural Studies</td>
<td>132</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in Architecture</td>
<td>133</td>
</tr>
<tr>
<td>Master of Architecture (MArch) Degree</td>
<td>135</td>
</tr>
<tr>
<td>Master of Arts (MA) Degree in the field of Architecture</td>
<td>138</td>
</tr>
<tr>
<td>Art History</td>
<td>139</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in Art History</td>
<td>140</td>
</tr>
<tr>
<td>Doctor of Philosophy (PhD) Degree in the field of Art History</td>
<td>147</td>
</tr>
<tr>
<td>Asian Studies</td>
<td>149</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in Asian Studies</td>
<td>150</td>
</tr>
<tr>
<td>Bioengineering</td>
<td>152</td>
</tr>
<tr>
<td>Bachelor of Science in Bioengineering (BSBE) Degree</td>
<td>154</td>
</tr>
<tr>
<td>Doctor of Philosophy (PhD) Degree in the field of Bioengineering</td>
<td>157</td>
</tr>
<tr>
<td>Doctor of Philosophy (PhD) Degree in the field of Bioengineering / Doctor of Medicine (MD) Degree with Baylor College of Medicine</td>
<td>158</td>
</tr>
<tr>
<td>Master of Bioengineering (MBE) Degree</td>
<td>159</td>
</tr>
<tr>
<td>Master of Business Administration (MBA) Degree / Master of Bioengineering (MBE) Degree</td>
<td>161</td>
</tr>
<tr>
<td>BioSciences</td>
<td>162</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree / Master of Arts (MA) Degree / Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology</td>
<td>164</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in Biochemistry and Cell Biology</td>
<td>166</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in Biological Sciences</td>
<td>168</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in Ecology and Evolutionary Biology</td>
<td>171</td>
</tr>
<tr>
<td>Bachelor of Science (BS) Degree with a Major in Biochemistry and Cell Biology</td>
<td>174</td>
</tr>
<tr>
<td>Bachelor of Science (BS) Degree with a Major in Ecology and Evolutionary Biology</td>
<td>176</td>
</tr>
<tr>
<td>Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology</td>
<td>179</td>
</tr>
<tr>
<td>Doctor of Philosophy (PhD) Degree in the field of Ecology and Evolutionary Biology</td>
<td>180</td>
</tr>
<tr>
<td>Master of Arts (MA) Degree in the field of Biochemistry and Cell Biology</td>
<td>182</td>
</tr>
<tr>
<td>Master of Arts (MA) Degree in the field of Ecology and Evolutionary Biology</td>
<td>183</td>
</tr>
<tr>
<td>Minor in Biochemistry and Cell Biology</td>
<td>185</td>
</tr>
<tr>
<td>Minor in Ecology and Evolutionary Biology</td>
<td>186</td>
</tr>
<tr>
<td>Bioscience and Health Policy</td>
<td>187</td>
</tr>
<tr>
<td>Master of Business Administration (MBA) Degree / Master of Science in Bioscience and Health Policy (MSBHP) Degree</td>
<td>188</td>
</tr>
<tr>
<td>Master of Science in Bioscience and Health Policy (MSBHP)</td>
<td>189</td>
</tr>
<tr>
<td>Business</td>
<td>191</td>
</tr>
<tr>
<td>Doctor of Philosophy (PhD) Degree in the field of Business</td>
<td>194</td>
</tr>
<tr>
<td>Doctor of Philosophy (PhD) Degree in the field of Business and a Major Concentration in Economics and Finance</td>
<td>194</td>
</tr>
<tr>
<td>Master of Business Administration (MBA) Degree / Doctor of Medicine (MD) Degree with Baylor College of Medicine</td>
<td>195</td>
</tr>
<tr>
<td>Master of Business Administration (MBA) Degree / Master of Bioengineering (MBE) Degree</td>
<td>195</td>
</tr>
<tr>
<td>Master of Business Administration (MBA) Degree / Master of Chemical Engineering (MChem) Degree</td>
<td>196</td>
</tr>
<tr>
<td>Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree in the field of Civil Engineering</td>
<td>197</td>
</tr>
<tr>
<td>Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree in the field of Environmental Engineering</td>
<td>198</td>
</tr>
</tbody>
</table>
Master of Business Administration (MBA) Degree / Master of Computational Science and Engineering (MCSE) Degree ................................................................. 199
Master of Business Administration (MBA) Degree / Master of Computer Science (MCS) Degree .................................................................................. 199
Master of Business Administration (MBA) Degree / Master of Electrical Engineering (MEE) Degree ..................................................................... 200
Master of Business Administration (MBA) Degree / Master of Materials Science and Nanoengineering (MMSNE) Degree ................. 201
Master of Business Administration (MBA) Degree / Master of Mechanical Engineering (MME) Degree .................................................................. 201
Master of Business Administration (MBA) Degree / Master of Science in Bioscience and Health Policy (MBSHP) Degree ............. 202
Master of Business Administration (MBA) Degree / Master of Science in Environmental Analysis and Decision Making (MSEADDM) Degree ........................................................................ 203
Master of Business Administration (MBA) Degree / Master of Science in Nanoscale Science (MSNS) Degree ........................................ 203
Master of Business Administration (MBA) Degree / Master of Science in Space Studies (MSSpS) Degree .............................................................. 204
Master of Business Administration (MBA) Degree / Master of Science in Subsurface Geoscience (MSSG) Degree ................................. 205
Master of Business Administration (MBA) Degree / Master of Statistics (MStat) Degree ...................................................................................... 205
Master of Business Administration (MBA) Degree / Master of Computational and Applied Mathematics (MCAAM) Degree .............. 206
Master of Business Administration (MBA) Degree, Executive Program ........................................................................................................ 207
Master of Business Administration (MBA) Degree, Full-Time Program ..................................................................................................... 210
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Accounting ............................................ 215
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Energy .................................................. 219
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Entrepreneurship ......................... 223
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Finance ................................................... 227
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Health Care ............................................... 231
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Marketing .................................................. 236
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Operations Management ............. 240
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Real Estate ............................................. 244
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Strategic Management ......... 248

Master of Business Administration (MBA) Degree, Professional Program ........................................................................................................ 252
Minor in Business ........................................................................................................ 257

Chemical and Biomolecular Engineering ........................................................................ 258
Bachelor of Arts (BA) Degree with a Major in Chemical Engineering .................................................. 259
Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Biotechnology and Bioengineering ......................... 261
Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Computational Engineering .................. 263
Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Engineering Breadth .................................... 266
Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Environmental Engineering .................. 268
Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Materials Science and Engineering .............. 271
Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Sustainability and Energy Engineering ...... 273
Doctor of Philosophy (PhD) Degree in the field of Chemical Engineering .................................................. 275
Master of Business Administration (MBA) Degree / Master of Chemical Engineering (MChE) Degree .......................................................... 276
Master of Chemical Engineering (MChE) Degree ........................................................................ 277

Chemical Physics ........................................................................................................ 278
Bachelor of Science (BS) Degree with a Major in Chemical Physics ................................................................................................. 278

Chemistry .................................................................................................................. 280
Bachelor of Arts (BA) Degree with a Major in Chemistry ................................................................................................. 281
Bachelor of Science (BS) Degree with a Major in Chemistry ................................................................................................. 283

Doctor of Philosophy (PhD) Degree in the field of Chemistry ................................................................................................. 286

Cinema and Media Studies .......................................................................................... 287
Minor in Cinema and Media Studies ........................................................................ 288
Civic Leadership ........................................................................................................ 289
Certificate in Civic Leadership ................................................................................. 290

Civil and Environmental Engineering ............................................................................. 293
Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Civil Engineering .................................................. 294
Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Environmental Engineering .................................................. 297
Bachelor of Science in Civil Engineering (BSCE) Degree ........................................ 300

2017-2018 General Announcements
<table>
<thead>
<tr>
<th>Degree</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>303</td>
</tr>
<tr>
<td>Bachelor of Science in Computer Science (BSCS) Degree</td>
<td>305</td>
</tr>
<tr>
<td>Doctor of Philosophy (PhD) Degree</td>
<td>306</td>
</tr>
<tr>
<td>Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree</td>
<td>306</td>
</tr>
<tr>
<td>Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree</td>
<td>307</td>
</tr>
<tr>
<td>Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree</td>
<td>308</td>
</tr>
<tr>
<td>Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree</td>
<td>309</td>
</tr>
<tr>
<td>Master of Science (MS) Degree</td>
<td>311</td>
</tr>
<tr>
<td>Master of Science (MS) Degree</td>
<td>312</td>
</tr>
<tr>
<td>Master of Science (MS) Degree</td>
<td>313</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in Classical Studies</td>
<td>314</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in Classical Studies</td>
<td>315</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in French Studies</td>
<td>316</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in German Studies</td>
<td>317</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in Cognitive Sciences</td>
<td>318</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree with a Major in Cognitive Sciences</td>
<td>319</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>320</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>321</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>322</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>323</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>324</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>325</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>326</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>327</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>328</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>329</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>330</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>331</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>332</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>333</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>334</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>335</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>336</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>337</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>338</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>339</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>340</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>341</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>342</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>343</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>344</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>345</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>346</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>347</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>348</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>349</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>350</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>351</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>352</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>353</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
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<tr>
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<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>356</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>357</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
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<tr>
<td>Bachelor of Arts (BA) Degree</td>
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<td>Bachelor of Arts (BA) Degree</td>
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<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>366</td>
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<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>367</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>368</td>
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<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>372</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>373</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>374</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>375</td>
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<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>376</td>
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<td>Bachelor of Arts (BA) Degree</td>
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<td>Bachelor of Arts (BA) Degree</td>
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<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>380</td>
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<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>381</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>382</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>383</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>384</td>
</tr>
<tr>
<td>Bachelor of Arts (BA) Degree</td>
<td>385</td>
</tr>
</tbody>
</table>
Bachelor of Arts (BA) Degree with a Major in English .......... 386
Bachelor of Arts (BA) Degree with a Major in English and a Major
Concentration in Creative Writing ................................. 389
Doctor of Philosophy (PhD) Degree in the field of English ...... 392
Environmental Analysis and Decision Making .................. 394
Master of Business Administration (MBA) Degree / Master
of Science in Environmental Analysis and Decision Making
(MSEADM) Degree ....................................................... 395
Master of Science in Environmental Analysis and Decision
Making (MSEADM) Degree ........................................... 395
Environmental Science ............................................... 397
Bachelor of Arts (BA) Degree with a Major in Environmental
Science and a Major Concentration in Earth Science .......... 398
Bachelor of Arts (BA) Degree with a Major in Environmental
Science and a Major Concentration in Ecology and Evolutionary
Biology ................................................................. 401
Bachelor of Science (BS) Degree with a Major in Environmental
Science and a Major Concentration in Earth Science .......... 404
Bachelor of Science (BS) Degree with a Major in Environmental
Science and a Major Concentration in Ecology and Evolutionary
Biology .................................................................. 407
Environmental Studies ................................................ 410
Minor in Environmental Studies .................................. 411
Financial Computation and Modeling ........................... 412
Minor in Financial Computation and Modeling ............. 413
Global Affairs ................................................................ 414
Master of Arts in Global Affairs (MAGA) Degree .......... 415
Global Health Technologies .......................................... 417
Minor in Global Health Technologies .......................... 418
Gnosticism, Esotericism and Mysticism ......................... 420
Certificate in Gnosticism, Esotericism and Mysticism ....... 421
History ...................................................................... 422
Bachelor of Arts (BA) Degree with a Major in History ...... 423
Bachelor of Arts (BA) Degree with a Major in History and a Major
Concentration in History: International Concentration .... 428
Doctor of Philosophy (PhD) Degree in the field of History .... 432
Dual Doctor of Philosophy (PhD) Degree in the field of History,
with Instituto Mora, in Mexico ....................................... 433
Dual Doctor of Philosophy (PhD) Degree in the field of History,
with Universidade Estadual de Campinas (UNICAMP), in Brazil
................. .................................................................. 434
Humanities Research Center ......................................... 435
Jewish Studies ........................................................... 436
Minor in Jewish Studies .............................................. 437
Kinesiology ................................................................ 439
Bachelor of Arts (BA) Degree with a Major in Kinesiology and a
Major Concentration in Health Sciences ......................... 440
Bachelor of Arts (BA) Degree with a Major in Kinesiology and a
Major Concentration in Sports Medicine ....................... 442
Languages and Intercultural Communication .................. 444
Certificate in Languages and Intercultural Communication ... 445
Latin American Studies ................................................. 446
Bachelor of Arts (BA) Degree with a Major in Latin American
Studies ................................................................. 447
Liberal Studies ............................................................ 449
Diploma in Liberal Studies (DLS) ................................ 450
Master of Liberal Studies (MLS) Degree ....................... 452
Lifetime Physical Activity Program ............................... 453
Linguistics ................................................................. 454
Bachelor of Arts (BA) Degree with a Major in Linguistics .... 455
Doctor of Philosophy (PhD) Degree in the field of Linguistics 
........................................................................... 457
Managerial Studies ...................................................... 458
Bachelor of Arts (BA) Degree with a Major in Managerial Studies
.................................................................................. 458
Materials Science and NanoEngineering ......................... 460
Bachelor of Arts (BA) Degree with a Major in Materials Science
and NanoEngineering .................................................. 462
Bachelor of Science in Materials Science and NanoEngineering
(BSMSNE) Degree .......................................................... 463
Doctor of Philosophy (PhD) Degree in the field of Materials
Science and NanoEngineering ........................................ 466
Master of Business Administration (MBA) Degree / Master
of Materials Science and NanoEngineering (MMSNE) Degree 
................................................................................. 468
Master of Materials Science and NanoEngineering (MMSNE)
Degree ........................................................................ 468
Master of Science (MS) Degree in the field of Materials Science
and NanoEngineering .................................................. 470
Mathematics ............................................................... 471
Bachelor of Arts (BA) Degree with a Major in Mathematics ... 472
Bachelor of Science (BS) Degree with a Major in Mathematics
...................................................................................... 473
Doctor of Philosophy (PhD) Degree in the field of Mathematics 
.................................................................................. 475
Minor in Mathematics .................................................. 476
Mechanical Engineering ................................................ 477
Bachelor of Arts (BA) Degree with a Major in Mechanical
Engineering ............................................................... 478
Bachelor of Science in Mechanical Engineering (BSME) Degree 
.............................................................................. 479
Doctor of Philosophy (PhD) Degree in the field of Mechanical
Engineering ............................................................... 481

2017-2018 General Announcements
| Bachelor of Arts (BA) Degree with a Major in Medieval and Early Modern Studies | 488 |
| Bachelor of Arts (BA) Degree with a Major in Music History | 524 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 530 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 533 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 535 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 537 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 539 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 542 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 545 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 547 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 549 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 551 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 553 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 555 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 557 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 559 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 561 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 563 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 565 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 567 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 569 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 572 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 574 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 576 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 578 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 580 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 582 |
| Bachelor of Music (BMus) Degree with a Major in Bassoon Performance | 584 |
Doctor of Musical Arts (DMA) Degree in the field of Violin Performance ................................................................. 586
Doctor of Musical Arts (DMA) Degree in the field of Vocal Performance ........................................................................ 588
Master of Music (MMus) Degree in the field of Bassoon Performance ........................................................................ 591
Master of Music (MMus) Degree in the field of Cello Performance ................................................................................ 593
Master of Music (MMus) Degree in the field of Clarinet Performance ............................................................................. 596
Master of Music (MMus) Degree in the field of Composition ......................................................................................... 598
Master of Music (MMus) Degree in the field of Double Bass Performance ........................................................................ 600
Master of Music (MMus) Degree in the field of Flute Performance ................................................................................... 602
Master of Music (MMus) Degree in the field of Harp Performance .................................................................................... 605
Master of Music (MMus) Degree in the field of Horn Performance ................................................................................... 607
Master of Music (MMus) Degree in the field of Musicology ..................................................................................... 610
Master of Music (MMus) Degree in the field of Oboe Performance .................................................................................... 612
Master of Music (MMus) Degree in the field of Orchestral Conducting ............................................................................. 615
Master of Music (MMus) Degree in the field of Organ Performance .................................................................................. 617
Master of Music (MMus) Degree in the field of Percussion Performance ............................................................................. 619
Master of Music (MMus) Degree in the field of Piano Chamber Music And Accompanying .................................................. 622
Master of Music (MMus) Degree in the field of Piano Performance ................................................................................... 624
Master of Music (MMus) Degree in the field of String Quartet Performance ...................................................................... 627
Master of Music (MMus) Degree in the field of Trombone Performance ........................................................................... 629
Master of Music (MMus) Degree in the field of Trumpet Performance ................................................................................ 631
Master of Music (MMus) Degree in the field of Tuba Performance .................................................................................... 634
Master of Music (MMus) Degree in the field of Viola Performance .................................................................................... 636
Master of Music (MMus) Degree in the field of Violin Performance ................................................................................... 639
Master of Music (MMus) Degree in the field of Vocal Performance ................................................................................... 641
Nanoscale Science .................................................................................................................. 644
Master of Business Administration (MBA) Degree / Master of Science in Nanoscale Science (MSNS) Degree .............. 645
Master of Science in Nanoscale Science (MSNS) Degree ......................................................................................... 645
Naval Science .............................................................................................................................. 647
Minor in Naval Science ........................................................................................................ 647
Neuroscience .................................................................................................................................................. 648
Minor in Neuroscience ............................................................................................................... 649
Philosophy ......................................................................................................................................................... 651
Bachelor of Arts (BA) Degree with a Major in Philosophy ......................................................................................... 652
Doctor of Philosophy (PhD) Degree in the field of Philosophy ...................................................................................... 654
Physics and Astronomy .............................................................................................................. 655
Bachelor of Arts (BA) Degree with a Major in Astronomy ......................................................................................... 657
Bachelor of Arts (BA) Degree with a Major in Physics ......................................................................................... 658
Bachelor of Science (BS) Degree with a Major in Astrophysics .................................................................................. 659
Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Applied Physics ..................... 660
Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Biological Physics ............. 662
Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Computational Physics .......... 664
Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in General Physics ............... 665
Doctor of Philosophy (PhD) Degree in the field of Physics ...................................................................................... 667
Minor in Physics .............................................................................................................................................. 668
Political Science ................................................................................................................................................... 669
Bachelor of Arts (BA) Degree with a Major in Political Science .................................................................................. 669
Doctor of Philosophy (PhD) Degree in the field of Political Science ........................................................................... 674
Politics, Law and Social Thought .............................................................................................................. 675
Minor in Politics, Law and Social Thought ............................................................................................... 675
Poverty, Justice and Human Capabilities ................................................................................................. 678
Minor in Poverty, Justice and Human Capabilities .................................................................................... 678
Program in Writing and Communication ............................................................................................................. 682
Psychology ......................................................................................................................................................... 682
Bachelor of Arts (BA) Degree with a Major in Psychology ..................................................................................... 684
Doctor of Philosophy (PhD) Degree in the field of Psychology ................................................................................... 685
Religion ......................................................................................................................................................... 686
Bachelor of Arts (BA) Degree with a Major in Religion .......................................................................................... 687
Doctor of Philosophy (PhD) Degree in the field of Religion .................................................................................... 690
Master of Arts (MA) Degree in the field of Religion .......................................................................................... 691
Science Teaching ................................................................................................................................................. 692
Master of Science Teaching (MST) Degree ................................................................. 693
Social Policy Analysis .............................................................................................. 694
Bachelor of Arts (BA) Degree with a Major in Social Policy Analysis ...................... 695
Sociology .................................................................................................................. 697
Bachelor of Arts (BA) Degree with a Major in Sociology ........................................ 698
Doctor of Philosophy (PhD) Degree in the field of Sociology .................................. 700
Minor in Sociology .................................................................................................. 701
Space Studies ......................................................................................................... 702
Master of Business Administration (MBA) Degree / Master of Science in Space Studies (MSSpS) Degree ................................................................. 703
Master of Science in Space Studies (MSSpS) Degree ................................................ 703
Spanish, Portuguese and Latin American Studies .................................................... 705
Bachelor of Arts (BA) Degree with a Major in Spanish and Portuguese .................. 706
Sport Management .................................................................................................. 708
Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Analytics ................................................................. 709
Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Law ................................................................. 710
Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Leadership .......................................................... 712
Statistics .................................................................................................................. 714
Bachelor of Arts (BA) Degree with a Major in Statistics .......................................... 715
Doctor of Philosophy (PhD) Degree in the field of Statistics .................................. 716
Master of Business Administration (MBA) Degree / Master of Statistics (MStat) Degree ..................................................................................................... 717
Master of Statistics (MStat) Degree .......................................................................... 718
Minor in Statistics .................................................................................................. 719
Study of Women, Gender and Sexuality .................................................................. 720
Bachelor of Arts (BA) Degree with a Major in Study Of Women, Gender and Sexuality ........................................................................................................ 721
Certificate in Women, Gender and Sexuality ......................................................... 725
Subsurface Geoscience ............................................................................................ 726
Master of Business Administration (MBA) Degree / Master of Science in Subsurface Geoscience (MSSG) Degree ................................................................. 727
Master of Science in Subsurface Geoscience (MSSG) Degree .................................. 728
Systems, Synthetic and Physical Biology .................................................................. 730
Doctor of Philosophy (PhD) Degree in the field of Systems, Synthetic and Physical Biology ................................................................. 731
Teacher Education .................................................................................................. 733
Master of Arts in Teaching (MAT) Degree ............................................................... 735
Teaching and Learning ............................................................................................. 737
Certificate in Teaching and Learning ...................................................................... 737
University Courses .................................................................................................. 738
Visual and Dramatic Arts ......................................................................................... 738
Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Film and Photography ........................................ 740
Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Studio Art .......................................................... 743
Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Theatre .......................................................... 746
Air Force Science (AFSC) ....................................................................................... 750
Americas Research Center (ARCR) ......................................................................... 751
Ancient Mediterranean Civil (AMCI) ..................................................................... 752
Anthropology (ANTH) ......................................................................................... 752
Applied Physics (APPL) ....................................................................................... 782
Arabic (ARAB) ....................................................................................................... 782
Architecture (ARCH) ............................................................................................. 783
Art History (HART) ............................................................................................... 808
Asian Studies (ASIA) ............................................................................................. 846
Astronomy (ASTR) ............................................................................................... 854
Biochemistry & Cell Biology (BIOO) ................................................................. 857
Bioengineering (BIOE) ......................................................................................... 872
Business (BUSI) ..................................................................................................... 891
Center for Civic Leadership (LEAD) ..................................................................... 899
Chemical & Biomolecular Eng (CHBE) ............................................................. 901
Chemistry (CHEM) .............................................................................................. 910
Chinese (CHIN) .................................................................................................... 921
Civil and Environmental Eng (CEVE) ............................................................... 924
Classical Studies (CLAS) ..................................................................................... 939
Cntr Lang & Intercultural Comm (CLIC) ............................................................ 943
Cognitive Sciences (CSCI) .................................................................................... 944
College Course (COLL) ......................................................................................... 944
Communication (COMM) ..................................................................................... 952
Comp. & Applied Mathematics (CAAM) ............................................................ 952
Computer Science (COMP) .................................................................................. 960
Dissertation/Thesis Submission (DSRT) .............................................................. 981
Earth Science (ESCI) ............................................................................................. 981
Ecology & Evolutionary Biology (EBIO) ........................................................... 1002
Economics (ECON) .............................................................................................. 1011
Education (EDUC) .............................................................................................. 1026
Electrical & Comp. Engineering (ELEC) ............................................................ 1035
Emergency Med Studies/Practice (EMSP) ......................................................... 1060
Engineering (ENGI) ............................................................................................. 1061
<table>
<thead>
<tr>
<th>Program</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>English (ENGL)</td>
<td>1067</td>
</tr>
<tr>
<td>Environmental Studies (ENST)</td>
<td>1091</td>
</tr>
<tr>
<td>Executive Management (EMBA)</td>
<td>1097</td>
</tr>
<tr>
<td>Film (FILM)</td>
<td>1098</td>
</tr>
<tr>
<td>First-Yr Writing Intensive Sem (FWIS)</td>
<td>1104</td>
</tr>
<tr>
<td>French Studies (FREN)</td>
<td>1117</td>
</tr>
<tr>
<td>Freshman Seminar (FSEM)</td>
<td>1123</td>
</tr>
<tr>
<td>German (GERM)</td>
<td>1128</td>
</tr>
<tr>
<td>Global Affairs (GLBL)</td>
<td>1137</td>
</tr>
<tr>
<td>Global Health Technologies (GLHT)</td>
<td>1141</td>
</tr>
<tr>
<td>Greek (GREE)</td>
<td>1143</td>
</tr>
<tr>
<td>Health Sciences (HEAL)</td>
<td>1145</td>
</tr>
<tr>
<td>Hebrew (HEBR)</td>
<td>1148</td>
</tr>
<tr>
<td>Hindi (HIND)</td>
<td>1149</td>
</tr>
<tr>
<td>History (HIST)</td>
<td>1150</td>
</tr>
<tr>
<td>Honors Program (HONS)</td>
<td>1177</td>
</tr>
<tr>
<td>Humanities (HUMA)</td>
<td>1177</td>
</tr>
<tr>
<td>Humanities Research Center (HURC)</td>
<td>1184</td>
</tr>
<tr>
<td>Italian Language and Culture (ITAL)</td>
<td>1190</td>
</tr>
<tr>
<td>Japanese (JAPA)</td>
<td>1192</td>
</tr>
<tr>
<td>Jewish Studies (JWST)</td>
<td>1193</td>
</tr>
<tr>
<td>Keck Center (KECK)</td>
<td>1194</td>
</tr>
<tr>
<td>Kinesiology (KINE)</td>
<td>1194</td>
</tr>
<tr>
<td>Korean (KORE)</td>
<td>1197</td>
</tr>
<tr>
<td>Latin (LATI)</td>
<td>1198</td>
</tr>
<tr>
<td>Latin American Studies (LASR)</td>
<td>1201</td>
</tr>
<tr>
<td>Liberal Studies Core/Capstone (MLSC)</td>
<td>1202</td>
</tr>
<tr>
<td>Lifetime Phys Activity Credit (LPCR)</td>
<td>1213</td>
</tr>
<tr>
<td>Lifetime Phys Activity Program (LPAP)</td>
<td>1213</td>
</tr>
<tr>
<td>Linguistics (LING)</td>
<td>1222</td>
</tr>
<tr>
<td>Management (MGMT)</td>
<td>1231</td>
</tr>
<tr>
<td>Managerial Studies (MANA)</td>
<td>1269</td>
</tr>
<tr>
<td>Master Accounting (MACC)</td>
<td>1269</td>
</tr>
<tr>
<td>Materials Science &amp; NanoEng (MSNE)</td>
<td>1272</td>
</tr>
<tr>
<td>Mathematics (MATH)</td>
<td>1281</td>
</tr>
<tr>
<td>MBA for Professionals-Evening (MGMP)</td>
<td>1292</td>
</tr>
<tr>
<td>MBA for Professionals-Weekend (MGMW)</td>
<td>1297</td>
</tr>
<tr>
<td>Mechanical Engineering (MECH)</td>
<td>1301</td>
</tr>
<tr>
<td>Medieval/Early Modern Studies (MDEM)</td>
<td>1314</td>
</tr>
<tr>
<td>Mgmt Integrated Crse Offering (MICO)</td>
<td>1322</td>
</tr>
<tr>
<td>Military Science (MILI)</td>
<td>1323</td>
</tr>
<tr>
<td>Music (MUSI)</td>
<td>1325</td>
</tr>
<tr>
<td>Natural Sciences (NSCI)</td>
<td>1354</td>
</tr>
<tr>
<td>Naval Science (NAVA)</td>
<td>1357</td>
</tr>
<tr>
<td>Neuroscience (NEAV)</td>
<td>1359</td>
</tr>
<tr>
<td>Philosophy (PHIL)</td>
<td>1369</td>
</tr>
<tr>
<td>Photography (FOTO)</td>
<td>1379</td>
</tr>
<tr>
<td>Physics (PHYS)</td>
<td>1382</td>
</tr>
<tr>
<td>Political Science (POLI)</td>
<td>1391</td>
</tr>
<tr>
<td>Politics, Law, Social Thought (PLST)</td>
<td>1411</td>
</tr>
<tr>
<td>Portuguese (PORT)</td>
<td>1411</td>
</tr>
<tr>
<td>Psychology (PSYC)</td>
<td>1413</td>
</tr>
<tr>
<td>Religion (RELI)</td>
<td>1430</td>
</tr>
<tr>
<td>Russian (RUSS)</td>
<td>1458</td>
</tr>
<tr>
<td>Social Sciences (SOSC)</td>
<td>1459</td>
</tr>
<tr>
<td>Sociology (SOCL)</td>
<td>1461</td>
</tr>
<tr>
<td>Spanish &amp; Portuguese (SPPO)</td>
<td>1477</td>
</tr>
<tr>
<td>Spanish (SPAN)</td>
<td>1484</td>
</tr>
<tr>
<td>Sport Management (SMGT)</td>
<td>1485</td>
</tr>
<tr>
<td>Statistics (STAT)</td>
<td>1489</td>
</tr>
<tr>
<td>Systems/Synthetic/Phys Biology (SSPB)</td>
<td>1502</td>
</tr>
<tr>
<td>Theatre (THEA)</td>
<td>1502</td>
</tr>
<tr>
<td>Tibetan (TIBT)</td>
<td>1507</td>
</tr>
<tr>
<td>University Courses (UNIV)</td>
<td>1507</td>
</tr>
<tr>
<td>Visual Arts (ARTS)</td>
<td>1512</td>
</tr>
<tr>
<td>Women, Gender, &amp; Sexuality (SWGS)</td>
<td>1520</td>
</tr>
<tr>
<td>Administration and Faculty</td>
<td>1534</td>
</tr>
<tr>
<td>Board of Trustees</td>
<td>1535</td>
</tr>
<tr>
<td>Administration</td>
<td>1536</td>
</tr>
<tr>
<td>Faculty</td>
<td>1538</td>
</tr>
<tr>
<td>Emeritus Faculty</td>
<td>1568</td>
</tr>
<tr>
<td>Important Notices</td>
<td>1574</td>
</tr>
<tr>
<td>Accreditation</td>
<td>1575</td>
</tr>
<tr>
<td>Complaints Process</td>
<td>1576</td>
</tr>
<tr>
<td>Contact Information</td>
<td>1577</td>
</tr>
<tr>
<td>Disclaimer</td>
<td>1578</td>
</tr>
<tr>
<td>Ethical Concerns</td>
<td>1579</td>
</tr>
<tr>
<td>Equal Opportunity Notice</td>
<td>1580</td>
</tr>
<tr>
<td>Family Educational Rights and Privacy Act (FERPA)</td>
<td>1581</td>
</tr>
<tr>
<td>Message from the President</td>
<td>1583</td>
</tr>
<tr>
<td>Policies</td>
<td>1584</td>
</tr>
<tr>
<td>Archive</td>
<td>1585</td>
</tr>
<tr>
<td>Index</td>
<td>1586</td>
</tr>
</tbody>
</table>
Welcome to the 2017-2018 publication of the General Announcements, Rice University's official catalog of courses, degrees, policies, and curricular requirements.
UNDERGRADUATE STUDENTS

The undergraduate experience at Rice is one of intense personal interactions. The close sense of community created by individual placement in residential colleges is extended to warm intellectual and personal relationships with members of the Rice faculty. "Inside the hedges," the beautifully designed, spacious campus is small enough to encourage a sense of belonging even as students engage with the lively cultural currents of one of the country's largest cities.

The academic philosophy at Rice is to offer students beginning their college studies both a grounding in the broad fields of general knowledge and the chance to concentrate on very specific academic and research interests. By completing the required distribution courses, all students gain an understanding of the literature, arts, and philosophy essential to any civilization, a broad historical introduction to thought about human society, and a basic familiarity with the scientific principles underlying physics, chemistry, and mathematics. Building on this firm foundation, students then concentrate on studies in their major areas of interest.

Rice University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (SACSCOC), the recognized regional accrediting body in the 11 U.S. Southern states.

Rice grants eleven undergraduate degrees. The majority of undergraduates earn the Bachelor of Arts (BA) or the Bachelor of Science (BS), in a range of majors. The BS degree is offered in a number of science fields and in various fields of engineering. The George R. Brown School of Engineering offers seven BS degrees, including BS degrees in Computer Science (BSCS) and in Materials Science and NanoEngineering (BSMSNE), with the five programs leading to the BS degrees in Bioengineering (BSBE), Civil Engineering (BSCE), Chemical Engineering (BSChE), Electrical Engineering (BSEE) and Mechanical Engineering (BSME) being accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org. The Shepherd School of Music also offers a Bachelor of Music (BMus), and the School of Architecture an undergraduate professional Bachelor of Architecture (BArch) degree.

Undergraduates may major in any of the numerous fields provided by the various schools of architecture, humanities, music, social sciences, natural sciences, and engineering. To accommodate the full range of individual student interests, specific interdepartmental majors and minors also are available, as are various departmental minors and selectively approved area majors. In certain departments, students also have the option of overlapping the upper-level course work of their undergraduate degree with those basic requirements necessary to earn an advanced degree in the field, considerably reducing the time required to complete their graduate studies. The Shepherd School of Music offers a dual degree in music (BMus/MMus) that may be completed with a fifth year of study. The BA–BArch professional track is the primary course of study for undergraduate architectural study at Rice. All students who successfully apply to the university and the School of Architecture enter into this program. This program leads to a degree of Bachelor of Arts with a major in Architecture (BA) after four years, followed immediately by the professional Bachelor of Architecture (BArch) degree sequence, which consists of a one year internship program (Preceptorship) and one year of advanced coursework.

Through Rice's Education Certification Program, students interested in teaching in secondary schools may complete a program of teacher training, leading to certification in the state of Texas, while pursuing their Rice degree. Students interested in satisfying the requirements for admission to medical, dental, or law school should consult with the Office of Academic Advising for completing these programs in conjunction with the various majors.
ACADEMIC OPPORTUNITIES

- Auditing Courses (p. 12)
- Majors, Minors, and Certificates (p. 12)
- Non-Traditional Coursework (p. 13)
- Study Abroad (p. 13)
- Undergraduate Degree Chart (p. 14)
- Undergraduate Degrees (p. 16)
- Unique Programs (p. 17)

Auditing Courses

During the fall and spring semesters, currently enrolled degree-seeking Rice students may audit one or more courses at Rice without charge by securing permission of the instructor and by registering as an auditor with the Office of the Registrar. During the summer sessions, enrolled Rice students may audit one or more courses at Rice at the cost of the auditor fee for Rice alumni (see Cashier’s website [https://cashier.rice.edu]).

Upon completion, the audited course will appear on the student’s transcript with a grade of either "AUD" or "NC". As noted in Grades, instructors report the AUD grade in those instances where the auditing student has met the audit requirements of the course as defined by the instructor. A grade of NC (No Credit) is reported in instances where the auditing student has not met the audit requirements of the course as defined by the instructor.

There are no credit hours associated with audited courses, and auditing a course does not affect a student's GPA. Requests to audit a class or to change from audit to credit or vice versa must be done by the dates and deadlines documented in the posted Academic Calendar ([https://registrar.rice.edu/calendars](https://registrar.rice.edu/calendars)).

Majors, Minors, and Certificates

Undergraduate Majors

To receive a bachelor's degree, a student must complete the requirements for at least one major. Rice offers majors in many fields. Within some majors, students have the choice of a particular area of concentration. Students also may choose to fulfill the requirements for more than one major; such majors do not necessarily need to be in related fields. More detailed information on the departmental majors described below may be found in the Undergraduate Degree chart, in the section “Departments and Interdisciplinary Programs” or by contacting the department. The process for declaring majors appears in the section Declaring Majors and Minors and Area Majors.

School of Architecture

Students admitted to the university as architecture majors must first complete four years of the BA program (architecture major) before applying to the BArch program in their senior year. If admitted, they are assigned a preceptorship with an architectural firm for a one-year period, after which they return to Rice to complete the BArch degree program. The School of Architecture also offers a BA in Architectural Studies, which provides a foundation for graduate level study of architecture and/or pursuit of other fields.

George R. Brown School of Engineering

Rice offers majors in bioengineering, chemical and biomolecular engineering, civil and environmental engineering, computational and applied mathematics, computer science, electrical and computer engineering, materials science and nanoengineering, mechanical engineering, and statistics. These programs lead to either the BA or the BS degree and may qualify students for further graduate study.

School of Humanities

Students may declare majors in art history, classical studies, English, French studies, German studies, Spanish and Portuguese, history, philosophy, religion, and visual and dramatic arts. Interdisciplinary majors are available in ancient mediterranean civilizations, Asian studies, Latin American studies, medieval and early modern studies, and the study of women, gender, and sexuality.

Shepherd School of Music

Music students may opt for either a BA or a Bachelor of Music (BMus) degree in performance, composition, music history, and music theory. Students who pass a special qualifying examination may elect an honors program that leads to the simultaneous awarding of the BMus and Master of Music (MMus) degrees after five years of study.

Wiess School of Natural Sciences

All natural sciences departments, including biosciences, chemistry, earth science, kinesiology, mathematics, and physics and astronomy offer programs leading to the BA degree. BS degrees are offered in some departments. Majors include astronomy, astrophysics, biochemistry and cell biology, biological sciences, kinesiology, chemical physics, chemistry, earth science, ecology and evolutionary biology, environmental studies, mathematics, and physics. Students also may elect double majors combining one of the programs in natural sciences with another science, a humanities discipline, or an engineering field.

School of Social Sciences

Rice offers majors in anthropology, economics, linguistics, mathematical economic analysis, political science, psychology, social policy analysis, sociology, and sport management. In addition the cognitive sciences major includes science, engineering, and humanities courses, while the managerial studies major incorporates coursework in the schools of engineering and management.

Declaring Majors, Minors, and Certificates

Students declare a major, minor, or certificate via a Declaration Form. The department chair or designee must sign the form acknowledging the declaration. The department will counsel the student about the requirements that must be met to complete the major and the likelihood the student will be able to meet them. If the department believes a student is not well prepared for success in its major (or minor, or certificate), it may express its reservations on the form and/or propose a specific course of study to help the student improve his or her background. No department or program, except the School of Architecture and Shepherd School of Music, may refuse to admit an undergraduate into its program unless specific curricular conditions for such refusal are included in the relevant description of the program requirements, or in cases of resource limitations. Students may not obtain both a BA and a BS in the same major.

Students are encouraged to declare an official major as soon as they have decided on it so that a major advisor can be assigned. Students may declare a major at any time up to, before, or during the spring semester.
of their second year at Rice. They will not be permitted to register for
the fall semester of their third year without having declared a major. The
major declaration deadline is listed in the Academic Calendar each year.
(Transfer students should declare within their first year or before reaching
junior level status.) Students are always free to change their major by
completing the Change of Major form. However, such a change may entail
one or more additional semesters at the university. Area majors are an
exception to this rule and must be declared by the fourth semester before graduation (see Area Majors below).

Some majors provide students an opportunity to declare a major
concentration. Major concentrations are formally recognized subfields
of study within a major, and they are represented by a coordinated set
of courses emphasizing a subfield in that program. For those majors
with approved concentrations, the major concentration is listed on the
student’s academic transcript as an element of the official curriculum.

Students may declare a minor only after they have first declared a major.
The declaration of minor process is identical to that of majors. Students
may not major and minor in the same subject.

Additionally, students may declare their intent to pursue a university
certificate only after they have first declared a major. The declaration of intent to pursue a university certificate process is identical to that of
majors.

Once a student declares a major, minor, or certificate, the title of the
major, minor, or university certificate is noted on the student’s transcript,
and a faculty advisor in the appropriate department is assigned. To gain
full benefit of departmental or program course offerings, students should
meet regularly with faculty advisors.

To assess progress toward degree requirements, students should:

1. monitor their Degree Works degree audits (via ESTHER) to review
   progress toward degree requirements; and
2. meet regularly with their faculty advisors to review progress toward
   completion of major, minor, university certificate, and degree
   requirements.

For instructions on how to declare a major or minor in ESTHER, visit
the Major, Minors, and University Certificates (https://registrar.rice.edu/
students/majors_minors) page of the Office of the Registrar’s website.

Area Majors

Students with well-defined needs that are not met by established
departmental or interdisciplinary majors may propose an area major. Area
majors combine courses from more than one department into a cohesive
plan of original study that is equivalent in quality and rigor to a traditional
major.

Area majors are rare and limited by the available academic resources
and must be distinct from other majors at Rice. They differ from double
majors, which must conform to the requirements of both departments.
An area major constitutes a single major with specific requirements that
include courses from two or more departments. No course in an area
major may be used to fulfill the requirements of an additional major,
minor or a certificate, and students with area majors must still meet all
the other university graduation requirements.

Students initiate an area major after first consulting with faculty advisors
from each of the departments involved. Once support has been obtained
from these faculty advisors, students should consult the Office of
Academic Advising (OAA) which serves as a liaison to the Committee on
the Undergraduate Curriculum (CUC). Students work closely with each
faculty advisor to design a comprehensive and substantial course of
study and to decide on an appropriate title. This course of study must
be formulated in a written proposal. Each faculty advisor and the OAA
must sign off on the plan before submission to the chair of the CUC. The
CUC determines final approval. As part of the review process, the CUC
consults chairs of the involved departments to confirm that courses
necessary for successful and timely completion of the major will be
offered. If approved, the OAA officially certifies the area major plan to the
Office of the Registrar and goes on to oversee the major on behalf of the
faculty advisors. Any change in the area major requirements needs the
approval of both the faculty advisors and the CUC.

Students may not propose an area major if they are within three
semesters of graduation unless the Committee on Examinations and
Standing rules that exceptional circumstances warrant this action. Under
no circumstances may students propose an area major in their final
semester before graduation.

Non-Traditional Coursework

Courses tailored for individual students provide a valuable opportunity
for them to pursue an academic or professional interest under the
supervision of a Rice faculty member. Such courses are typically titled as
independent study or research, directed reading, or internships. Although
the organization of these courses is quite variable, they are subject to the
same basic requirements as other course offerings. In particular:

• The subject matter and intellectual level of the course must be
  appropriate for Rice.
• The instructor of record must hold a regular faculty appointment at
  Rice. This instructor is responsible for submitting the final grade, in
  consultation with the student’s immediate supervisor, if appropriate.
• The course must have a written syllabus that meets published Rice
  Syllabus Standards (p. 95). In addition, the syllabus must include
  a description of anticipated activities and topical content.
• Credit hours assigned are subject to the same amount-of-work
  considerations as other courses. Credit hours will be awarded in
  accordance with the Rice credit hour guidelines (https://
  registrar.rice.edu/facstaff/contact_hours) and fixed at the time of
  registration.
• All Academic Calendar (or Registrar) deadlines for registration, add/
drop, completion of course work, and grade submission must be met.

Study Abroad

Rice University Study Abroad provides substantial, intellectually rigorous,
and culturally enriching international opportunities. Rice Study Abroad
is committed to providing high quality academic-based educational
programs in collaboration with prestigious international universities and
select program providers. Rice approved programs are distinguished
by their academic focus contributing to the curricular needs of Rice
University as well as integration with host communities through
opportunities such as intensive language instruction, field studies,
professional internships, and independent study.

Students must make their study abroad arrangements through Rice
Study Abroad (http://abroad.rice.edu) in order to ensure proper
enrollment, credit transfer, financial aid portability, scholarship eligibility,
and risk management coverage.
Students should familiarize themselves with the university's transfer credit policy, and specifically that for International Transfer Credit (p. 32), before studying abroad. Please note that some departments have additional program-specific transfer credit guidelines or restrictions.

**Undergraduate Degree Chart**

**The School of Architecture**

**Architecture**
- Bachelor of Architecture (BArch) Degree (p. 130)
- Bachelor of Arts (BA) Degree with a Major in Architectural Studies (p. 132)
- Bachelor of Arts (BA) Degree with a Major in Architecture (p. 133)

**The George R. Brown School of Engineering**

**Bioengineering**
- Bachelor of Science in Bioengineering (BSBE) Degree (p. 154)

**Chemical and Biomolecular Engineering**
- Bachelor of Arts (BA) Degree with a Major in Chemical Engineering (p. 259)
- Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Biotechnology and Bioengineering (p. 261)
- Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Computational Engineering (p. 263)
- Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Engineering Breadth (p. 266)
- Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Environmental Engineering (p. 268)
- Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Materials Science and Engineering (p. 271)
- Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Sustainability and Energy Engineering (p. 273)

**Civil and Environmental Engineering**
- Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Civil Engineering (p. 294)
- Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Environmental Engineering (p. 297)
- Bachelor of Science in Civil Engineering (BSCE) Degree (p. 300)

**Computational and Applied Mathematics**
- Bachelor of Arts (BA) Degree with a Major in Computational and Applied Mathematics (p. 326)
- Minor in Computational and Applied Mathematics (p. 330)

**Computer Science**
- Bachelor of Arts (BA) Degree with a Major in Computer Science (p. 336)
- Bachelor of Science in Computer Science (BSCS) Degree (p. 338)

**Electrical and Computer Engineering**
- Bachelor of Arts (BA) Degree with a Major in Electrical Engineering (p. 367)
- Bachelor of Science in Electrical Engineering (BSEE) Degree (p. 371)

**Energy and Water Sustainability**
- Minor in Energy and Water Sustainability (p. 379)

**Engineering Design**
- Minor in Engineering Design (p. 382)

**Financial Computation and Modeling**
- Minor in Financial Computation and Modeling (p. 413)

**Global Health Technologies**
- Minor in Global Health Technologies (p. 418)

**Materials Science and Nanoengineering**
- Bachelor of Arts (BA) Degree with a Major in Materials Science and NanoEngineering (p. 462)
- Bachelor of Science in Materials Science and NanoEngineering (BSMSNE) Degree (p. 463)

**Mechanical Engineering**
- Bachelor of Arts (BA) Degree with a Major in Mechanical Engineering (p. 478)
- Bachelor of Science in Mechanical Engineering (BSME) Degree (p. 479)

**The Rice Center for Engineering Leadership**
- Certificate in Engineering Leadership (p. 384)

**Statistics**
- Bachelor of Arts (BA) Degree with a Major in Statistics (p. 715)
- Minor in Statistics (p. 719)

**The School of Humanities**

**African Studies**
- Minor in African Studies (p. 114)

**Ancient Mediterranean Civilizations**
- Bachelor of Arts (BA) Degree with a Major in Ancient Mediterranean Civilizations (p. 117)

**Art History**
- Bachelor of Arts (BA) Degree with a Major in Art History (p. 140)

**Asian Studies**
- Bachelor of Arts (BA) Degree with a Major in Asian Studies (p. 150)

**Center for Languages and Intercultural Communication**
- Certificate in Languages and Intercultural Communication (p. 445)

**Cinema and Media Studies**
- Minor in Cinema and Media Studies (p. 288)

**Classical and European Studies**
- Bachelor of Arts (BA) Degree with a Major in Classical Studies (p. 314)
- Bachelor of Arts (BA) Degree with a Major in French Studies (p. 316)
- Bachelor of Arts (BA) Degree with a Major in German Studies (p. 317)

**English**
- Bachelor of Arts (BA) Degree with a Major in English (p. 386)
- Bachelor of Arts (BA) Degree with a Major in English and a Major Concentration in Creative Writing (p. 389)

**History**
- Bachelor of Arts (BA) Degree with a Major in History (p. 423)
- Bachelor of Arts (BA) Degree with a Major in History and a Major Concentration in History: International Concentration (p. 428)

**Jewish Studies**
- Minor in Jewish Studies (p. 437)

**Medical Humanities**
- Minor in Medical Humanities (p. 485)

**Medieval and Early Modern Studies**

2017-2018 General Announcements
Bachelor of Arts (BA) Degree with a Major in Medieval and Early Modern Studies (p. 488)

Museums and Cultural Heritage
Minor in Museums and Cultural Heritage (p. 493)

Philosophy
Bachelor of Arts (BA) Degree with a Major in Philosophy (p. 652)

Politics, Law, and Social Thought
Minor in Politics, Law and Social Thought (p. 675)

Poverty, Justice, and Human Capabilities
Minor in Poverty, Justice and Human Capabilities (p. 678)

Religion
Bachelor of Arts (BA) Degree with a Major in Religion (p. 687)

Spanish, Portuguese and Latin American Studies
Bachelor of Arts (BA) Degree with a Major in Latin American Studies (p. 447)
Bachelor of Arts (BA) Degree with a Major in Spanish and Portuguese (p. 706)

Study of Women, Gender and Sexuality
Bachelor of Arts (BA) Degree with a Major in Study Of Women, Gender and Sexuality (p. 721)

Visual and Dramatic Arts
Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Film and Photography (p. 740)
Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Studio Art (p. 743)
Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Theatre (p. 746)

The Jones Graduate School of Business
Business
Minor in Business (p. 257)

The Shepherd School of Music

Music
Bachelor of Arts (BA) Degree with a Major in Music (p. 521)
Bachelor of Music (BMus) Degree with a Major in Bassoon Performance (p. 523)
Bachelor of Music (BMus) Degree with a Major in Cello Performance (p. 525)
Bachelor of Music (BMus) Degree with a Major in Clarinet Performance (p. 527)
Bachelor of Music (BMus) Degree with a Major in Composition (p. 529)
Bachelor of Music (BMus) Degree with a Major in Double Bass Performance (p. 531)
Bachelor of Music (BMus) Degree with a Major in Flute Performance (p. 533)
Bachelor of Music (BMus) Degree with a Major in Harp Performance (p. 535)
Bachelor of Music (BMus) Degree with a Major in Horn Performance (p. 537)
Bachelor of Music (BMus) Degree with a Major in Music History (p. 539)
Bachelor of Music (BMus) Degree with a Major in Music Theory (p. 542)
Bachelor of Music (BMus) Degree with a Major in Oboe Performance (p. 545)
Undergraduate Degrees

Bachelor of Arts (BA) Degree with a Major in Kinesiology and a Major Concentration in Health Sciences (p. 440)
Bachelor of Arts (BA) Degree with a Major in Kinesiology and a Major Concentration in Sports Medicine (p. 442)

Mathematics
Bachelor of Arts (BA) Degree with a Major in Mathematics (p. 472)
Bachelor of Science (BS) Degree with a Major in Mathematics (p. 473)
Minor in Mathematics (p. 476)

Neuroscience
Bachelor of Arts (BA) Degree with a Major in Neuroscience
Minor in Neuroscience (p. 649)

Physics and Astronomy
Bachelor of Arts (BA) Degree with a Major in Astronomy (p. 657)
Bachelor of Arts (BA) Degree with a Major in Physics (p. 658)
Bachelor of Science (BS) Degree with a Major in Astrophysics (p. 659)
Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Applied Physics (p. 660)
Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Biological Physics (p. 662)
Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Computational Physics (p. 664)
Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in General Physics (p. 665)
Minor in Physics (p. 668)

The School of Social Sciences

Anthropology
Bachelor of Arts (BA) Degree with a Major in Anthropology (p. 121)
Minor in Anthropology (p. 124)

Cognitive Sciences
Bachelor of Arts (BA) Degree with a Major in Cognitive Sciences (p. 320)

Economics
Bachelor of Arts (BA) Degree with a Major in Economics (p. 358)
Bachelor of Arts (BA) Degree with a Major in Mathematical Economic Analysis (p. 360)

Linguistics
Bachelor of Arts (BA) Degree with a Major in Linguistics (p. 455)

Managerial Studies
Bachelor of Arts (BA) Degree with a Major in Managerial Studies (p. 458)

Political Science
Bachelor of Arts (BA) Degree with a Major in Political Science (p. 669)

Psychology
Bachelor of Arts (BA) Degree with a Major in Psychology (p. 684)

Social Policy Analysis
Bachelor of Arts (BA) Degree with a Major in Social Policy Analysis (p. 695)

Sociology
Bachelor of Arts (BA) Degree with a Major in Sociology (p. 698)
Minor in Sociology (p. 701)

Sport Management
Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Analytics (p. 709)
Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Law (p. 710)
Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Leadership (p. 712)

The Dean of Undergraduates
Center for Civic Leadership
Certificate in Civic Leadership (p. 290)

Naval Sciences
Minor in Naval Science (p. 647)

Undergraduate Degrees
Bachelor of Arts Degrees

The specific requirements of individual majors leading to the Bachelor of Arts degree vary widely. No department may specify more than 80 semester credit hours (including prerequisites, required courses, and related laboratories included) for the Bachelor of Arts.

In addition to meeting the degree requirements for all bachelor’s degrees, to qualify for the Bachelor of Arts, students in all fields except architecture must complete at least 60 semester credit hours in course work outside the major, and students in architecture must complete at least 45 semester credit hours in coursework outside the major.

Bachelor of Science Degrees in the Wiess School of Natural Sciences

The Bachelor of Science degree is offered with majors in astrophysics, biochemistry and cell biology, chemistry, chemical physics, earth science, environmental science, ecology and evolutionary biology, mathematics, and physics. The specific degree requirements vary from field to field and differ from those of the Bachelor of Arts in that there are greater technical requirements. No department may specify more than 80 semester credit hours (including prerequisites, required courses, and related laboratories) for the Bachelor of Science. To earn a BS degree in one of these fields, students must complete at least 60 semester credit hours in course work outside the major.

Bachelor of Science Degrees in the George R. Brown School of Engineering

- Bioengineering (BSBE)
- Chemical Engineering (BSChE)
- Civil Engineering (BSCE)
- Computer Science (BSCS)
- Electrical Engineering (BSEE)
- Materials Science and NanoEngineering (BSMSNE)
- Mechanical Engineering (BSME)

The Bachelor of Science degree in a given engineering field is distinct from the Bachelor of Arts degree in that it must meet greater technical requirements. In establishing a departmental major for the Bachelor of Science degrees, departments may specify up to a defined maximum number of hours of coursework towards that major (including prerequisites, required courses, and related laboratories).
For the declared majors associated with the Bachelor of Science degrees, the Bioengineering department specifies 95 semester credit hours of coursework towards its major; the Chemical and Biomolecular Engineering department may specify up to 100 semester credit hours; the Civil and Environmental Engineering department up to 95; the Computer Science department up to 84; the Electrical and Computer Engineering department up to 86; the Materials Science and NanoEngineering department, up to 94; and the Mechanical Engineering department specifies 94 semester credit hours of coursework.

To earn the corresponding Bachelor of Science degrees, students must meet the following minimum semester credit hour requirements in total course work:

- Bioengineering majors — a total of at least 134 semester credit hours
- Chemical Engineering majors — a total of 132 semester credit hours
- Civil Engineering majors — a total of at least 133 semester credit hours
- Computer Science majors — a total of at least 128 semester credit hours
- Electrical Engineering majors — a total of at least 134 semester credit hours
- Materials Science and NanoEngineering majors — a total of at least 130 semester credit hours
- Mechanical Engineering majors — a total of at least 132 semester credit hours

The programs leading to BS degrees in Bioengineering, Civil Engineering, Chemical Engineering, Electrical Engineering and Mechanical Engineering are accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

### Other Bachelor’s Degrees

The professional Bachelor of Architecture (BArch) degree requires a fifth year of study and a one-year preceptorship. The Bachelor of Music (BMus) degree requires advanced courses in performance and ensemble in addition to the core music curriculum.

### Unique Programs

Rice undergraduates have the opportunity to pursue a number of unique academic programs during their course of study. A few are highlighted below.

#### Century Scholars Program

The University’s goals of attracting superior undergraduates, fostering collaboration between students and professors, and sustaining a commitment to undergraduate education have culminated in a groundbreaking scholarship and mentoring program. The Rice University Century Scholars program matches select incoming freshmen with faculty mentors (https://ccl.rice.edu/students/learn/undergraduate-research/century-scholars-program/current-faculty-mentors) for a two-year period. During that time the student and mentor collaborate on one of the mentor’s research projects. In addition to the research opportunity, select students receive a two-year merit scholarship and a research stipend.

For more information regarding the Century Scholars Program, please see the program’s website:

- [https://ccl.rice.edu/students/learn/undergraduate-research/century-scholars-program/](https://ccl.rice.edu/students/learn/undergraduate-research/century-scholars-program/)

### Rice Undergraduate Scholars Program (RUSP)

The Rice Undergraduate Scholars Program (RUSP) is a two-semester, 1-credit undergraduate research program aimed at students interested in careers in academia and research. Junior and senior Rice students engage in a year-long research project and attend weekly seminars on topics of research and the academic life. The program is focused on developing research and presentation skills, an understanding of an academic career, and how to apply to post-graduate education (graduate, medical, and law) and nationally competitive fellowships. In addition to this, all students in the program will have access to funding that may be used for research materials or conference attendance.

For more information regarding the RUSP program, please see the program’s website:

- [https://ccl.rice.edu/students/learn/undergraduate-research/rice-undergraduate-scholars-program-rusp/](https://ccl.rice.edu/students/learn/undergraduate-research/rice-undergraduate-scholars-program-rusp/)

### Rice-UT Public Health Scholars Program

Beginning in Fall 2015, a collaborative program agreement became effective between Rice University (Rice) and the University of Texas School of Public Health (UTSPH). The program is designed to allow select Rice undergraduate students interested in pursuing a graduate program in public health to obtain dual undergraduate and graduate credit by enrolling in up to 5 graduate courses (16 credit hours) at UTSPH during their senior year. This unique Rice-UTSPH Program enables accepted Rice students to earn credit towards their Rice undergraduate degree (BA or BS with any major), and to accelerate the completion of their UTSPH Master of Public Health degree (MPH) to within one year after completing their Rice undergraduate degree.

For more information regarding the Rice-UTSPH program, please see the program’s website: [https://dou.rice.edu/student-resources/public-health-scholars-program](https://dou.rice.edu/student-resources/public-health-scholars-program).

### Teacher Education

Students in the teacher education program earn Texas state teacher certification at the secondary level, grades 7-12. Subjects include art, English language arts and reading, history, Latin, life sciences, mathematics, physical sciences, physics/mathematics, science, social studies, and Spanish. For more information on teacher education programs at the undergraduate and graduate levels, see Teacher Education (p. 733).
ACADEMIC POLICIES AND PROCEDURES

All undergraduate students are subject to the academic regulations of the university. Students are responsible for making certain they meet all departmental and university requirements and academic deadlines.

The Committee on Examinations and Standing (EX&S) administers the rules and regulations documented here. Under unusual or mitigating circumstances, students may submit a written petition requesting special consideration to the committee. Students should address all correspondence to the EX&S committee in care of the Office of the Dean of Undergraduates. Further information about the petition process can be found at https://dou.rice.edu/committee-examinations-and-standing.

- Academic and Judicial Discipline (p. 21)
- Academic Calendar (https://registrar.rice.edu/calendars)
- Admission (p. 18)
- Attendance and Excused Absences (p. 22)
- Final Examinations (p. 23)
- Grades (p. 24)
- Graduation Requirements (p. 25)
- Leaves, Withdrawals and Readmission (p. 27)
- Name Changes (p. 30)
- Registration (p. 30)
- Transcript Policies (p. 32)
- Transfer Credit (p. 32)
- Veterans Information (p. 33)

Admission

Dating back to the founding of Rice University, our first president, Edgar Odell Lovett, mandated that we aspire to be a world-class university of the highest standing. Dr. Lovett challenged us “to assign no upper limit to our educational endeavor.” He envisioned students and faculty as a community of scholars, their minds exercised by spirited discourse (John Boles, A University So Conceived: A Brief History of Rice, p. 17, third rev. ed. 2006). Therefore, as an integral part of the university’s mission, we seek a broadly diverse student body where educational diversity increases the intellectual vitality of education, scholarship, service, and communal life at Rice. We seek students, both undergraduate and graduate, of keen intellect and diverse backgrounds who not only show potential for success at Rice, but also who will contribute to the educational environment of those around them. Rice determines which group of applicants, considered individually and collectively, will take fullest advantage of what we have to offer, contribute most to the educational process at Rice, and be most successful in their chosen fields and in society in general. Our evaluation process employs many different means to identify these qualities in applicants. History shows that no single gauge can adequately predict a student’s preparedness for a successful career at Rice. For example, we are cautious in the use of standardized test scores to assess student preparedness and potential.

An applicant is considered in competition with all other applicants. In making a decision to admit or award financial aid, we are careful not to ascribe too much value to any single metric, such as rank in class, grade point average, the SAT/ACT, or Graduate Record Exam.

We use a broader perspective that includes such qualitative factors as the overall strength and competitive ranking of a student’s prior institution, the rigor of his or her particular course of study, letters of recommendation, essays, responses to application questions, and (where required) auditions and portfolios. Taken together with a student’s academic record and test scores, these additional factors provide a sound basis to begin assessing the applicant’s potential on all levels.

Beyond indicators of academic competence, we look for other qualities among applicants, such as creativity, motivation, artistic talent, and leadership potential. We believe that students who possess these attributes in combination with strong academic potential will contribute to, and benefit from, a more vibrant, diverse educational atmosphere. Through their contributions and interactions with others, students will enrich the educational experience of all faculty and students. These qualities are not revealed in numerical measurements, but are manifest in the breadth of interests and the balance of activities in their lives.

Rice University strives to create on its campus a rich learning environment in which all students will meet individuals whose interests, talents, life experiences, beliefs, and world views differ significantly from their own. We believe that an educated person is one who is at home in many different environments, at ease among people from many different cultures, and willing to test his or her views against those of others. Moreover, we recognize that in this or any university, learning about the world we live in is not by any means limited to the structured interaction between faculty and students in the classroom, but also occurs through informal dialogue between students outside the classroom.

To encourage our students’ fullest possible exposure to the widest possible set of experiences, Rice seeks through its admission policies to bring bright and promising students to the university from a range of socioeconomic, cultural, geographic, and other backgrounds. We consider an applicant’s race or ethnicity as a factor in the admission process and believe that racial and ethnic diversity is an important element of overall educational diversity. Though race or ethnicity is never the defining factor in an application or admission decision, we do seek to enroll students from underrepresented groups in sufficient and meaningful numbers as to prevent their isolation and allow their diverse voices to be heard. We also seek students whose parents did not attend college as well as students from families with a well-established history of college-level education. Rice places a premium on recruitment of students, regardless of their races or ethnicities, who have distinguished themselves through initiatives that build bridges between different cultural, racial, and ethnic groups. In so doing, we endeavor to craft a residential community that fosters creative, intercultural interactions among students, a place where prejudices of all sorts are confronted squarely and dispelled.

In assessing how well an applicant can contribute to enlivening the learning environment at Rice, we also try to determine the relative challenges that he or she may have faced. For economically disadvantaged students, this may mean achieving a high level of scholastic distinction while holding down a job in high school. For a first generation college student, it might mean achieving high standards for academic success within an environment relatively indifferent to intellectual attainment. Or it might mean overcoming a disability to excel in sports, music, or forensics. For students who do not have particular disadvantages, we also look at whether they chose a more challenging road than the normal path through high school. This might mean an especially strenuous course of study, a prolonged, in-depth engagement in a school project, or a particularly creative and wide-ranging set of extracurricular activities.
Rice does not view offers of admission as entitlements based on grades and test scores. Our admission process combines an examination of academic ability with a flexible assessment of an applicant’s talents, experiences, and potential, including potential diversity contributions; it precludes any quick formula for admitting a given applicant or for giving preference to one particular set of qualifications without reference to the class as a whole. Rice is a highly selective institution and receives many more applications from viable candidates than it has available spaces. An inevitable consequence of Rice’s approach is that some highly accomplished students will not be admitted. However, by selecting a wide range of matriculants of all types, the admission process seeks to enrich the learning environment at Rice and thus improve the quality of a Rice education for all students.

Due to the nature of the Rice education, Rice admits undergraduate degree candidates on a full-time basis only.

Applicants are selected on a competitive basis in six academic divisions: architecture, engineering, humanities, music, natural sciences, and social sciences. Candidates should give careful consideration to the category under which they wish to be considered. However, once enrolled, students are able to move freely among most divisions after consultation with their advisors. Music students must pursue the music program for at least the first year before changing divisions. The schools of music and architecture maintain limited enrollments; all majors are subject to faculty approval.

Those offered admission are expected to complete the remainder of their high school courses with the same superior performance that led to their admission.

**First-Year Applicants**

The areas of focus generally used in evaluation of first-year candidates for admission include: scholastic record as reflected by the courses chosen and the quality of academic performance, recommendations from high school, the application presentation of personal information, special talents, essays, and standardized testing.

**The High School Record**—Students must complete at least 16 college preparatory units as follows:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>4</td>
</tr>
<tr>
<td>Social Studies</td>
<td>2</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>Laboratory Science (e.g. biology, chemistry, physics)</td>
<td>2</td>
</tr>
<tr>
<td>Additional language</td>
<td>2</td>
</tr>
<tr>
<td>Additional categories above</td>
<td>3</td>
</tr>
</tbody>
</table>

The natural science and engineering divisions require trigonometry (precalculus) or other advanced mathematics courses and both chemistry and physics. Students may substitute a second year of chemistry or biology for physics.

Students admitted with curriculum deficiencies will be asked to complete the required work by taking high school or college-level courses during the summer before enrollment at Rice.

**Note:** Because of the admission competition to enter Rice, successful applicants generally have taken 20 or more college preparatory courses in high school, many at the college level. Therefore, only those students who have more than 20 college preparatory courses may have the Office of the Registrar consider for Rice credit their college courses taken in high school.

**Transfer of Coursework Taken During High School**—College-level courses taken during high school years may be considered for credit at Rice University on receipt of the following documentation:

1. An official transcript of all college courses sent directly from the college(s) attended. The college courses should be part of the normal curriculum of the college and taught by regular members of the college faculty.
2. Official notification by letter from the high school principal or guidance counselor that the credit earned was not used to meet high school diploma requirements. College-level courses that appear on the high school transcript will not yield credits at Rice.

**Recommendations**—Candidates must submit evaluations from their guidance counselor and one teacher.

**The Application**—All freshman applicants must complete the Common Application, the Coalition Application, or the QuestBridge Application. The application and the Rice supplement provide the committee with important information on the student’s background and gives the applicant an opportunity to provide statements on his or her interests, experiences, and goals. The application fee is $75. Students for whom this fee creates a hardship may apply for a waiver. Freshmen applicants should provide proof of a fee waiver for the SAT or ACT test, or a NACAC fee waiver form, or eligibility for the school lunch program. In any case, a letter from the student’s high school counselor is required. Financial stress created by application fees to other institutions is not considered a valid reason to grant a fee waiver.

**Standardized Testing**—All freshman applicants for Fall 2018 must submit at least one of the following:

- the new, redesigned SAT (Reading/Writing/Language and Math) and two SAT Subject Tests in fields related to their proposed area of study. The SAT Essay is optional.
- the ACT. Writing is optional.

These exams are administered by the College Board and the American College Testing Program. The applicant is responsible for arranging to take the tests and sending official score reports to Rice before the student can be considered for admission. The College Board code for Rice is 6609. The ACT code is 4152.

Rice uses the highest scores from any sitting on the new SAT in order to consider each applicant’s most positive test results. Recognizing that this policy could disadvantage those students who cannot afford repeated testing or expensive test prep coaching, we believe a comprehensive testing history provides us with the appropriate context required for making a fair judgment of what the test scores mean in a holistic admission process. Therefore, we require all applicants submitting the SAT to submit all scores from the new SAT to Rice. The ACT’s definition of a composite score is the average of the four multiple-choice scale scores from a single administration, therefore, it is Rice’s policy to use the highest ACT composite score from a single administration.

Additionally, applicants for whom English is not their native language are required to submit official results of either the TOEFL or IELTS exam. A minimum score of 100 is required on the internet-based TOEFL or a 600 on the paper-based TOEFL. The minimum acceptable score for the
IELTS exam is 7.0. Applicants may be exempt from this requirement if the language of instruction at the school(s) they attended for the most recent two full years (minimum) is English.

**Personal Interview**—Although a personal interview is not a requirement, we recommend an interview for first-year applicants as an excellent opportunity to discuss the applicant's interests, needs, and questions. On-campus interviews are conducted by the admission staff and a select group of Rice senior students. Off-campus interviews are conducted throughout the United States and abroad by Rice alumni. The Committee on Admission makes no distinction between on-campus and off-campus interviews. Interviews are available to high school seniors only.

**Music Audition**—All applicants to the Shepherd School of Music must submit all required documents by December 1. An Audition Profile Form, preliminary recording, or portfolio of composition on music history is also required.

**Architecture Portfolio**—Architecture applicants must submit a portfolio along with the required application materials by the deadline for either the Early Decision or Regular Decision Plan.

### Decision Plans

**Early Decision Plan**—Early Decision is a binding decision plan designed for students who have selected Rice as their first choice. Students may initiate applications to other colleges under nonbinding plans but must withdraw those applications if admitted to Rice.

Early Decision applicants must complete the required standardized testing prior to or by the November testing dates in their senior year. All other materials should be submitted by November 1. Admission notices will be mailed by mid December. The committee will admit, defer, or deny Early Decision applicants. Deferred applicants are considered with the Regular Decision pool.

It is important to note that, if admitted under Early Decision, a candidate must withdraw all other college applications, may not submit any additional applications after accepting the offer, and must accept Rice's offer of admission by submitting a $300 nonrefundable deposit by January 1. An additional $100 housing deposit is required of those desiring on-campus accommodations.

Those accepted under Early Decision who demonstrate financial aid eligibility will receive a financial aid package in the admission packet. To apply for need-based aid, Early Decision applicants must submit the College Scholarship Service Profile and the student and parent income tax and W-2 forms by November 15, 2017. Register for the CSS PROFILE at [https://student.collegeboard.org/css-financial-aid-profile](https://student.collegeboard.org/css-financial-aid-profile). Students will complete the PROFILE online. The PROFILE number for Rice is 6609. For more detailed information go to [http://financialaid.rice.edu](http://financialaid.rice.edu).

**Shepherd School of Music**—All candidates applying to the Shepherd School of Music must submit their application and all required supporting documents by December 1. Admission notification is April 1. Admitted students must submit a $300 nonrefundable deposit by May 1.

**Rice/Baylor Medical Scholars Program**—All candidates interested in the Rice/Baylor Medical Scholars Program must submit the Baylor College of Medicine application to Rice University by December 1. Rice application materials are due by November 1 for Early Decision or December 1 for Regular Decision.

**Regular Decision Plan**—Students who apply Regular Decision must submit their materials by January 1 to receive notification by April 1. Candidates who miss the deadline must do so in full knowledge that they are in a less competitive position. Regular Decision applicants must complete their standardized tests by December of their senior year of high school.

Regular Decision applicants who are offered admission should submit a $300 enrollment deposit by May 1 to reserve their places in the incoming class. Those who desire a room on campus must pay an additional $100 deposit. Enrollment deposits are not refundable.

### Accelerated Students

Rice University will accept applications from students who are completing high school in less than four years. It is important to note that these students will compete with other candidates who will be completing four years of high school. Therefore, it is the candidate's responsibility to demonstrate that he or she has exhausted all college preparatory course work at his or her school. Further, because of the residential focus and commitment to student self-governance at Rice, candidates must also demonstrate the maturity and personal development that would allow them to participate fully and responsibly in campus life. Because of the unique circumstances surrounding the accelerated student, it is strongly recommended that these candidates have an on-campus interview with an admission officer well before the application deadline.

### Home-Schooled Applicants

The Committee on Admission and Financial Aid recognizes that each home-schooled applicant is in a unique educational program. To ensure that our evaluation process is fully informed, home-schooled applicants are encouraged to provide clear, detailed documentation of curriculum of study, assessment tools, and learning experiences. Rice requires evaluations from a guidance counselor and a teacher from all applicants. For home-schooled applicants, at least one of these evaluations must be from someone not related to the student.

### Transfer Students

Students with superior records from two-year or four-year colleges or universities may apply as transfer candidates. Applicants should have completed at least 12 semester hours of college work since graduating from high school. Students with less than 12 semester hours should apply through the freshman admission process. High school students enrolled in an Early College program or Dual Enrollment program are not eligible to apply as transfer students and should apply through the freshman admission process. Students who have already completed a bachelor’s degree may not apply for transfer admission.

Applicants for transfer admission must file the following with the Office of Admission:

- The Transfer Common Application and the Rice Writing Supplement or the Coalition Application.
- Official transcripts of all high school and college work completed to date, as well as courses in progress
- Professional evaluation of transcripts from non-U.S. institutions. Recommended evaluators are SpanTran ([https://www.spantran.com](https://www.spantran.com)) and Education Credential Evaluators ([https://www.ece.org](https://www.ece.org)).
- Two college instructor evaluations
- The college official's report
Applications with the appropriate documents must be submitted by March 15 for fall term admission. Notification of the admission decisions are made on a rolling basis between May 1 and June 1. The criteria used in evaluating transfer applications are similar to those applied to applicants for the first-year class, except that special emphasis is given to performance at the college level. Because of the highly competitive nature of transfer admission, it is recommended that applicants have a minimum 3.20 (4.00 scale) grade point average on all college work. The SAT must be taken by December 2017 or the ACT must be taken by February 2018. The SAT Subject Tests are not required.

Additionally, applicants for whom English is not their native language are required to submit official results of either the TOEFL or IELTS exam. A minimum score of 100 is required on the internet-based TOEFL or a 600 on the paper-based TOEFL. The minimum acceptable score for the IELTS exam is 7.0. Applicants may be exempt from this requirement if the language of instruction at the school(s) they attended for the most recent two full years (minimum) is English.

Students for whom the $75 application fee creates a hardship may apply for a waiver. Transfer applicants must send a copy of the Student Aid Report that they receive after completing the Free Application for Federal Student Aid (FAFSA) along with a request for a fee waiver to the Office of Admission. Financial stress created by application fees to other institutions is not considered a valid reason to grant a fee waiver. U.S. citizens, permanent residents, DACA students, and undocumented students who have lived in the United States for an extended period of time are eligible for an application fee waiver.

Transfer students must be registered in residence at Rice for at least four full semesters during the fall or spring terms and must complete no fewer than 60 semester hours before earning a Rice degree.

Advanced Placement/International Baccalaureate/International Certificate Programs

**Advanced Placement**—Students who score a four or five on the applicable Advanced Placement College Board examinations taken before matriculation at Rice may receive university credit for the corresponding Rice course(s). For more information, see AP Credit (http://registrar.rice.edu/students/ap_credit).

**International Baccalaureate**—Students who complete the International Baccalaureate diploma and receive a score of six or seven on a higher-level IB exam may receive course credit for the corresponding Rice course(s). For more information, see IB Credit (http://registrar.rice.edu/students/ib_credit).

**International Certificate Programs**—Students who have completed various international certificate programs may receive course credit for corresponding Rice courses; however, each student’s documentation will be reviewed individually and on a case-by-case basis. The General Certificate of Education A-Level (United Kingdom), the Abitur (Germany), and the Baccalauréat (France) are eligible for review. For more information, see International Exam Credit (http://registrar.rice.edu/students/international_exam).

### Academic and Judicial Discipline

#### Academic Probation

Students are placed on academic probation at the end of any semester if:

- Their grade point average for that semester is less than 1.67, or
- Their cumulative grade point average is less than 1.67 (this requirement is waived if the grade point average for that semester is at least 2.00)

The period of probation extends to the end of the next semester in which the student is enrolled. Students on academic probation may not be candidates for, or hold, any elected or appointed office, or are they allowed to enroll in more than 17 semester hours.

#### Academic Suspension

Students are suspended from the university at the end of any semester if they:

- Earn grades that will place them on academic probation a third time, or
- Have a grade point average for the semester that is less than 1.00 (exceptions are made for students completing their first semester at Rice).

Students readmitted after a previous suspension will again be suspended if in any succeeding semester they fail to achieve at least one of the following requirements:

- a cumulative and semester grade point average of at least 1.67, or
- a semester grade point average of at least 2.00.

The first suspension period is normally one semester; the second suspension period is at least two semesters. Students may only return for a fall or spring semester following suspension, not for summer school. Students are not readmitted after a third suspension.

Participation in student activities on and off campus and use of Rice facilities, including, but not limited to, the student center, the colleges, the playing fields, the recreation center, and the computer labs, are limited to enrolled students.

Students placed on academic suspension are notified by the Office of the Registrar after all final grades have been received and posted to their record. Suspension is lifted the first day of class of the semester when the student returns to the university. When students serve the nominal term of suspension but do not intend to return to Rice, suspension is lifted after permission from the Committee on Examinations and Standing is granted.

Students facing a first or second academic suspension who verify with the Office of the Registrar, academic advising, and their department that successful completion of their proposed academic plan would satisfy their degree requirements in one semester if allowed to return, may petition the dean of undergraduates for immediate readmission. This is known as the “senior exception rule”, and students may be granted this exception only once. If granted, both the immediate readmission and the exception will be noted on the student's academic transcript.

Senior exception students that do not complete their degree requirements in the one semester for which they were readmitted, but finish with a GPA which allows for good academic standing may be
allowed to continue with their studies at Rice, but only by petitioning and receiving approval from the dean of undergraduates.

Senior exception students should note that if they do not complete their degree requirements in the one semester for which they were readmitted, and finish with a GPA resulting in an academic suspension, that second or third suspension will be applied to their academic record.

Students who fulfill all of their degree requirements at the end of a semester under academic circumstances that would normally place them on probation or suspension will not have the terms “academic probation” or “academic suspension” placed on their transcript for that semester, but will instead have the notation of “Good Standing with Exception” and be permitted to graduate.

### Readmission After Academic Suspension

Students seeking readmission after academic suspension should address a letter of petition to the Committee on Examinations and Standing, in care of the Office of the Dean of Undergraduates, which must be received by June 1 for readmission in the fall semester and November 1 for readmission in the spring semester. The petition should demonstrate what the student did while they were separated from Rice and how they have prepared themselves to function successfully as a student at Rice. The petition must include two supporting letters from persons for whom the student has worked during the suspension period as a student or an employee, as well as an academic plan. Academic plans must be reviewed and approved by the Office of Academic Advising by June 1 for readmission in the fall semester and November 1 for readmission in the spring semester. To allow time for review and revision of the academic plan, students must submit their first draft academic plan at least three weeks in advance of the deadline. Guidelines for completing an academic plan can be found at [http://oaa.rice.edu/](http://oaa.rice.edu/). If the problems causing the previous difficulty appear to be resolved, the student generally is readmitted. Students returning from academic suspension must maintain regular contact with the Office of Academic Advising or a designated faculty advisor throughout the semester. In the first semester upon return from an academic suspension, students may not become candidates for, or hold, any elected or appointed office, nor are they allowed to enroll in more than 17 semester hours.

In some instances, the committee may postpone approval of readmission or rule that suspension is permanent. Although it may do so at its discretion, the Office of the Registrar does not normally place on probation or suspension students who perform poorly in the Rice Summer Sessions. Students should be aware, however, that Rice Summer Sessions grades are included in their grade point averages.

### Disciplinary Probation, Suspension, and Expulsion

The Code of Student Conduct (p. 44) applies to all Rice students and encompasses conduct both on and off campus. The Office of Student Judicial Programs may sanction students including implementing disciplinary probation, suspension, or expulsion for violations of the Code of Student Conduct or the Honor Code. Students who have been expelled, who are serving a suspension, who are under investigation for disciplinary violations, or who have pending Code of Conduct or Honor Code proceedings against them may not receive their degree, even if they have met all academic requirements for graduation. Students who are suspended or expelled must leave the university within the time frame specified by Student Judicial Programs, generally 48 hours from being informed of the decision, though in cases of unusual hardship, Student Judicial Programs may extend the deadline. Any tuition refund will be calculated from the official date of suspension or expulsion based on the refund schedule noted in the Academic Calendar, published by the Office of the Registrar. A grade of “W” will be awarded to all enrolled courses regardless of when the suspension or expulsion began. Expelled students will have the expulsion noted on their transcript.

While on disciplinary probation or suspension, students may not run for, or hold, any elective or appointed office in any official Rice organization. Participation in student activities on and off campus and use of Rice facilities, including, but not limited to the student center, the colleges, the playing fields, the recreation center, and the computer labs, are reserved for enrolled students.

Students seeking readmission after a suspension for Honor Code or Code of Conduct violations or other nonacademic action should submit a petition in writing to the Office of Student Judicial Programs by emailing SJP@rice.edu. That petition should include information on what the student did while away from Rice, including any schooling or employment; how the student met any requirements described by Rice at the time of separation; what the student did to address any issues leading to the separation; and what the student learned from the separation. Once approved by Student Judicial Programs, the petition is forwarded to the dean of undergraduates for final readmission approval and action.

### Degree Revocation

The University reserves the right to revoke any degrees granted. A degree awarded may be revoked if the University becomes aware that the degree should not have been granted, such as a degree that was obtained by violating the Honor Code or Code of Student Conduct or by deception, misrepresentation, falsification of records, academic misconduct, research misconduct, or if the work submitted in fulfillment of – and indispensable to – the requirements for such degree are determined to fail to meet the academic standards that were in effect at the time the degree was awarded. Notification of the date of revocation will appear on the student’s transcript, and the student will be asked to return the diploma. The Provost receives all recommendations for revocation of degrees and, after consideration and review, forwards to the President any recommendations deemed to be warranted. The Provost may also initiate and forward to the President his or her own recommendation for a degree revocation. The President will consider all such recommendations forwarded by the Provost and effectuate those he or she determines to be warranted. Procedures governing degree revocations may be obtained from the offices of the Registrar, Provost, or President.

The University also reserves the right to withdraw a degree to correct an administrative error, such as an incorrectly listed degree, or in a situation where it was found that a student had not actually fulfilled all graduation requirements.

### Attendance and Excused Absences

Students are expected to attend all scheduled activities for all of the classes for which they are registered during the entire course of the academic semester for which they are enrolled. The academic calendar indicates normal class days, recesses, and holidays. Instructors, however, may schedule required activities on other days, including recesses, holidays, and weekends, if required by programmatic needs, such as laboratories or field trips. Such requirements must be clearly stated in the
online course description available at registration and on the syllabus, and instructors should try to provide compensatory time off for students.

The university understands that students participating in university-sponsored extracurricular activities may, on rare occasions, need to miss a class session during the semester. As a matter of course, students should inform their instructors in advance of absences resulting from participation in university-sponsored activities, and faculty normally will give a reasonable opportunity to make up work missed on such occasions.

No nonacademic university-sponsored event at which student attendance is required may be scheduled or rescheduled for any date after the day following the last day of classes. Exceptions may be granted by a quorum of the Committee on Examinations and Standing only for events where scheduling is not under the control of the university. On the class days falling during the last calendar week of classes, an individual student may participate in only one university-sponsored event, which may be scheduled or rescheduled, so long as no more than one night would be spent outside of Houston for travel. For events during the last week of classes, the reading period, and the final examination period, a quorum of the Committee on Examinations and Standing must be satisfied that each student is in satisfactory academic standing to participate in an event. If a quorum of the Committee on Examinations and Standing cannot meet in a timely fashion, then the executive committee of the Faculty Senate will handle exception requests.

Absences for activities other than university-sponsored events may be negotiated on an informal basis between the student and the faculty member. Alternatively, absences may be formally excused on a case-by-case basis if a petition explaining the nature of the event, accompanied by suitable documentation, is submitted to the Committee on Examinations and Standing at least two weeks before the event.

**Resolving Conflicting Course Obligations Scheduled Outside of Assigned Class Time**

Many courses require presentations that cannot reasonably be accommodated within the scheduled class period. Problems occur when faculty schedule these presentations during times that conflict with other regularly scheduled classes.

**Principles**

- Generally, faculty should plan their course activities to avoid conflicts with other regularly scheduled classes.
- Generally, all deadlines and schedules will be included in the syllabus or announced, in writing, early in the semester.
- It is the responsibility of faculty members to make appropriate accommodations and adjustments when required class exercises are scheduled outside of assigned class time.
- A student must not be penalized either directly or indirectly.

**Resolution of Scheduling Conflicts**

- Class presentations outside of the scheduled class time should be held on evenings and weekends.
- Registrar-assigned class times take priority over activities of other classes.
- When two or more classes require activities outside of class time, the order of priority is determined by the date at which the exercise was announced in writing and scheduled.
- When two or more classes require activities outside of class time, activities which require external reviewers or coordination of multiple schedules have priority over individual exercises that can be rescheduled.
- Required exercises outside of assigned class times that are announced at the last minute do not take priority over those announced earlier, even if they require coordination of multiple schedules.

**Roles and Responsibilities**

- Ideally, faculty will cooperate with one another when they need to resolve scheduling conflicts.
- If faculty involved are unable to find a solution that does not penalize or unduly disadvantage the student, department chairs will resolve the scheduling conflict.
- If department chairs are unable to resolve the scheduling conflict, the matter will be referred to the Dean of Undergraduates or the Dean of Graduate and Postdoctoral Studies, or their designees, who will have final authority for resolution.

**Final Examinations**

The decision to give a final exam as a required part of the course rests with the instructor. All tests and examinations are conducted under the honor system. No examinations or other course assignments may be due between the last day of classes and the first day of the final examination period.

Examinations are considered final examinations when they:

- Cover more than the material learned since the last exam, or
- Are the only exam in the course, or
- Require comprehensive knowledge of the entire course.

Such exams may be given only during the final examination period.

All undergraduate-level courses are assigned a final examination time by the Office of the Registrar. Upon request, graduate-level courses may be scheduled for a final examination time. Instructors may choose to use that officially assigned time for a scheduled final examination, may choose to give a take-home exam, or may choose to give no exam at all.

If they choose to give a scheduled final examination, the Office of the Registrar will assign a room, and the final exam will be administered in that room at the designated time. Some instructors assign end-of-term projects or papers rather than final examinations. With regard to due dates, final papers or projects will be treated the same as take-home exams.

Take-home exams should be available to the students as soon as possible after the end of classes, but must be available no later than the end of the next business day after classes have ended. Take-home exams may be no longer than five hours in length. The due date of take-home exams may be no earlier than the end of the examination time assigned to that class by the Office of the Registrar. Instructors may specify due dates later than this time, but not later than the end of the last day of the examination period.

As noted in the Faculty Grading Guidelines (p. 93), no student should be given an extension of time or opportunity to improve a grade that is not available to all members of the class, except for verified illness or justified absence from campus. However, students cannot be required to take more than two scheduled exams in two consecutive calendar
days. Students also cannot be required to complete more than two take-home and/or scheduled final exams on the same calendar day (unless this is the last day of the examination period). In both instances, if the student wishes to make alternative arrangements and is unable to work out such arrangements with the instructor(s) involved, the instructor of the third and any subsequent exams will be required to allow the student to reschedule that exam.

Grades

See also Faculty Grading Guidelines (p. 93) and Syllabus Standards (p. 95).

Pass/Fail Option

Undergraduates may register for courses on a Pass/Fail basis. Students:

• May not take more than one course as a Pass/Fail per semester for each full year of residence (students studying in off-campus programs through Rice are considered to be in residence for the purpose of this rule).
• May not take more than four courses as Pass/Fail (even if they are in a five-year degree program).
• May not take more than a total of 14 semester hours total as Pass/Fail.
• May register for only one course as Pass/Fail in a semester.
• May not take as Pass/Fail a repeatable course previously taken and designated as Pass/Fail.
• May not take as Pass/Fail those courses used to meet the requirements for their major, minor, or certificate. If students take such courses Pass/Fail, students should request in writing to the Office of the Registrar that the P grade be replaced with the letter grade earned.
• Must submit the proper online form for a course to be taken Pass/Fail no later than the posted deadline, usually the end of the 10th week of semester.
• May not take First-Year Writing-intensive Seminar (FWIS) courses as Pass/Fail.

Students may convert a pass/fail course to a graded course by submitting the proper online form with the Office of the Registrar, and must adhere to the pass/fail deadlines as stated in the Academic Calendar (https://registrar.rice.edu/calendars). Students wishing to designate a course as pass/fail during the summer sessions should see Registration During Summer Sessions (p. 30).

Students should be aware that while a grade of P does not affect their grade point average, a grade of F is counted as a failure and is included in their GPA. Students who take a course during the Rice summer session as pass/fail also should be aware that this counts toward their allowable total of four courses. For more information, see The Pass/Fail Option. (https://registrar.rice.edu/students/reg_pass_fail)

Satisfactory/Unsatisfactory

Satisfactory/unsatisfactory courses are those that do not use traditional grading procedures and instead assign a grade of S or U rather than a letter grade. Such courses or labs are designated by the instructor and are, in most cases, graduate level courses. With S/U courses, instructors report the S if the student successfully completes the course, or the U if they have not. Students should be aware that while a grade of S or U does not affect their grade point average, no credit will be awarded if a grade of U is received. Courses with a grade of S will count towards total credits earned.

Audit

Students have the option of auditing courses. For auditing students, instructors report either the AUD or the NC grade symbol, the AUD if the student met the audit requirements of the class, or the NC if they have not. There are no credit hours associated with audited courses, and auditing a course does not affect a student’s GPA. Request to audit a class or to change from audit to credit or vice versa must be done by the dates and deadlines documented in the posted Academic Calendar (https://registrar.rice.edu/calendars). (See Grade Designations AUD (p. 24) and NC (p. 25) below.)

Grade Symbols

Instructors are required to report a grade for all students whose names appear on the class roster. They grade their students using the following conventional symbols: A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F.

Grade Designations

Under certain circumstances, special designations accompany the student’s grade. These designations do not affect the grade point average. The special designations include the following:

AUD (“Audit”)

This designation is only used for students auditing the course, and specifically where the auditing student has met the audit requirements of the course as defined by the instructor. A grade designation of “NC” (No Credit) is given to students who do not meet the audit requirements. There are no credit hours associated with an AUD grade designation. (See Audit above.)

INC (“Incomplete”)

Instructors report this designation to the Office of the Registrar when a student fails to complete a course because of verified illness or other circumstances beyond the student’s control that occur during the semester. Students must provide independent corroboration of their illness or circumstances, and they are expected to coordinate with the instructor prior to final grades being submitted. For an INC received in the fall semester, students must complete the work by the end of the first week of the spring semester or an earlier date as defined by the instructor, and instructors must submit a revised grade by the end of the second week. For an INC received in the spring or summer semester, students must complete the work before the start of the fall semester or an earlier date as defined by the instructor, and instructors must submit a revised grade by the end of the first week. If a grade is not submitted by the appropriate deadline, the INC will be automatically converted to a failing grade.

Students with an INC must be certain that tests, papers, and other materials affecting their grade or essential to completing a course requirement are delivered by hand to the appropriate professor or office according to the timeline previously stated, for the instructor to grade the documents and submit the final grade to the Office of the Registrar by the deadline. Loss or lateness because of mail service is not an acceptable excuse for failing to meet academic deadlines. Students also should be aware that they may be placed on probation or suspension when the INC is changed to a grade, either by an instructor or by default.
### NC ("No Credit")
This designation signals that no credit was granted for the course. It is used in situations where a person auditing a course has not met the audit requirements of the course as defined by the instructor. (See Audit above.)

### NG ("No Grade")
This designation signals that no credit was granted for the course, and no grade was submitted by the instructor. As a non-punitive grade, the NG is applied administratively and used in rare situations.

### OT ("Other")
Instructors report this designation to the Office of the Registrar when a student fails to appear for the final examination after completing all the other required work for the course. An OT awarded during a fall semester must be resolved and instructors must submit a revised grade by the end of the first week of the spring semester. An OT awarded during a spring semester must be resolved and instructors must submit a revised grade by the end of the fourth week after Commencement. An OT awarded during a summer semester must be resolved and instructors must submit a revised grade by the start of orientation week. If a grade is not submitted by the appropriate deadline, the OT will be automatically converted to a failing grade. Students should be aware that they may be placed on probation or suspension when the OT is changed to a grade, either by an instructor or by default.

### W ("Official Withdrawal from University")
Students who officially withdraw from the university after the designated drop deadline, the seventh week of classes, will receive a final grade of "W" for each course in which they were enrolled at the time of withdrawal.

Students who officially withdraw from the university by the drop deadline will not receive the grade of "W" for any courses in which they were enrolled for that semester. These courses will not be included on the official transcript.

### W ("Late Drop with Approval")
A student who receives approval from the Committee on Examinations and Standing to drop a course after the designated drop deadline will receive a grade of "W" for that course. When requests for late drops are denied by the committee, the Office of the Registrar records the submitted grade.

If a student drops a class before the designated drop deadline for the semester, the course will not be included on his/her official transcript. New matriculants in their first semester at Rice may drop a class up until the last day of classes, and through the end of week ten in their second semester, if that is a full-term Spring semester, and the course will not be included on the student’s official transcript.

### XII ("Article XII")
This designation was used in various honor council or judicial cases when a student had opted to voluntarily withdraw from the university and forfeit credit for the course in question, with the understanding that the accusation would not otherwise be pursued. This option is no longer available.

### Grade Points
To compute grade point average, letter grades are assigned numeric values as follows:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Numeric Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.33</td>
</tr>
<tr>
<td>A</td>
<td>4.00</td>
</tr>
<tr>
<td>A-</td>
<td>3.67</td>
</tr>
<tr>
<td>B+</td>
<td>3.33</td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
</tr>
<tr>
<td>B-</td>
<td>2.67</td>
</tr>
<tr>
<td>C+</td>
<td>2.33</td>
</tr>
<tr>
<td>C</td>
<td>2.00</td>
</tr>
<tr>
<td>C-</td>
<td>1.67</td>
</tr>
<tr>
<td>D+</td>
<td>1.33</td>
</tr>
<tr>
<td>D</td>
<td>1.00</td>
</tr>
<tr>
<td>D-</td>
<td>0.67</td>
</tr>
<tr>
<td>F</td>
<td>0.00</td>
</tr>
</tbody>
</table>

1 Effective in Fall 2018 semester, the grade A+ will be worth 4.0, not 4.33, in calculating the GPA.

### Grade Point Average Calculation
For each course carrying standard letter grades, the credit hours attempted and the points for the grade earned are multiplied. The grade points for each course are added together, and the sum is divided by the total credit hours attempted. Grade point averages are noted each semester on the student’s official transcripts. Courses taken on a S/U or pass/fail basis are excluded from the grade point average calculation.

### Graduation Requirements
The General Announcements (GA) is the official Rice curriculum. In the event that there is a discrepancy between the GA and any other websites or publications, the GA shall prevail as the authoritative source.

### Degree Requirements for All Bachelor’s Degrees
Students are responsible for making certain that their plan of study meets all degree and major (and minor and/or certificate) requirements. To graduate from Rice University, all students must:

- Be registered at Rice University full time for at least four full fall and/or spring semesters.
- Complete the requirements of at least one major and degree program.
- Complete at least 120 semester credit hours (some degree programs require more than a minimum 120 credit hours).
- Complete at least 60 semester credit hours at Rice University.
- Complete at least 48 semester credit hours in upper-level coursework (courses at the 300-level or higher).
- Complete more than half of the upper-level coursework (at least 25 of the 48 minimum semester credit hours) at Rice University.
- Complete more than half of the upper-level coursework required by the declared major(s) at Rice University (as designated by the department or program, some may specify a higher proportion).
- Complete at least 60 semester credit hours outside of major requirements for Bachelor of Arts and Bachelor of Science degrees. Exceptions include:
  - Students pursuing the BA degree with a major in architecture must complete at least 45 credit hours outside of major requirements.

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2017-2018 General Announcements
Graduation Requirements

- Students pursuing the BMus (Bachelor of Music) degree, or a BS degree in engineering are not subject to this "outside of major" requirement.
- Complete all Rice coursework with a cumulative grade point average of at least 1.67 or higher.
- Complete all Rice coursework that satisfy major, minor and/or certificate requirements (as designated by the department or program):
  - with a cumulative grade point average of at least 2.00 or higher.
  - with the standard letter grade earned (not on a Pass/Fail basis).
- Satisfy the Writing and Communication Requirement (see below).
- Complete courses to satisfy the Distribution Requirements (see below).
- Complete one Lifetime Physical Activity Program (LPAP) course for one credit. Students with disabilities may make special arrangements to satisfy this requirement.
- Otherwise be a student in good academic and disciplinary standing and not under investigation.

Please Note:

- No more than 4 hours of credit for LPAP courses may be counted toward graduation.
- No more than 3 hours of credit for student-taught College Courses (COLL) may be counted toward graduation. (This includes all courses COLL 100-COLL 199 as well as the COLL 200 Teaching Practicum.)

In order to earn a second degree, students must fulfill the requirements outlined in the Dual-Degree Requirements section below.

Writing and Communication Requirement

All students must complete and pass a First-Year Writing-Intensive Seminar (FWIS). An FWIS is a content-based, 3-credit hour seminar open only to first-year students that can focus on any topic, and in which writing and communication pedagogy plays a significant role in assignments and grading. To facilitate success in meeting this requirement, all students must take the Composition Examination prior to matriculating. Students who fail the Composition Exam, or fail to take it, must successfully complete the FWIS 100 Fundamentals of Academic Communication course during their first semester, and prior to enrolling in the FWIS course used to meet the graduation requirement. FWIS 100 cannot be used to meet the Writing and Communication (FWIS) graduation requirement.

All first-year students must enroll in and successfully complete an FWIS during their first year at Rice, and all first-year students will be notified prior to Orientation Week if they have been assigned to take an FWIS during the fall or spring of their first year. The following transfer credit restrictions exist for FWIS courses, and this Writing and Communication Requirement:

- Students who matriculate as freshmen may not substitute pre-matriculation transfer credit for the FWIS.
- Transfer students who wish to satisfy the FWIS requirement with courses from another institution must apply for this credit in their first semester at Rice. The course taken at another institution will only be considered for transfer as an equivalent FWIS course i.) with the approval of the Program Director, and ii.) provided that the course transfers in at least 2.5 semester credit hours.
- Neither freshmen nor transfer students may satisfy the FWIS requirement by taking an equivalent course at another institution after matriculating at Rice.

All FWIS courses carry the FWIS designation and cannot be taken as Pass/Fail. Students are allowed to change FWIS sections during the first two weeks of classes each semester, but they cannot drop one FWIS section without simultaneously adding another. After week two, FWIS courses cannot be dropped. In extraordinary circumstances, students may submit a petition to the Dean of Undergraduates, who may approve a drop on an exception basis.

See the Program in Writing and Communication's web site (http://pwc.rice.edu) for FWIS section descriptions and for more information on the required English Composition Exam.

Distribution Requirements (Groups I / II / III)

Distribution courses introduce the knowledge, intellectual skills and habits of thought characteristic of disciplines or of inquiry across disciplines within three main areas: humanities, social sciences, and natural sciences and engineering. They are broad-based, accessible to non-majors, and provide a foundation that enables students to integrate knowledge from multiple perspectives. No single course is expected to fulfill all the criteria or goals of a distribution group. Courses that presume students' special expertise or that teach techniques or career-based skills without exposure to modes of analysis and scholarship in the relevant discipline are not eligible for distribution credit. Research or independent study courses and internships and practica are also excluded.

Group I

These courses, which are broad in theme and scope, prompt students to probe the modes of knowledge, inquiry or creative practice characteristic of the arts and humanities. Group I courses provide students with essential knowledge and tools for thinking critically about history and culture, and for understanding the centrality of such capacity to informed participation in social, political, and professional life.

Group II

These courses introduce the theories, problems, methodologies, and substance of the social sciences. They are intended to familiarize students with different approaches to the study of human behavior and how individuals interact with and are shaped by cultural, social, economic, and political groups and institutions. Because of the complexity and scope of human behavior, these courses may be multi-disciplinary in nature. Group II courses provide a foundation for thinking about the social worlds we inhabit and the diverse behavioral factors that both structure human activity at multiple scales and contribute to the dynamism of social and cultural systems.

Group III

These courses are designed to give students a basic knowledge of the capabilities and limitations of scientific inquiry and technological development, and to develop their skills in analytical thinking and quantitative reasoning. They provide grounding in the scientific method, engineering design, theorem development, or quantitative analysis. They provide students with the essential knowledge and tools required to appreciate, understand, and critically assess the elegance and power of the natural world and our effect upon it. Some understanding of basic scientific concepts and how the scientific
process produces new knowledge is essential for informed participation in contemporary society. In an increasingly data-driven world, an understanding of how numerical and categorical information can be manipulated and interpreted is also vital. The goal of Group III courses is to promote an understanding of the value and impact of scientific thinking and engineering design, and to foster a critical appreciation of experimentation, quantitative applications, and scientific research.

**Academic Planning for Distribution Requirements**

Each student is required to complete at least 3 courses of designated distribution courses of at least 3 credit hours each in each of Distribution Groups I, II, and III. The 3 courses in each group must include courses in at least two departments in that group. Divisional or interdisciplinary designations, e.g., HUMA or NSCI, count as departments. For the purpose of this rule, a course taken at another institution and transferred to Rice as an equivalent distribution course will be counted as one of these courses, provided that the course earns at least 2.5 semester credit hours.

Students must complete the distribution requirements in each group by taking courses that are designated as a distribution course at the time of course registration, as published in that semester’s Course Offerings. Courses taken outside of Rice and transferred in can be used to satisfy distribution requirements, assuming they are on the list of approved and designated distribution courses at the time they were taken. Completed courses taken prior to matriculation are subject to the list of designated distribution courses at the time of matriculation.

**Applicable Academic Graduation Requirements**

Students enrolled in four- (or five-) year bachelor’s programs may decide whether to follow the graduation general and major requirements in effect when they first matriculated at Rice, or those in effect when they graduate. This is known as the GA Year, or Catalog Year in the university’s degree audit system, Degree Works.

If the student graduates more than seven (or eight) years after their matriculation, they must graduate under the regulations in effect at the time of their last readmission or those in effect when they graduate. Also, departments may review courses completed in a major more than seven (or eight) years before the student’s anticipated graduation. If the department concludes that a course no longer satisfies the requirements of the major, it is not credited toward the major program, although it remains on the student’s record.

Departmental major requirements may vary from year to year during the period between a student’s matriculation and graduation. The department may, at its discretion, make any of these variations available to a student for completion of the major requirements. When declaring the major or minor, students and advisors should identify and clearly document the set of major requirements to be followed. Each should retain a copy of the documented major requirements. If a new degree program, major, or minor is created during the student’s time at Rice, the new program will be available to the student as if the program appeared in the General Announcements at the time of matriculation.

**Application for Degree and Degree Conferral**

Students are responsible for making certain that their plan of study meets all degree and major (and minor and/or certificate) requirements. To graduate from Rice University, all students must submit an Application for Degree Form available in ESTHER. This form is required for all students who plan to complete their degree requirements at the end of a fall, spring or summer semester. A late fee will be assessed for applying after the deadline (please consult the semester-specific Academic Calendar (https://registrar.rice.edu/calendars) for deadlines).

Upon completion of degree requirements, degrees are approved by the faculty and conferred in December, May, and August. Fall and Spring degree recipients may then participate in the annual commencement ceremony, celebrated each year after the conclusion of the spring semester. Under specific, limited circumstances, an undergraduate student may participate in commencement without being a degree recipient, provided that the student would be joining his or her matriculating class in that commencement. The specific policy, rules and procedures are available on the Office of the Dean of Undergraduates’ website. Summer degree recipients have the option of participating in the following year’s annual commencement ceremony.

**Dual-Degree Requirements**

To earn a second four-year bachelor’s degree, also known as a dual degree, currently enrolled undergraduates who have not yet completed their first bachelor’s degree must:

- Be accepted for the second major by the major’s department or program
- Fulfill all requirements for the second degree
- Complete at least 30 additional semester hours at Rice University, beyond the hours required for their first degree (these hours are applied to the second degree)

Students seeking a second degree should submit an additional declaration of major form with the Office of the Registrar (p. 12). This paperwork should include the addition of the proposed degree and major programs along with the approval of the chair or undergraduate advisor of each department involved, indicating that the proposed course program satisfies all major and degree requirements.

Students with a previously earned bachelor’s degree from Rice who wish to earn a second bachelor’s should look at the Second Bachelor’s Degree for Rice Alumni (p. 88) page.

**Leaves, Withdrawals and Readmission**

All students taking a leave or withdrawal from Rice should submit their written request on an Undergraduate Separation Request Form (https://dou.rice.edu/student-resources/petitions-special-requests/undergraduate-separation-request). Student separations are effective when acknowledged by the university. Approval of a withdrawal and leave of absence is always contingent on the student’s satisfactory completion of course work in the semester preceding the leave. Students performing poorly may have their approved leave converted to an academic suspension.
After a separation of more than four semesters, students seeking to return to Rice must submit a written petition to the dean of undergraduates who has discretion to submit it to the Committee on Examinations and Standing. The petition should be received no later than June 1 for the fall semester and November 1 for the spring semester. The petition should include an academic plan approved by the Office of Academic Advising and two letters of support. Academic plans must be reviewed and approved by the Office of Academic Advising by June 1 for readmission in the fall semester and November 1 for readmission in the spring semester. To allow time for review and revision of the academic plan, students must submit their first draft academic plan by October 7 in the fall semester and by May 7 in the spring semester. Guidelines for completing an academic plan can be found on the Academic Advising website (http://oaa.rice.edu/academic-planning).

**Coordination of Separations and Returns**

Rice is committed to students' long-term success and to seeing them thrive during their college experience. Part of that commitment means that Rice supports students if they decide to leave the university for a period of time. Professionals in these areas also work with students to plan a roadmap back to Rice.

The Office of the Dean of Undergraduates oversees readmission processes. Each request for readmission will be reviewed individually. The dean of undergraduates or his/her designee will make readmission decisions. Students are encouraged to contact the Office of the Dean of Undergraduates with questions about separations and re-enrollment at the university.

Students are expected to follow the process outlined in their letter from the dean of undergraduates and any other communications from Rice regarding expectations for separation and readmission. Additionally, sometimes students are separated from Rice through more than one process and are required to submit readmission requests to multiple university departments. In certain cases, readmission may be accompanied by additional requirements to support the success and wellbeing of the student.

**Leave of Absence**

Students may request a leave of absence from the university by submitting their written request on an Undergraduate Separation Request Form (https://dou.rice.edu/student-resources/petitions-special-requests/undergraduate-separation-request) at any time before the first day of classes in the semester for which they are requesting a leave. A leave of absence taken after the first day of classes is considered a voluntary withdrawal.

To gain readmission following an approved leave of absence of not more than four semesters, students must notify the Office of the Dean of Undergraduates no later than June 1 for the fall semester and November 1 for the spring semester. We strongly recommend that the student consult with the Office of Academic Advising about their academic plan.

**Voluntary Withdrawal and Readmission**

Students may withdraw voluntarily from the university at any time during the semester up until the last day of classes. Students wishing to withdraw should inform their college magister and submit their written request on an Undergraduate Separation Request Form (https://dou.rice.edu/student-resources/petitions-special-requests/undergraduate-separation-request). The Office of the Dean of Undergraduates may notify other offices of the university as necessary. Students who fail to give notice of withdrawal should expect to receive grades reflective of any missed academic work.

If students are in good academic standing at the time of their withdrawal, they may be considered for readmission after submitting a written petition to the Office of the Dean of Undergraduates. The petition, received no later than June 1 for the fall semester, and November 1 for the spring semester, should include an academic plan approved by the Office of Academic Advising and two letters of support. Academic plans must be reviewed and approved by the Office of Academic Advising by June 1 for readmission in the fall semester and November 1 for readmission in the spring semester. To allow time for review and revision of the academic plan, students must submit their first draft academic plan by October 7 in the fall semester and by May 7 in the spring semester. Guidelines for completing an academic plan can be found on the Academic Advising website (http://oaa.rice.edu/academic-planning).

If students withdraw within five weeks of the last day of classes, they must submit the written application on an Undergraduate Separation Request Form (https://dou.rice.edu/student-resources/petitions-special-requests/undergraduate-separation-request) to the dean of undergraduates who has discretion to submit it to the Committee on Examinations and Standing. If students withdraw within five weeks of the last day of classes, the Committee on Examinations and Standing takes into account their grades (which reflects their performance up to the day of withdrawal) when ruling on their readmission. For purposes of readmission, students whose grades would have led to suspension had they not withdrawn are treated as if they had been suspended.

If students voluntarily withdraw for medical or psychological/psychiatric reasons, students are encouraged to contact the Student Wellbeing Office (http://wellbeing.rice.edu/home) about the readmission process.

**Medical Withdrawal**

Students may request a medical withdrawal from the university by submitting their written request on an Undergraduate Separation Request Form (https://dou.rice.edu/student-resources/petitions-special-requests/undergraduate-separation-request) at any time during the semester, up until the last day of classes. Students considering taking time off for personal reasons related to their wellbeing and mental health are also encouraged to contact the Student Wellbeing Office (http://wellbeing.rice.edu/home) about the roadmap back to Rice. The Student Wellbeing Office is part of the Dean of Undergraduates Division and serves as a liaison to the medical readmission process during the separation process and when students are ready to return.
Following a medical withdrawal, students should submit a written petition for readmission to the Office of the Dean of Undergraduates no later than June 1 for the fall semester and November 1 for the spring semester. This petition must include documentation of treatment provided. Students may also be required to schedule an interview with the director of the Rice Counseling Center (https://wellbeing.rice.edu/rice-counseling-center) or Student Health Services (http://health.rice.edu) or their designees. Academic plans must be reviewed and approved by the Office of Academic Advising by June 1 for readmission in the fall semester and November 1 for readmission in the spring semester. To allow time for review and revision of the academic plan, students must submit their first draft academic plan by October 7 in the fall semester and by May 7 in the spring semester. Guidelines for completing an academic plan can be found at the Office of Academic Advising (http://oaa.rice.edu/academic-planning).

Students who withdraw for psychological reasons within the last five weeks of a semester are strongly encouraged to focus on their wellbeing needs and will not be eligible to apply for immediate readmission. Therefore, petitions for readmission will be considered in the following readmission request cycle and must be received no later than the applicable June 1 or November 1 deadline.

Involuntary Withdrawal

The university may insist on a student’s involuntary withdrawal if, in the judgment of the dean of undergraduates or his/her designee, the student’s behavior includes, but is not limited to, one or more of the following:

- Poses a threat to the safety or welfare of him/herself or other members of the Rice community;
- Has a serious medical or a psychological condition that the student cannot effectively address while enrolled or which is likely to be severely exacerbated by the Rice academic and/or living environment;
- Demonstrates behavior that seriously interferes with the education of other members of the Rice community;
- Is not able to continue functioning as a student.

Following an involuntary withdrawal, students should submit a written petition for readmission to the Office of the Dean of Undergraduates (https://dou.rice.edu) no later than June 1 for the fall semester and November 1 for the spring semester. This petition must include documentation of treatment provided. Students may be required to schedule an interview with the director of the Rice Counseling Center (https://wellbeing.rice.edu/rice-counseling-center) or Student Health Services (http://health.rice.edu) or their designees. Academic plans must be reviewed and approved by the Office of Academic Advising by June 1 for readmission in the fall semester and November 1 for readmission in the spring semester. To allow time for review and revision of the academic plan, students must submit their first draft academic plan by October 7 in the fall semester and by May 7 in the spring semester. Guidelines for completing an academic plan can be found on the Academic Advising website (http://oaa.rice.edu/academic-planning).

Further information is available by contacting the Office of the Dean of Undergraduates.

Students taking time off due to an involuntary withdrawal are also encouraged to contact the Student Wellbeing Office (http://wellbeing.rice.edu/home) about the roadmap back to Rice. The Student Wellbeing Office is part of the Dean of Undergraduates Division and serves as a liaison to the medical readmission process during the separation process and when students are ready to return.

Students who are involuntarily withdrawn for psychological reasons after the designated drop deadline of the fall or spring semester may not petition for readmission for the semester immediately following the semester from which they are withdrawn. Petitions should be received no later than the applicable June 1 or November 1 deadline to be considered for readmission for the upcoming semester.

Unauthorized Withdrawal

Students who leave the university without proper notification of withdrawal are considered to have resigned. Resigned students will only be considered for readmission under exceptional circumstances. In order to be considered for readmission, students must submit a petition no later than June 1 for the fall semester and November 1 for the spring semester to the dean of undergraduates who has the discretion to submit it to the Committee on Examinations and Standing. The petition should include an academic plan approved by the Office of Academic Advising and two letters of support. Academic plans must be reviewed and approved by the Office of Academic Advising by June 1 for readmission in the fall semester and November 1 for readmission in the spring semester. To allow time for review and revision of the academic plan, students must submit their first draft academic plan by October 7 in the fall semester and by May 7 in the spring semester. Guidelines for completing an academic plan can be found on the Academic Advising website (http://oaa.rice.edu/academic-planning).

Resignation

A student may resign from the university by notifying the dean of undergraduates in writing. Resignation means the student is withdrawing, is no longer a student at Rice, and will not return to Rice. A resignation becomes effective when accepted by the dean of undergraduates. In general, if a student is under investigation for a potential Code of Student Conduct violation or has charges pending under the Code, disciplinary proceedings will terminate upon acceptance of the resignation by the dean of undergraduates. A student who resigns is not eligible to receive a degree from Rice, even if the student has otherwise met all of the requirements for the degree.

All Separated Students, Presence on Campus

All students separated from Rice, whether voluntarily or involuntarily, withdrawn, resigned, or due to academic or disciplinary suspension, must leave campus within 48 hours. Exceptions are granted by the dean of undergraduates or, in the case of disciplinary suspensions, the Office of Student Judicial Programs. All separated students must return their college key to their college coordinator and their student ID to the dean of undergraduates. Participation in student activities on and off campus and use of Rice facilities, including, but not limited to, the student center, the colleges, the playing fields, the recreation center, and the computer labs, are limited to enrolled students. Separated students are expected to be away from Rice during the term of the separation. If the student is employed by Rice at the time of separation, he or she must relinquish such employment or petition the dean of undergraduates (https://dou.rice.edu) for written permission to continue the on-campus employment; separated students may not begin employment with Rice during the separation. Noncompliance with these requirements may delay readmission.
All Readmitted Students, Return to Campus

Students who have been readmitted must comply with any restrictions or requirements placed upon them by the dean of undergraduates or the Office of Student Judicial Programs. Failure to comply with or follow the restrictions or requirements may be cause for disciplinary action under the Code of Student Conduct (http://sip.rice.edu). Student Judicial Programs may implement a period of disciplinary probation and/or other restrictions as a condition of any readmission.

Completing Graduation Requirements Elsewhere

Students planning to complete graduation requirements at another institution must first secure formal written approval from the dean of undergraduates by submitting their written request on an Undergraduate Separation Request Form (https://dou.rice.edu/student-resources/petitions-special-requests/undergraduate-separation-request). Transfer credit is subject to all Rice’s transfer credit policies and must be approved by the Registrar. All other graduation requirements apply, and the student is expected to adhere to all requirements and deadlines.

Name Changes

To comply with a number of government agencies’ reporting requirements, the university must record the name of each student who is a U.S. citizen as the student’s name appears on his or her Social Security card. Students who need to change their names on Rice University records and who are U.S. citizens must notify the Office of the Registrar and present a Social Security card, marriage license, divorce decree or court order, and picture identification when submitting the form. After the change is implemented, the name on the Rice University transcript will read as printed on the supporting document(s).

Registration

Currently enrolled students register in April for the fall semester and in November for the spring semester. Student registration is prioritized based on a student’s matriculation term and their hours completed and in academic history. Students matriculating in the fall complete their registration during Orientation Week before classes begin in August. Students matriculating mid-year register during Mid-Year Orientation before classes begin in January. Students are strongly encouraged to meet with their divisional or major advisor to discuss their courses for the upcoming semester.

New students may not register or attend classes until they return a properly completed health data form and meet immunization and TB screening requirements. Additionally, all first-time undergraduate students, including transfers, must meet the meningococcal meningitis vaccine requirement to live on campus. Immunizations required for admission are diphtheria/tetanus, measles, rubella, and mumps, meningococcal meningitis, with immunizations against hepatitis B and chicken pox recommended. The Mantoux tuberculin skin test is also required. A late fee of $30 is charged for failure to submit a fully completed health data form by the required date.

Each year, the Office of the Registrar publishes specific registration deadlines for the semesters of that year in the Academic Calendar. Deadline due dates for student account balances for each term are published here in the General Announcements under the appropriate sections and on the Cashier’s website. Any student not registered as of the last day to add classes or any student who is in arrears or becomes in arrears after the last day to add classes will be withdrawn from the university. Withdrawn students will not be allowed to receive credit for the withdrawn semester.

Appeals to this policy must be addressed to the dean of undergraduates. If readmitted, students must petition the Committee on Examinations and Standing to add classes late and must pay a late registration fee of $125. Additionally, students who are readmitted after being withdrawn for nonpayment will be assessed a $350 readmission fee.

Drop/Add

During the first two weeks of classes, students may add or drop courses without penalty. After the second week of the semester, the following conditions apply for adds and drops. Undergraduate students:

- May not add courses after the second week of classes, except in extenuating circumstances and with the approval of the Committee on Examinations and Standing (a $75 fee per course will be assessed)
- May drop courses through the seventh week of classes without penalty
- May not drop courses after the end of the seventh week of classes except in extenuating circumstances and with the approval of the Committee on Examinations and Standing (a $75 fee per course will be assessed). Students who receive approval to drop a course after the designated drop deadline will receive a grade of “W” for that course.

Newly matriculated undergraduate students, both new first-time and transfer students in their first full-term semester at Rice (Fall or Spring), are permitted to drop courses up to the last day of classes. These same students, in their second semester at Rice, if that semester is a full-term Spring semester, are permitted to drop courses through the tenth week of classes without a fee.

Students are allowed to change FWIS sections during the first two weeks of classes each semester, but they cannot drop one FWIS section without simultaneously adding another. After week two, FWIS courses cannot be dropped. In extraordinary circumstances, students may submit a petition to the dean of undergraduates who may approve a drop on an exception basis.

For courses with start and end dates not coinciding with Rice’s typical semester calendar, otherwise known as “part of term” courses, the Office of the Registrar will consult with the instructor and:

- Set the add deadline approximately one-seventh of the way into the course
- Set the drop deadline approximately one-half of the way into the course
- Post these special deadlines on the Office of the Registrar’s website, under Academic Calendars.

Students may not drop courses where the Honor Council has ruled a loss of credit.

Note: Weeks are defined as academic instruction; thus, midterm recess is not included in this calculation.
Course Load

Students at Rice normally enroll for 15 to 17 semester credit hours each semester. For most students, this allows completion of graduation requirements in 8 semesters. In some instances a student may feel the need to petition for a registration overload. Petitioning for a registration overload should be a last resort and only for students with truly extenuating circumstances that would necessitate a course overload. The petition process for receiving a registration overload is dependent upon the student’s matriculation semester.

For Students that Matriculated to Rice Prior to Fall 2016 Semester:

- Students must secure permission in writing from the Office of the Academic Advising to register for more than 20 credit hours in any semester. Guidelines and the petition form can be found on the Academic Advising website (https://oaa.rice.edu/overloads-and-part-time-status).
- Petitions for more than 24 credit hours are not considered.
- No student may receive credit for more than 20 semester credit hours in a semester, including courses taken elsewhere, without prior written approval.

For Students that Matriculated to Rice in the Fall 2016 Semester, and thereafter:

- Students must secure permission in writing from either the Office of the Academic Advising or their appropriate major advisor(s) to register for more than 18 credit hours in any semester.
- Updated guidelines (as of Fall 2017) and a new process and timeline for petition approval can be found on the Academic Advising website (https://oaa.rice.edu/overloads-and-part-time-status).
- Music students and architecture students are not held to this semester credit hour limit due to their unique curricula; the credit hour limit for these students remains 20 credit hours per semester.

Students must secure permission in writing from the Office of the Dean of Undergraduates (https://dou.rice.edu/student-resources/petitions-special-requests) before registering for courses if they want to:

- Complete graduation requirements elsewhere
- Register for less than 12 semester credits hours, which will move the student to part-time status
- Register concurrently at another university, regardless of the delivery method of the course
  a. In the absence of extenuating circumstances necessitating concurrent registration, such permission will not generally be granted.
  b. Credit for coursework at another college or university completed in a semester while enrolled at Rice will not be recorded by the Office of the Registrar without prior receipt of written permission from the dean of undergraduates.

Students also should be aware that the Office of the Registrar must report a student’s part-time status to various groups, such as loan agencies, scholarship foundations, insurance companies, etc. It is in the student’s best interest to determine if he or she will be affected in any way by part-time status.

For more information, visit the Office of the Registrar website (https://registrar.rice.edu/home).

Course Numbering System

Courses numbered 100-499 are generally considered undergraduate level, with the 100-299 sequence classified as lower-level (freshman/sophomore) and the 300-499 sequence classified as upper-level (junior/senior). Courses numbered 500 and above are generally considered to be at the post-baccalaureate or graduate level. Graduate and undergraduate students may, with departmental approval, take certain courses outside their designated level.

Repeated Courses

Students may repeat courses previously taken; however the record of all attempts and the corresponding earned grades remain on the transcript. Additionally the grades for all attempts are included in both the term and cumulative grade point average calculations. If students repeat courses previously passed, credit is awarded only for the course with the highest grade. For example, a student took HIST 117 and received a grade of B. The student then repeated HIST 117 and received a grade of A. Both grades—the B and the A—appear on the transcript and are included in his/her GPA; however, he/she only receives three credits toward his/her degree. On the transcript, a repeated course is indicated by one of the following values:

I – Included in GPA and earned hours
A – Included in GPA, but excluded from earned hours
E – Excluded from both GPA and earned hours

Each course attempt will be included in a student’s academic history. Under no circumstances will repeated course attempts be removed from a student’s academic history or official transcript, nor will a student be retroactively dropped from a course that they completed.

Some Rice University courses may be repeated for credit. They are specifically noted in the Course Offerings each semester. If a course may be repeated for credit, each grade appears on the permanent record and is included in the student’s grade point average.

If students repeat courses for which they have received either advanced placement or transfer credit, the credit will be removed from the transfer or advanced placement credit. Nor can credit be received twice for students transferring in courses that repeat courses previously completed at Rice.

Students may not receive credit twice for cross-listed, equivalent, or graduate/undergraduate equivalency courses taken at the same time. If the course is not repeatable, students may not receive credit for cross-listed, equivalent, or graduate/undergraduate equivalency courses taken in different semesters.

Change in Registration

The academic calendar lists deadlines for dropping or adding a course or section. This schedule is binding for all students. Adding or dropping a course, including transferring from one section to another or changing credit status in a course, must be accomplished online or through the completion of the appropriate forms and submission to the Office of the Registrar. Changing a course to/from audit status must be done by the deadlines as posted in the Academic Calendar (https://registrar.rice.edu/calendars) for the applicable semester. If a student feels they have
exceptional circumstances, they can request exceptions to these deadlines by petitioning the Committee on Examinations and Standing.

Registration During Summer Sessions
Registration for the Summer Sessions begins in March of each year. Currently enrolled Rice students should register for summer courses online via ESTHER (https://esther.rice.edu) as per normal registration processes and procedures. Rice students should be aware that the registration and payment deadlines do differ, depending on the summer session, and should familiarize themselves with the Academic Calendar (https://registrar.rice.edu/calendars). Summer courses that do not generate enrollments sufficient to cover their costs may be canceled prior to the first day of class.

Pass/Fail During Summer Sessions
Currently enrolled Rice students can designate a summer course as Pass/Fail during the summer sessions, but can do so only by visiting the Office of the Registrar in person and completing a Pass/Fail Designation form. Similarly, conversions of summer Pass/Fail grades can only be done via paper form at the Office of the Registrar. Students should adhere to the applicable Pass/Fail deadlines, as stated in the Academic Calendar (https://registrar.rice.edu/calendars).

Auditing Courses During Summer Sessions
As noted in Auditing Courses (p. 12), currently enrolled Rice students may audit one or more summer courses at Rice at the cost of the auditor fee for Rice alumni (see Cashier's Website (http://cashier.rice.edu)).

Transcript Policies
Rice University provides official hard-copy transcripts and electronic transcripts. Official transcripts are issued only at the request of the student. Official transcript requests should be made at least five working days before the desired date of issue. A $10 fee per transcript must be received before a transcript is issued.

Transcripts that have been presented for admission or evaluation of credit become a part of the student’s permanent record and are not reissued. Transcripts from other institutions, if needed, must be sent to Rice University directly from the original issuing institution.

Transfer Credit
Courses taken at another college or university that are appropriate to the Rice curriculum may be approved for transfer credit toward a Rice undergraduate degree. Students must have taken the course at a United States academic institution accredited by a regional accrediting agency, or at a foreign institution accredited by the appropriate agency, such as the government’s Ministry of Education. Studies done in one’s home country constitute transfer credit through the Office of the Registrar. Official transcripts from the transfer credit institution must be sent directly from the institution’s registrar to Rice’s Office of the Registrar or hand-delivered in an official sealed envelope. For students participating in an official study abroad program (i.e., studying in a country that is not one’s home country) this coursework must be approved by Rice’s Study Abroad Office.

All coursework must have earned a grade of at least a C- or the equivalent. Students may not transfer courses taken pass/fail or on a similar basis at other institutions. Generally, grades earned for transfer credit are not entered on the Rice transcript, and transferred courses have no effect on a student’s Rice grade point average. However, where coursework taken at other institutions has been approved by the faculty as an explicitly specified component to a program’s curriculum, the courses will be entered on the transcript and counted in the student’s Rice grade point average (including grades lower than C-). Such opportunities are listed in the program curriculum description. Students should keep in mind that if they choose to pursue an advanced degree, the transcripts from transfer credit institutions, with the actual grades earned in the transferring courses, will be requested as part of a graduate school’s admission process.

After matriculation at Rice, students are limited to 15 semester hours of summer school transfer credit. This restriction is waived for credit earned during an official summer study abroad program through the Study Abroad Office. Additionally, transfer credit taken at another institution while concurrently enrolled at Rice is subject to Rice’s course load (p. 31) policy. Individual departments may place additional restrictions on particular courses and/or institutions. Similarly, various majors, minors, certificates and degree programs may limit the amount of transfer credit that students may apply to them.

All transferable credits from schools utilizing a system other than the semester hour (such as quarter hours or ECTS credits) will be converted to semester hours. In accordance with university guidelines and based on the external transcript, the Office of the Registrar will determine appropriate transferable credit hours and whether the credits are upper-level or lower-level.

Students with much transfer credit should be aware of the general graduation requirements: Students must be registered at Rice full time for at least four full fall and/or spring semesters, complete at least 60 semester hours, more than half of their upper-level degree work, and more than half of their upper-level major work at Rice. (Students also should check their specific departmental major requirements).

Prematriculation Transfer Credit
For transfer work completed prior to matriculation, the Office of the Registrar, in conjunction with the academic departments, determines whether courses are appropriate for transfer to Rice as Rice equivalent courses or as TRAN, general elective hours. TRAN will be indicated as either upper- or lower-level and will count toward the total hours needed for graduation and for required upper-level credit if the TRAN credit is designated by the Office of the Registrar as upper-level. If courses transferred to Rice as TRAN credit are subsequently granted Rice equivalent course credit by the Office of the Registrar and academic department, the TRAN credit is reduced by the number of credit hours of the Rice equivalent course. The Rice equivalent course is then listed on the student’s transcript and satisfies the university and major requirements the Rice course satisfies.

Postmatriculation Transfer Credit
Continuing students who plan to transfer courses are strongly advised to seek prior approval. Without such approval, students cannot be certain transfer credit will be accepted at Rice. To receive Rice equivalent credit, students are required to complete the appropriate form through the Office of the Registrar and secure approval from the designated transfer credit advisor in the department offering the Rice equivalent course. Unless approval is secured before or after completing the transfer credit, students can expect transferable courses to be granted TRAN. Transfer credit will be evaluated transferable courses to be granted TRAN. Transfer credit will be evaluated only after the Office of the Registrar receives an official transcript from the other college or university.
International Transfer Credit

Students seeking transfer credit for courses taken prematriculation and postmatriculation at institutions outside the United States must present a professional course-by-course evaluation of the foreign official transcript. The professional evaluation must verify that the foreign institution is equivalent to a regionally accredited U.S. academic institution and must include an explanation of credits earned (including U.S. semester hour equivalents), grade equivalents, and course levels (lower or upper level). Two reliable services with course-by-course evaluations that include this required information are:

- SpanTran (https://www.spantran.com)
- Education Credentials (https://www.ece.org)

All professional evaluations should be obtained from one of these two recommended credential services and submitted to the Office of the Registrar. Payment for the professional evaluation is the responsibility of the student.

Students participating in an official study abroad program through the Study Abroad Office are exempt from the requirement of having the international transcript professionally evaluated, unless the Office of the Registrar is unable to make a clear distinction of the credit earned. Study abroad international transfer credit may be transferred back to Rice in the following situations:

Third-Party Providers

Students participating in a study abroad program with a third party provider must provide a School of Record transcript in order to transfer credit back to Rice.

Direct Enrollment

Students participating in a study abroad program with direct enrollment into a foreign university should be prepared to provide a professionally evaluated transcript if the Office of the Registrar is unable to make a clear distinction of the credit earned.

European Credit Transfer System (ECTS)

A number of European institutions use the European Credit Transfer System (ECTS). One ECTS credit is comparable to one-half (0.5) semester hour credit at Rice. It is suggested that students take 30 ECTS credits per semester, which will transfer to Rice as 15 semester hours. A minimum full-time load during the fall and spring semesters is 24 ECTS, which will transfer to Rice as 12 semester credit hours.

Transfer credit for study away from Rice, including international study, is governed by guidelines established by Rice’s Faculty Senate, available here (http://professor.rice.edu/uploadedFiles/Professor/Faculty_Senate/Guidelines%20for%20international%20credit%20rev.pdf).

Veterans Information

Qualified veterans, dependents of deceased or disabled veterans whose death or disability is a direct result of their military service, or dependents in receipt of transferred benefits from a veteran may be eligible for VA educational benefits under one of the following programs while attending Rice University:

- Chapter 30: Montgomery G.I. Bill-Active Duty/Discharged
- Chapter 31: Vocational Rehabilitation
- Chapter 32: Veterans Educational Assistance Program (VEAP)
- Chapter 33: Post 9/11 G.I. Bill
- Chapter 35: Dependents Education Assistance
- Chapter 1606: Montgomery G.I. Bill-Selected Reserve
- Chapter 1607: Reserve Education Assistance Program (REAP)

At Rice University, veterans’ benefits are managed through the Office of the Registrar. This office assists all veterans and their dependents who wish to receive Veterans Administration (VA) educational benefits. Please see the Registrar’s website (https://registrar.rice.edu/students/veterans) regarding the documentation required to obtain educational allowances from the VA.

Veterans who are planning to attend the university should contact Rice University’s Veterans Affairs Representative (registrar@rice.edu) at least two months before the date of entry. Such time is required to expedite the processing of paperwork for educational allowances from the VA.

For certification of benefits, students should have an enrollment of at least half time (6 credit hours for undergraduates).

For additional information regarding other veterans’ educational programs, contact the Office of the Registrar at 713-348-4999 or registrar@rice.edu.
STUDENT SERVICES AND ORGANIZATIONS

- Clubs and Organizations (p. 34)
- Disability Support Services (p. 35)
- Financial Aid (p. 35)
- Health, Counseling and Wellbeing (p. 37)
- Student Government (p. 39)
- Tuition, Fees and Expenses (p. 39)
- Undergraduate Student Life (p. 41)

Clubs and Organizations

Office of Student Activities

The Office of Student Activities, located in the Rice Student Center, oversees the activities of various campus-wide student organizations, student requests for facilities usage, and coordination of various leadership development programs.

In addition to managing the registration process, finances, and general advising for over 250 registered clubs at Rice University, Student Activities provides direct advising to the following organizations:

- Student Association (SA) (http://sa.rice.edu) - Undergraduate student government, including college presidents
- Graduate Student Association (GSA) (http://gsa.rice.edu) - Graduate student government
- Impact Rice Retreat (IRR) (https://studentcenter.rice.edu/impact)
  - A student-led leadership development retreat for freshman and sophomore students
- Leadership Summit (https://studentcenter.rice.edu/summit)
  - Advanced student leadership development program
- Rice Program Council (https://riceprogramcouncilsite.wordpress.com)
  - Host campus-wide student events on and off campus
- Women LEAD (https://studentcenter.rice.edu/women-lead)
  - Female leadership empowerment and networking events

The Rice University clubs are divided into eleven genres: Academic/Honorary, Cultural/International, Departmental GSA, Environmentalism and Sustainability, Political, Recreational/Sport, Religious/Spiritual, Service, Social/Special Interest, STEM, and Visual/Performing Arts. The full list of registered clubs can be found online (https://studentcenter.rice.edu/club-listings). Student Activities also provides leadership development opportunities in the form of Lunch and Lead sessions, the Impact Rice Retreat, Leadership Summit, Women LEAD programs, and additional Club Development workshops.

A large number of student organizations address special student interests, such as the Black Student Association, the Hispanic Association for Cultural Enrichment at Rice, the Chinese Student Association, Rice Young Democrats, and Rice University College Republicans. There are also numerous sport related clubs such as sailing, rugby, volleyball, and soccer. Some of the special-interest groups include a pre-med society, a pre-law society, and Habitat for Humanity.

Many organizations are associated with academic and professional disciplines, such as foreign language clubs, honor societies, and student affiliates groups such as the American Institute of Chemical Engineers, the American Society of Civil Engineers, and the American Society of Mechanical Engineers.

Student Activities also recognizes a number of religious and spiritual organizations. These include, but are not limited to, Chi Alpha Christian Ministries, the Baptist Student Ministry, Catholic Student Association, Hillel, the Muslim Student Association, and an interfaith association, the Boniuk Council. Many of these clubs are assisted by local clergy or staff, and form the Joint Campus Ministers (https://studentcenter.rice.edu/student-activities/group/club-resources/joint-campus-ministries).

The Clubs Office is located in the basement of the Rice Student Center and provides computers, workspace, storage, and a color copier for club convenience.

For more information on the Office of Student Activities, please visit http://studentactivities.rice.edu/.

Center for Civic Leadership

The Center for Civic Leadership (CCL) fosters engaged citizenship among Rice undergraduates through integrated curricular and experiential learning opportunities. These opportunities help students develop the capacity to exercise civic leadership by better understanding themselves, their responsibilities as citizens, the complexity of social issues, and the mechanisms for creating sustainable change in Houston and communities beyond. By serving as the hub for the university’s engagement with off-campus partners in Houston, the United States, and around the world, the CCL assists Rice faculty and staff with creating additional experiential learning opportunities with external partners.

In addition to academic coursework in leadership, the CCL offers research, service, and internship opportunities that enable students to work with a range of off-campus partners in the public, private, and nonprofit sectors. Programs include Urban Immersion, Alternative Spring Break, Houston Action Research Teams, the Loewenstein Fellowship in Civic Research and Science, and the Leadership Rice Mentorship Experience. While CCL programs are open to all undergraduates, those who seek greater depth and intentionality in their leadership development have the opportunity to pursue the Certificate in Civic Leadership. As home to undergraduate fellowships advising, the CCL also enables students to build upon their academic and leadership experiences to identify undergraduate and post-baccalaureate opportunities that best meet their future goals.

For more information on the Center for Civic Leadership, please visit http://ccl.rice.edu.

Rice Student Volunteer Program

By heightening student awareness of community needs and generally raising social consciousness, the Rice Student Volunteer Program (RSVP) has organized volunteer projects for Rice students, faculty, and staff since 1985. The largest event of each semester is Outreach Day, a Saturday when approximately 500 students volunteer with more than 30 nonprofit agencies throughout the Houston area, learning how to take thoughtful action to build a stronger, more just community. With an office in the cloisters of the Rice Memorial Center, RSVP invites each student’s involvement as an officer, a college representative, a committee member, a project organizer, or an interested participant in any RSVP event.
Intercollegiate Speech and Debate

Consistently ranked in the top 10 nationally, the George R. Brown Forensic Society sponsors competition in the categories of Individual Events, Lincoln–Douglas, and Parliamentary Debate. The society provides students with the chance to hone their public speaking skills and to qualify for competition both at the American Forensic Association National Individual Events Tournament and at the National Parliamentary Debate Championships. Recognizing the importance of developing strong communication skills, the society has an open admission policy, inviting students with little or no previous experience as well as those with extensive high school backgrounds to become members of one of the most successful teams at Rice.

For more information on speech and debate, please visit: [http://debate.rice.edu/](http://debate.rice.edu/)

Office of Multicultural Affairs

The Office of Multicultural Affairs (OMA) has, as its primary mission, coordinating and implementing comprehensive educational, cultural, and social programs designed to emphasize inclusiveness, while promoting intercultural dialogue, awareness, and respect for diversity. Through advocacy, cultural programs, and education, OMA also helps students understand and appreciate racial, ethnic, gender, and other differences, while creating opportunities for students to challenge prejudice and expand their cultural knowledge and appreciation.

OMA utilizes its programming and support systems to provide an optimum developmental environment where all members of the University community may develop to the highest level of their potential in an atmosphere free from harassment and bias, thereby ensuring Rice's standing as an intellectually and culturally vibrant community. Cultural student clubs, such as the Black Student Association, the Hispanic Association for Cultural Enrichment at Rice, and the South Asian Society meet regularly with OMA to discuss programming logistics and other issues. Another major program for students under OMA is HARAMBE, (Swahili for "working together in unity" or "let's pull together"), a group that seeks to create a unifying event for entering African-American students, allowing them to build social and academic connections with peers, faculty, and staff.

For more information about the Office of Multicultural Affairs, please visit [http://oma.rice.edu/](http://oma.rice.edu/).

Disability Support Services

Located on the first floor of Allen Center, Disability Support Services coordinates campus services for individuals with documented disabilities. For academic accommodations, adaptive equipment, or disability-related housing needs, Disability Support Services is the campus resource for all students with disabilities. Information is maintained on scholarships, internships, and other programs specific to students with disabilities. For more information, see the Disability Support Services website at [http://dss.rice.edu](http://dss.rice.edu). Students can schedule an appointment with the director of Disability Support Services by calling 713-348-5841.

Financial Aid

The financial aid programs at Rice provide assistance to meet demonstrated need for university attendance for all admitted students. Through grants, endowments, low-interest loans, campus work opportunities, or a combination of these programs, Rice makes every effort to provide students and families assistance to meet their educational expenses. The financial aid program receives funding from many sources. Rice uses contributions from alumni and friends to establish and maintain scholarships and loan funds. Federal and state grant, work, and loan programs also provide funds. Awards are based primarily on financial need and a computed Expected Family Contribution (EFC), although there also are attractive loan opportunities for students and families who demonstrate no need. Financial information is also available online at the Office of Financial Aid ([http://financialaid.rice.edu](http://financialaid.rice.edu)) website.

The university determines need for first-time students by having them complete the College Scholarship Service (CSS) PROFILE ([https://student.collegeboard.org/css-financial-aid-profile](https://student.collegeboard.org/css-financial-aid-profile)). Students register for CSS PROFILE by visiting its website at [www.collegeboard.org](https://www.collegeboard.org). Students will complete the PROFILE online. The PROFILE number for Rice is 6609. First-time students also complete the Free Application for Federal Student Aid (FAFSA ([https://fafsa.ed.gov](https://fafsa.ed.gov))). The FAFSA school code for Rice is 003604. Student and parent income tax documents, including W-2 forms, are required to be submitted to The College Board using Institutional Documentation (IDOC) Service ([https://idoc.collegeboard.org/idoc](https://idoc.collegeboard.org/idoc)).

The university determines need for continuing students by having them complete the FAFSA ([https://fafsa.ed.gov](https://fafsa.ed.gov)) and the PROFILE ([https://student.collegeboard.org/css-financial-aid-profile](https://student.collegeboard.org/css-financial-aid-profile)). Additional documents may be requested by the Office of Financial Aid and uploaded through ESTHER.

“Need” is the amount required to meet the difference between each student's basic educational expenses and his or her family's resources. Parents are expected to contribute according to their financial means, taking into account income, assets, home equity, number of dependents, and other relevant factors. Students are expected to contribute as well from their own assets and earnings, including appropriate borrowing against future earnings.

The brochure *Financing Your Education* explains the assistance programs in detail. An electronic copy may be downloaded from the Office of Financial Aid ([http://financialaid.rice.edu](http://financialaid.rice.edu)).

Need-Based Application Process

Rice University is a need-blind school. Applicants are admitted to the university regardless of their family's ability to pay for college. Rice will meet 100% of demonstrated financial need as determined by university calculations. Rice considers applicants for all appropriate assistance administered by the university, including grants, scholarships, loans, and work. Students receive notification of an offer after their financial aid files
are complete. The Office of Financial Aid provides financial assistance only for coursework sponsored through Rice University.

To apply for financial assistance, first-time students (Early Decision students) must submit the following:

- CSS PROFILE (https://student.collegeboard.org/css-financial-aid-profile), priority date November 15
- Free Application for Federal Student Aid (FAFSA) (https://fafsa.ed.gov), priority date November 15
- Student and parent income tax documents and W-2 forms (IDOC (https://idoc.collegeboard.org/idoc)), priority date November 15

To apply for financial assistance, first-time students (Regular Decision students) must submit the following:

- CSS PROFILE, priority date March 1
- Free Application for Federal Student Aid (FAFSA), priority date March 1
- Student and parent income tax documents and W-2 forms, priority date March 1

Continuing students must submit the following:

- Free Application for Federal Student Aid (FAFSA), priority date April 15
- CSS PROFILE, priority date April 15
- Additional documents may be requested by the Office of Financial Aid

Decision

Financial aid offers are made annually. Award amounts are specified in the financial aid offer letter. Because financial circumstances change from year to year, Rice conducts an annual review of need and offers aid accordingly. For this reason, continuing students must complete CSS PROFILE and file the FAFSA every year that they seek assistance.

The university, from time to time, may adjust its methods of computing financial need or its policies regarding the types of financial assistance that it offers so as to meet the financial needs of the largest possible number of students. Therefore, the amount and type of financial aid may change from year to year, even when the student’s financial situation appears to remain relatively stable.

Disbursements

Financial aid awards during the academic year occur in two equal disbursements (Fall and Spring), and are released to the student’s account once all requirements are completed. The scheduled disbursements are credited a week prior to the start of each term or upon completion of financial aid requirements, whichever is later. Missing requirements may be reviewed through the financial aid tab in Esther. Additional disbursement information is available on the Office of Financial Aid (http://financialaid.rice.edu/Content.aspx?id=40) website.

Types of Financial Aid and Assistance

Need-Based Scholarships/Grants

Various need-based scholarships and grants are awarded to assist students with demonstrated need.

Merit Scholarships

Merit Scholarships are offered through the Office of Admission to incoming students. Merit scholarships may only be used for coursework sponsored by Rice University. Should a student with a merit award graduate early, unexpended merit funds will not be granted to the student.

Student Loan Funds

To assist students and parents with educational financing, the Office of Financial Aid participates in the following programs:

- Federal Direct Loans—These are low-interest loans made to students attending school on at least a half-time basis. Subsidized loans require need-based financial aid eligibility, but unsubsidized loans are not based on financial need.
- Federal Direct PLUS Loan—The PLUS loan is a low-interest loan to parents or legal guardians of dependent undergraduate students. Eligibility is not based on demonstrated financial need.
- Private Education Loans—These nonfederal and state loans are available to students attending school on at least a half-time basis. Eligibility is not based on financial need. These are credit-based loans and may require a co-signer.

A few endowments for student loans have been established at Rice primarily as memorial tributes. These funds exist separately from the normal financial aid program. Rice uses them to make small emergency loans to students experiencing unexpected financial problems or showing additional need beyond regular eligibility. All requests for these loans must be submitted to the Office of Financial Aid.

Additional information regarding loan options is available online through the Office of Financial Aid (http://financialaid.rice.edu).

Student Employment Programs

Opportunities for employment are available to students, either on or off campus, during the academic year. Students are eligible to work under either the Federal Work-Study Program or the Rice Work Program. Students interested in employment should access the Office of Financial Aid (http://financialaid.rice.edu/workstudy.aspx) webpage.

Deferred Payment Plan

Rice offers a deferred payment plan to enable families to finance students’ educational costs. This plan divides each semester’s charge over four installments. Details are available to eligible students each semester at the time of billing. Students arrange for deferred payment through the Cashier’s Office.

Summer Aid

Students who have not exceeded 10 semesters at Rice may be eligible to apply for limited non-institutional financial aid for the summer terms. A summer request form is required to be submitted to the Office of Financial Aid for consideration of summer aid eligibility. The summer request deadline and additional information is available through the Office of Financial Aid (http://financialaid.rice.edu).

Financial Aid Eligibility

Undergraduate students are eligible to apply for need-based Rice sponsored and federal/state/private aid during the first eight semesters at Rice; for transfer students the number of semesters is prorated based on the number of hours transferred. If a student is enrolled beyond
eight semesters, the student may apply for federal/state/private aid for an additional two semesters. (Architecture students may apply for Rice sponsored aid for two semesters following their preceptorship to complete the architecture degree.) If a student attends part time during a semester or withdraws during a term, the semester is counted toward the number of semesters aid is available.

A summary listing of student consumer information is available through the Office of Financial Aid (http://financialaid.rice.edu).

**Loan Counseling**

Students who are recipients of federal student loans will be required to complete online loan entrance counseling before funds will be credited to student accounts. Students also will be required to complete online exit counseling at the completion of a program of study at Rice. Failure to complete online loan exit counseling will result in a transcript hold.

**Satisfactory Academic Progress**

Federal regulations (CRF § 668.34) require that students demonstrate satisfactory academic progress toward completion of their degree to continue to receive institutional, federal and state financial aid. With the exception of the five-year program in architecture, eligibility for institutional aid is limited to the equivalent of 8 semesters of undergraduate enrollment, including coursework taken at other colleges and universities. In addition to meeting the standard for receiving financial aid, students must also meet the academic standards of Rice University.

Satisfactory academic progress is comprised of three areas as required by federal regulations. A student must complete their degree within a specified period that does not exceed 150% of the published length of the program, demonstrate they are making progress towards the completion of their degree by successfully completing 67% percent of all attempted courses, and maintain a cumulative 1.67 GPA, which is consistent with meeting graduation requirements. This regulation applies to each financial aid applicant, whether a previous recipient or not.

Credits counted in the maximum time are all attempted credits (even when not a financial aid recipient). Attempted credits include:

- Earned credits – Passed (A+ through D-), Satisfactory (S)
- Repeated courses
- Withdrawal
- Failures – Failed (F), Unsatisfactory (U)
- Incomplete
- All accepted transfer credits (including Study Abroad courses) toward the degree program

If a student fails to meet the satisfactory academic progress standards by the end of the academic year, the student will be placed on Financial Aid Suspension and will not be eligible for aid until the satisfactory academic progress standards are met.

**Appeal**

Students are allowed to appeal their Financial Aid Suspension in cases of the death of a relative, an injury or illness of the student, or other special circumstances. Students must submit a letter discussing why the student failed to make satisfactory academic progress, and what has changed in the student’s situation that will allow the student to demonstrate satisfactory academic progress at the next evaluation. Supporting documentation (doctor’s letter or academic plan) must accompany the appeal letter and must be submitted to the Office of Financial Aid prior to the beginning of the subsequent term. The Appeals Committee will review appeals on a case-by-case basis.

If an appeal is approved by the Appeals Committee, the student will be placed on financial aid probation and may receive financial aid for one probationary semester. At the end of the probationary term, the student must meet the satisfactory academic progress standards or meet the requirements of an approved academic plan developed by the student’s academic department(s).

**Financial Aid after Academic Suspension**

Students who have been suspended by the university for academic reasons need to be aware that if they are readmitted by the Committee on Examinations and Standing, they may not be eligible for financial aid based on their prior academic performance. Students who are petitioning for readmission are advised to contact the Office of Financial Aid to determine their aid eligibility.

**Return of Title IV Funds**

Students who receive federal funds as part of their aid packages and do not complete the academic term may be subject to returning a portion of those funds. Contact the Office of Financial Aid for information about “Return of Title IV Funds” policies and procedures.

**Health, Counseling and Wellbeing**

**Health and Wellness Support Services Fee**

By paying an annual student Health and Wellness Support Services Fee, all students gain access to the Student Health Services (http://health.rice.edu), Rice Counseling Center (https://wellbeing.rice.edu) and the Student Wellbeing Office (https://wellbeing.rice.edu). Detailed information on the care and services each provide is available from these centers.

**Student Health Services**

Student Health Services, an outpatient medical clinic, is located in the Morton L. Rich Health Center. The clinic is staffed by primary care physicians, nurses, and ancillary support staff. More information can be found at health.rice.edu.

Clinic hours are from 8:00 a.m. to 5:00 p.m., Monday through Friday, during fall and spring semesters. For after-hours and weekend medical care, students may choose among a number of local clinics and hospitals (guidance on self-care as well as local healthcare options can be found on the website). The clinic is open full-time from the first day of Orientation Week until the day before commencement. It is closed during Thanksgiving and the winter break. The clinic also is open for reduced hours during the summer months. Visits to the clinic are covered by the services fee, however, students must pay for all medical care outside the clinic’s purview, including blood tests, x-rays, and outside physician consultations. Should such medical care be necessary, students are urged to review their insurance coverage and pick the best available option.

Care at the clinic is arranged through appointment at 713-348-4966. In emergencies, students should call the Rice University Police Department (http://rupd.rice.edu) at 713-348-6000.

The Student Health Service provides the following:

- Medical care for illness and injury with referrals to specialists when needed
• Maintenance of health records for all students
• Immunizations and other preventive services
• General information for all students
• Contraceptive counseling and routine Pap smears
• Allergy shots (students must provide serum after a specialist allergy workup)
• Physical examinations

Confidentiality for Health Services

The Student Health Service physician–patient relationship is a confidential one. Medical records will be released only on receipt of written authorization from the student or as required by law or when the patient poses a significant risk to herself or himself or another person. Physicians with Student Health Services are considered confidential employees under Title IX, meaning that should a student wish to speak about domestic or sexual violence or stalking with a physician, his/her information is confidential and will not be released without the student’s written consent. The only exception is for students under the age of 18.

Health Insurance

All registered, degree-seeking students are required to maintain health insurance coverage, compliant with the Affordable Care Act, while enrolled at Rice University.

Students are required to either enroll in the Rice student health insurance plan administered by Aetna Student Health, or complete an online waiver application demonstrating comparable insurance coverage. Every eligible student will have an Insurance Hold placed on their account until they have actively enrolled in insurance coverage or submitted a waiver. Once a student enrolls or waives coverage, the tuition bill will be updated based on the selection. Insurance and waiver applications, as well as specific dates for enrolling, frequently asked questions, and more can be found on the Rice Student Insurance website: http://studenthealthinsurance.rice.edu.

Fall semester students who do not complete an enrollment or waiver application by September 1st will be automatically enrolled in the annual insurance plan. The deadline to enroll or waive for the spring semester is January 19th. Please note the automatic enrollment process does require additional processing time. The premium amount will not be prorated. Once enrolled in coverage, students are unable to cancel coverage for any reason.

For questions concerning the Rice plan, please contact studentinsurance@rice.edu or call (713) 348-5544.

Note: If you waive coverage in the fall, you are still expected to have ACA compliant insurance coverage for the spring. If you experience a qualifying life event and need to enroll in coverage mid-year, please email studentinsurance@rice.edu.

International students that have an F1 or J1 visa are subject to the Rice University International Student Health Insurance Policy. For more information on the policy, please visit the OISS website (http://oiss.rice.edu). Here students will find detailed information concerning the approved alternative insurance option through Student Assurance Services (SAS), as well as application and rate information.

Wellbeing and Counseling Center Services

Center Contact Information

The Wellbeing and Counseling Center provides confidential counseling treatment, as well as wellbeing case management services and Title IX support for graduate and undergraduate students. The Center also provides mental health and wellbeing related education for the student body. The Wellbeing and Counseling Center is located in the Barbara and David Gibbs Recreation and Wellness Center. The Center is open Monday - Friday from 8:30a.m. to 5:00p.m. Walk-ins are available during business hours. For appointments contact the Wellbeing and Counseling Center at 713-348-3311 (24/7) or visit https://wellbeing.rice.edu/ for more information. In emergencies, students should call the Rice University Police Department (http://rupd.rice.edu) at 713-348-6000.

General Information about Counseling

Rice Counseling Center addresses students’ psychological needs with various programs and services. Typically, students who use the counseling services bring with them very common concerns: roommate problems, breakup of a relationship, academic and/or interpersonal anxiety, family problems, difficulties adjusting to Rice, or confusion about personal goals, values, and identity. Counselors are equipped to handle a variety of issues, including substance abuse, eating disorders, sexual assault and relationship violence, depression, and the coming-out process. Rice Counseling Center offers both individual and group counseling, as well as educational workshops and programs.

When students need long term or specialized counseling or treatment, counselors refer them to an outside provider. The students, or their health insurance, must pick up these costs. All students who have paid the Health and Wellness Support Services Fee are eligible for initial assessment sessions, consultations, crisis intervention, and educational programming. Students who have worked with a mental health professional prior to enrolling at Rice are encouraged to make contact with the Rice Counseling Center prior to coming to Rice. This will allow the student to make arrangements for a continued care plan. This plan may involve working with the Rice Counseling Center or working with the center to find a suitable off-campus provider.

The Rice Counseling Center can be contacted at 713-348-3311 or at https://wellbeing.rice.edu/. The Rice Counseling Center provides the following services:

• Psychological crisis intervention, on a walk-in emergency basis during regular office hours or by phone at any time, 24 hours a day, by calling 713-348-3311. This includes after hours and weekends.
• Brief initial assessments to receive information quickly about a situation and assign an appropriate counselor
• Short-term individual and couples counseling
• Group therapy and support groups
• Medication consultations with the center’s psychiatrist for students in counseling at the center
• Other consultations (e.g., how to make a referral or how to respond to a friend in distress)
• Educational programming (e.g., various presentations on mental health issues)

Confidentiality for Counseling

Rice Counseling Center services are confidential; information about a student is not released without the student’s written consent except as required by Texas state law. Before entering a therapeutic relationship
with a counselor, students may review and discuss confidentiality with their counselor, ask all necessary questions, and be certain they understand how confidentiality will be applied in their case. As detailed in RCC's treatment agreements, state law does not extend confidentiality to several circumstances, including where:

1. there is risk of imminent harm to the student or others;
2. the counselor has reason to believe that a child or an elderly or handicapped person is, or is in danger of, being abused or neglected;
3. a court order is issued to release information; or
4. the counselor suspects that the student has been the victim of sexual exploitation by a former health care provider during the course of treatment with that provider.

In addition, RCC sometimes provides de-identified information to administrative officials who are in a need-to-know capacity. In some cases the terms of the treatment engagement with RCC may require a student to share assessments, diagnoses, or treatment plans from non-Rice treating professionals with Rice counselors.

Therapists with Rice Counseling Services are considered "confidential" employees under Title IX, meaning that should a student wish to speak about domestic or sexual violence or stalking with their therapist, their information is confidential and will not be released without his or her written consent. The only exception to this is for students under the age of 18.

### General Information about Wellbeing Advising

Wellbeing Advising provides case management services to support students who have experienced wellbeing challenges that may be impacting their personal and/or academic goals and overall success at Rice. Wellbeing advisors connect students to university resources and procedural options to help students during their enrollment. If students decide to take time off to focus on their wellbeing needs, wellbeing advisors work with them and serve as liaisons to the medical readmission process when students are ready to return. Wellbeing advisors also coordinate with the clinical counselors and Title IX Support to provide wellbeing programs and education for the student body. For appointments and/or more information, contact Wellbeing Advising at 713-348-3311 or visit https://wellbeing.rice.edu/.

### Office of Sexual Violence Prevention and Title IX Support

Rice encourages any student who has experienced an incident of sexual, relationship, or another form of interpersonal violence, harassment, or gender discrimination to seek support. There are many options available both on and off campus for all students, regardless of whether the perpetrator was a fellow student, a staff or faculty member, or someone unaffiliated with the university. Students have access to a Title IX resource navigator who will assist the student in determining the best path for them. Furthermore, students who have been accused of committing interpersonal violence or harassment can also seek support (http://safe.rice.edu) under Title IX.

Students should be aware when seeking support (http://safe.rice.edu) on campus that most employees are deemed "responsible," and thus are required by Title IX to disclose all incidents of non-consensual interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs. Rice prioritizes student privacy and safety, and only shares disclosed information on a need-to-know basis.

The therapists at the Rice Counseling Center and the doctors at Student Health Services are "confidential" employees, meaning that Rice will not be informed about the incident if a student discloses it to one of these staff members.

For more information, including how to reach out to Title IX Support, please visit safe.rice.edu or email titleixsupport@rice.edu.

### Student Government

All undergraduate students are members of the Rice Student Association (SA) (http://sa.rice.edu), which is governed through the Student Senate. The senate includes the president, two vice presidents, the secretary, the treasurer, the eleven college presidents, and eleven college senators. Each year committees are appointed within the SA to work on immediate projects. The SA strives to communicate with the Rice administration, faculty, and staff to implement changes benefiting the Rice community and to collaborate with the eleven colleges to establish a Rice identity. The SA is also the umbrella organization for all registered undergraduate student clubs and is a constant resource for any student. Please visit http://sa.rice.edu for more information about the SA.

### Award Presentations

The Rice Student Association presents three coveted awards annually, two to students and one to a faculty or staff member. The Rice Outstanding Senior Awards are presented to graduating seniors who have contributed the most to excellence throughout their time at Rice. The Rice Service Award, a memorial to Hugh Scott Cameron, first dean of students at Rice, is awarded to students who have rendered distinguished service to the student body. The Mentor Recognition Award recognizes extraordinary service to the student body by a current member of the faculty or staff. Student committees appointed by the association make the selections.

### Tuition, Fees and Expenses

The following costs apply to undergraduates in the 2017-18 school year:

<table>
<thead>
<tr>
<th>Cost Description</th>
<th>Hour 1</th>
<th>Semester</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition (entering and continuing)</td>
<td>$1,871</td>
<td>$22,450</td>
<td>$44,900</td>
</tr>
</tbody>
</table>

1. **By special permission only**

<table>
<thead>
<tr>
<th>Required Fees</th>
<th>Fall</th>
<th>Spring</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student activities</td>
<td>$56.50</td>
<td>$56.50</td>
<td>$113</td>
</tr>
<tr>
<td>Student Recreation Center fee</td>
<td>$50.50</td>
<td>$50.50</td>
<td>$101</td>
</tr>
<tr>
<td>Health and Wellness Support Services fee</td>
<td>$247</td>
<td>$247</td>
<td>$494</td>
</tr>
<tr>
<td>Health Insurance - student premium only</td>
<td>$980</td>
<td>$1,595</td>
<td>$2,575</td>
</tr>
</tbody>
</table>
1 Fifth-year students in professional degree programs and students working toward a second bachelor’s degree pay a reduced student activities fee of $6.85 per semester, which covers the Student Association, Student Organizations Activity, University Court, and Honor Council portions of the activity fee.

2 Unless waiver has been approved

<table>
<thead>
<tr>
<th>Orientation Week Fees</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>O-Week room and board – freshmen/transfers</td>
<td>$325</td>
</tr>
<tr>
<td>O-Week room and board – coordinators</td>
<td>$190</td>
</tr>
<tr>
<td>O-Week activity fee – freshmen/transfers</td>
<td>$320</td>
</tr>
<tr>
<td>iPrep Program fee (incoming international undergraduate and exchange students)</td>
<td>$180</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Room and Board</th>
<th>Semester</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room</td>
<td>$4,745</td>
<td>$9,490</td>
</tr>
<tr>
<td>Board - Option A</td>
<td>$2,180</td>
<td>$4,360</td>
</tr>
<tr>
<td>Telecommunication fee</td>
<td>$15</td>
<td>$30</td>
</tr>
<tr>
<td>Off-campus board Plan B</td>
<td>$730</td>
<td>$1,460</td>
</tr>
<tr>
<td>Off-campus board Plan C</td>
<td>$1,340</td>
<td>$2,680</td>
</tr>
<tr>
<td>Off-campus board Plan D</td>
<td>$680</td>
<td>$1,360</td>
</tr>
<tr>
<td>Off-campus board Plan E</td>
<td>$400</td>
<td>$800</td>
</tr>
</tbody>
</table>

**Billing Information**

Electronic billing (E-Bill) is the official mechanism for student billing at Rice University. E-Bills are generated monthly. Fall and Spring E-Bills are generated on the 1st of each month, having a due date of the 10th.

Fall semester charges are due in full by August 10. Spring semester charges are due in full by January 10. Payment Plans are available for students who wish to pay installments over the course of the semester. Accounts not enrolled in a payment plan or paid in full by the term due dates are subject to Late Payment Fees.

Summer E-Bills are generated on the 5th for Summer months, having a due date on the 15th. Charges are due by the due date on the E-Bill notice. Payment Plans are not available for the Summer semester.

**Refunds**

**Refund of Tuition and Fees**

Students withdrawing from the University during the first two weeks of the semester will receive a 100% refund of tuition and fees.

Students withdrawing from the University during the third week are entitled to a 70% refund of tuition only. Fees are not refundable. Refund of tuition for withdrawals succeeding week three are calculated on a 10% reduced refund proration per week until the 9th week of the semester. Students withdrawing after week 9 are not entitled to refund of tuition.

Federal regulations require a refund calculation for all students receiving Federal Financial Aid. The length of time during which a refund must be calculated is up to 60% of the payment period (semester). Students withdrawing on or before the 60% point in time, a portion of the Federal Financial Aid awarded to a student must be returned, according to the provisions of the Higher Education Act as amended. The calculation of the return of funds may result in the student owing a balance to the university and/or the Department of Education.

**Refund for Credit Balance on Student Accounts**

Student account credits resulting from excess Federal Financial Aid payments, scholarship payments, and loan payments are automatically refunded by the Cashier’s Office; however, there may be certain circumstances where credits on student accounts occur that may not be automatically refunded. Reversed charges, over payments, tuition waivers, and other varying factors may lead to a credit balance on a student account.

For those credits not automatically refunded, students may request disbursement of the credit balance by completing the Refund Request Form.

Refunds are issued daily to students that are enrolled in Electronic Refunds (https://cashier.rice.edu/electronic-refunds). For students not enrolled in Electronic Refunds (https://cashier.rice.edu/electronic-refunds), refund checks are issued weekly and are mailed directly from JP Morgan Chase to the student mailing address on record.

**Part-Time Students**

Part-time enrollment refers to enrollment of less than 12 credit hours during a semester. Students seeking part-time enrollment must obtain approval from the Office of the Dean of Undergraduates (https://dou.rice.edu/reduced-course-load-requests) and adjust their schedule accordingly within the first two weeks of the semester.

Part-time enrollment tuition is calculated on the per-credit rate. Students are also assessed a one-time per semester part-time enrollment fee. Students not approved for part-time enrollment or students with approval who fail to adjust their schedule before the end of the second week of classes will be assessed the full-time enrollment tuition charge.

**Living Expenses**

Residence fees cover dining hall costs and residence maintenance. They are established each year as needs dictate. For 2017–18, the annual room and board charge for residence in a residential college is $13,850. This charge includes the room and meals for the year.

**Housing**

An electronic housing agreement must be signed in Esther no later than April 30 for students to receive residential room assignments.

New students are required to submit a $100, non-refundable housing deposit no later than April 30, which will be applied to that semester’s room and board charges.

For more information about housing, see Undergraduate Student Life (p. 41).

**Meal Plans**

The College Food Service provides all-you-care-to-eat meals with the purchase of the meal plan. All students living on campus must purchase a meal plan. It is recommended that students living off campus also

**Payments and Refunds**

Residence and meal plan charges may be included in student payment plans. Amounts and due dates appear on the student's E-bill in the Bill Payment Suite, which can be accessed through Esther.

Students who move out of their college may receive a prorated credit to their student account, equal to the difference between the payments received and the reduced room and board charges. A termination fee will be applied. Exceptions for academic suspension, Rice-sponsored study abroad, family emergencies, and other isolated incidents will be considered on a case-by-case basis.

**Special Charges**

The following charges are separate from the regular fees. Charges due to late registration or course changes made after the deadline are described in the Registration (p. 30) section.

<table>
<thead>
<tr>
<th>Charge</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preceptorship per semester</td>
<td>$325</td>
</tr>
<tr>
<td>Internship per semester</td>
<td>$325</td>
</tr>
<tr>
<td>Study Abroad fee per semester</td>
<td>$425</td>
</tr>
<tr>
<td>Study Abroad fee for summer</td>
<td>$213</td>
</tr>
<tr>
<td>Late payment fee (charged monthly)</td>
<td>1.5% of balance due</td>
</tr>
<tr>
<td>Undergraduate application fee</td>
<td>$75</td>
</tr>
<tr>
<td>Part-time registration</td>
<td>$150</td>
</tr>
<tr>
<td>Orientation Week room and board (coordinators)</td>
<td>$190</td>
</tr>
<tr>
<td>Late registration fee&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$75</td>
</tr>
<tr>
<td>Late registration fee&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$125</td>
</tr>
<tr>
<td>College withdrawal-suspension</td>
<td>$175</td>
</tr>
<tr>
<td>College withdrawal-breaking of housing agreement</td>
<td>$750</td>
</tr>
<tr>
<td>Diploma fee: parchment</td>
<td>$50</td>
</tr>
<tr>
<td>Diploma fee: facsimile</td>
<td>$20</td>
</tr>
<tr>
<td>Diploma mailing fee: Domestic</td>
<td>$30</td>
</tr>
<tr>
<td>Diploma mailing fee: International</td>
<td>$50</td>
</tr>
<tr>
<td>Transcript fee</td>
<td>$10</td>
</tr>
<tr>
<td>Letter of standing</td>
<td>$10</td>
</tr>
<tr>
<td>Replacement ID</td>
<td>$10</td>
</tr>
<tr>
<td>Readmission fee after withdrawal for nonpayment</td>
<td>$375</td>
</tr>
<tr>
<td>Returned check fee</td>
<td>$30</td>
</tr>
<tr>
<td>Late course change fee (add/drop)</td>
<td>$75</td>
</tr>
<tr>
<td>Summer Health and Wellness Support Services Fee&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$135</td>
</tr>
<tr>
<td>Recreation Center Membership fees (Summer)&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$33</td>
</tr>
<tr>
<td>Recreation Center Membership fees (Annual)&lt;sup&gt;3&lt;/sup&gt;</td>
<td>$101</td>
</tr>
</tbody>
</table>

<sup>1</sup> Applies to early matriculants and summer returns from leave

<sup>2</sup> Student nine-month fee for membership paid with tuition. Summer additional

<sup>3</sup> Student only

**Special Courses**

Courses with additional charges are noted on the Cashier's website (https://cashier.rice.edu) and on the Course Schedule (https://courses.rice.edu/admweb/swkscat.main). In some cases the associated charges may be in lieu of Rice tuition and/or required fees.

**Late Payment Fees**

Student accounts not paid in full (or whose payment plan is not current) by the billing due date will be subject to a 1.5% late fee. Late fees are calculated based on the amount past due. Students experiencing difficulty with paying their balance should contact the Cashier's Office promptly to discuss payment options.

**Health Insurance**

All students, full-time or part-time—including those on away status—must have appropriate health insurance. For information about health insurance, visit Health, Counseling and Wellbeing (p. 37).

**Education Certification Program Fees**

Students enrolling in the summer student teaching apprenticeship must pay a $90 registration fee. The registration fee for the internship is $315. These fees are in lieu of tuition for the apprenticeship or internship. For more information, see Teacher Education (p. 733).

**Transcripts**

Official paper transcripts can be ordered online through ESTHER (https://esther.rice.edu) or through the National Student Clearinghouse (https://secure.studentclearinghouse.org/tsorder/faces/TOBridge?_afrLoop=1271611560244967&_afrWindowMode=0&af.ctrl-state=tdg5x1b8y_4). Electronic transcripts can be ordered through the National Student Clearinghouse (https://secure.studentclearinghouse.org/tsorder/faces/TOBridge?_afrLoop=1271611560244967&_afrWindowMode=0&af.ctrl-state=tdg5x1b8y_4). There is a $10 charge for each transcript ordered. Charges can be paid in advance using a major debit card, credit card, or eCheck. Current students can also have the charge added to their student account.

**Delinquent Accounts**

Students in arrears on their financial obligation to Rice as of the last day to add courses for any semester may be withdrawn. The university will not issue certificates of attendance, diplomas, or transcripts at any time for a student whose account is in arrears.

Students who have not made satisfactory arrangements with the Cashier for payment of current charges or who have moved on-campus without a proper campus housing agreement may be withdrawn from the university. Accounts not settled by the first day of classes incur a late payment penalty and are subject to a transcript/degree hold preventing the release of official transcripts, verifications, and degrees.

**Undergraduate Student Life**

**Residential Colleges**

Each undergraduate student at Rice, whether living on campus or not, is a member of one of 11 residential colleges. All colleges are sex and gender neutral.

Each college has faculty magisters who live in a house next to the college. Reporting to the dean of undergraduates, the magisters have
overall responsibility for all aspects of student life in the college, especially for encouraging broad cultural and intellectual interests and for promoting self-discipline and effective self-government within the college. Upon agreement, the students and magisters invite other members of the Rice faculty to become resident and nonresident associates of the college. Faculty associates act as advisors to the students and participate in the various activities of the college. Colleges also have nonfaculty university associates and community associates drawn from various professions in the Houston area.

Each college exists as a self-governing group of students. The elected officers and representatives are responsible to the magisters and to the college membership for:

- Directing the college's academic, cultural, social, and athletic activities
- Expenditure of college funds
- Maintaining order in the college

While uniformity among the colleges has never been sought and each college has developed its own particular interests and character, all seek to foster fellowship among their members and a mature sense of honor, responsibility, and sound judgment.

### College Assignment

Each undergraduate, upon acceptance by the university, is designated a member of one of the colleges. Two students entering Rice for the first time may request assignment to the same college, but they may not designate which college. New students also may request membership in the same college as a close relative. Except for these cases, students have no individual choice of college.

### Housing

College buildings include a dining hall and public rooms, which are available to both resident and nonresident members, and living quarters for resident students from all classes and all academic disciplines.

The university guarantees housing for all incoming students. Information about the residential colleges and room application forms accompany the notice of admission sent to each new undergraduate. Room reservations cannot be made before notification of admission.

About 75 percent of Rice undergraduates live in the on-campus residential colleges. **On-campus housing is not guaranteed beyond the first year at Rice.** Although most of the students who want to live in the colleges can be accommodated, demand usually exceeds the available number of rooms. The determination of housing for sophomores, juniors, and seniors is made by their residential college government. Sophomores, juniors, and seniors draw for rooms according to the priority system of their residential college. Some students, while remaining full members of the college, choose voluntarily to live off campus for one or more years. No student is required to live on campus; however, those members of the colleges who live off campus are encouraged to eat in their colleges and to participate in college activities. Further information on housing in the residential colleges is available from the Office of the Dean of Undergraduates, and information on off-campus housing is available from the Student Center Administration Office.

For more information on room and board, see Tuition, Fees and Expenses (p. 39).

### Meal Plans

The College Food Service provides all-you-care-to-eat meals with the purchase of the meal plan. All students living on campus must purchase meal plan A. It is recommended that students living off campus also purchase a meal plan. Its other services include:

- Assistance with food allergies confirmed and clearly diagnosed by a physician
- Sack lunches for students who must miss a meal due to a job conflict
- Sick trays for students when requested by the Student Health Service
- Alternate menu entrées, whenever possible, to accommodate students’ religious practices

Meals are served cafeteria style. The colleges provide three meals per day Monday through Friday, breakfast and lunch on Saturday, and lunch and dinner on Sunday. Meals are not served during the Thanksgiving holiday, winter break, or spring break.

### College Courses

One of the colleges' important activities is their sponsorship of courses and workshops open to all students. By expanding course offerings outside the traditional departments, college courses promote the academic involvement of the colleges while introducing students to interdisciplinary topics of particular interest.

For more information, see the College Courses (p. 944) listing.

### Rice Student Center

The Student Center provides services and developmental opportunities to build community and enrich the Rice experience through facilities, events, student run businesses, and student activities. It houses a variety of retail and dining operations including the campus store, Sammy’s, 4.Tac0, and Ambassador Cafe. The Graduate Student Lounge, Multicultural Center, and the Clubs offices are all located in the basement with other student life offices throughout the building, including meeting rooms for departments, clubs, and organizations. Visitors can also make use of an ATM located outside the store and ask questions of the Information Desk staff located near the circle drive. Students and visitors alike can enjoy a beverage of their choice and fellowship with their peers at the Rice Coffeehouse (http://coffeehouse.rice.edu), purchase a late night snack from the Hoot (http://www.thehootrice.com), or visit the new Rice Bikes (http://bikes.rice.edu) location in the Housing and Dining Garage located on the inner loop to rent a bicycle or get repairs.

For more information on the Rice University Student Center, go to http://studentcenter.rice.edu.
**RIGHTS AND RESPONSIBILITIES**

- Access to Student Records (p. 43)
- Code of Student Conduct (p. 44)
- Honor System (p. 44)
- Student Responsibility (p. 44)

**Access to Student Records**

**Notification of Rights under the Family Educational Rights and Privacy Act (FERPA)**

The Family Educational Rights and Privacy Act (FERPA) is a federal law designed to protect the privacy of, and limit access to, student education records. The law affords students the following rights with respect to their education records:

1. The right to inspect and review the student’s education records within 45 days after the date Rice University (“Rice”) receives a request for access;
2. The right to seek amendment of the student’s education records that the student believes are inaccurate, misleading, or otherwise in violation of the student’s privacy rights under FERPA;
3. The right to provide written consent to disclosures of personally identifiable information (“PII,” as defined by law) contained in the student’s education records, except to the extent FERPA authorizes disclosure without consent;
4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by Rice to comply with the requirements of FERPA. The name and address of the federal office that administers FERPA is:
   
   Family Policy Compliance Office
   U.S. Department of Education
   400 Maryland Ave. S.W.
   Washington, DC 20202

**Inspect and Review Records**

A student should make written request to any offices that maintain student education records, identifying the record(s) the student wishes to inspect. Though not exhaustive, as a guide for students, this is a list of the primary offices that maintain student education records: Office of the Registrar, Office of the Dean of Undergraduates, Office of Graduate and Postdoctoral Studies, Office of Student Judicial Programs, Office of Admission, Office of Financial Aid, Center for Career Development, Office of Student Activities, Office of Academic Advising, Office of International Students and Scholars, Cashier’s Office, and departmental offices. The appropriate Rice official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the Rice official to whom the request is submitted, that Rice official will advise the student of the correct official to whom the request should be addressed.

**Amendment of Records**

Any questions, problems, or written requests for amendment of records should be submitted to the Office of the Registrar. A student requesting to amend a record should clearly identify the part of the record the student wants changed and specify why it should be changed. If Rice decides not to amend the record as requested, Rice will notify the student in writing of the decision and of the student’s right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when the student is notified of the right to a hearing.

**Disclosure of Information**

As permitted by FERPA, Rice reserves the right to publish or release the following directory information without prior consent:

1. Name, permanent, local, mailing, and campus address, residential college affiliation, telephone and mobile number(s), campus email address(es), and Net ID
2. Date and place of birth
3. Classification and major and minor fields of study
4. Participation in officially recognized activities and sports
5. Weight and height of members of athletic teams
6. Dates of attendance, degrees, honors, and awards received
7. The most recent previous educational agency or institution attended by the student
8. Photograph

Students who would like Rice to withhold this directory information may do so by logging in to ESTHER, clicking Personal Information, clicking Release or Withhold Directory Information, and indicating that the information should be withheld. Thereafter, Rice will withhold access to, or release of, the student’s directory information until further written instruction is received. For more information regarding FERPA, please visit the U.S. Department of Education’s website (https://www2.ed.gov/policy/gen/guid/fpco/ferpa).

FERPA permits the disclosure of PII from students’ education records, without consent of the student, if the disclosure meets certain conditions found in 34 C.F.R. §99.31 of the FERPA regulations. Except for disclosures to school officials, disclosures related to some judicial orders or lawfully issued subpoenas, disclosures of directory information, and disclosures to the student, Section 99.32 of the FERPA regulations requires the institution to record the disclosure. Eligible students have a right to inspect and review the record of disclosures. A postsecondary institution may disclose PII from the education records without obtaining prior written consent of the student –

- To other school officials, within Rice whom Rice has determined have legitimate educational interests and require this information in order to perform instructional, supervisory, advisory, administrative, or other duties for Rice. These school officials include faculty, research personnel, staff (including law enforcement unit personnel and health staff), trustees, or students serving on official committees (such as disciplinary or grievance committees) or assisting another school official. A school official has a legitimate educational interest if the official needs to review an educational record in order to fulfill his or her professional responsibility to Rice. This includes contractors, consultants, auditors, attorneys, collection agents, volunteers, or other parties to whom Rice has outsourced institutional services or functions, provided that the conditions listed in §99.31(a)(1)(i)(B)(1) - (a)(1)(i)(B)(2) are met. (§99.31(a)(1))
- To officials of another school where the student seeks or intends to enroll, or where the student is already enrolled if the disclosure is for
purposes related to the student’s enrollment or transfer, subject to the requirements of §99.34. (§99.31(a)(2))

- To authorized representatives of the U.S. Comptroller General, the U.S. Attorney General, the U.S. Secretary of Education, or State and local educational authorities, such as a State postsecondary authority that is responsible for supervising the university’s State-supported education programs. Disclosures under this provision may be made, subject to the requirements of §99.35, in connection with an audit or evaluation of Federal- or State-supported education programs, or for the enforcement of, or compliance with, Federal legal requirements that relate to those programs. These entities may make further disclosures of PII to outside entities that are designated by them as their authorized representatives to conduct any audit, evaluation, or enforcement or compliance activity on their behalf. (§§99.31(a)(3) and 99.35)

- In connection with financial aid for which the student has applied or which the student has received, if the information is necessary to determine eligibility for the aid, determine the amount of the aid, determine the conditions of the aid, or enforce the terms and conditions of the aid. (§99.31(a)(4))

- To organizations conducting studies for, or on behalf of, the school, in order to: (a) develop, validate, or administer predictive tests; (b) administer student aid programs; or (c) improve instruction. (§99.31(a)(6))

- To accrediting organizations to carry out their accrediting functions. (§99.31(a)(7))

- To parents of an eligible student if the student is a dependent for IRS tax purposes, though Rice limits such information to financial details of the student’s enrollment. (§99.31(a)(8))

- To comply with a judicial order or lawfully issued subpoena. (§99.31(a)(9))

- To appropriate officials in connection with a health or safety emergency, subject to §99.36. (§99.31(a)(10))

- Information the school has designated as “directory information” above and pursuant to §99.37. (§99.31(a)(11))

- To a victim of an alleged perpetrator of a crime of violence or a non-forcible sex offense, subject to the requirements of §99.39. The disclosure may only include the final results of the disciplinary proceeding with respect to that alleged crime or offense, regardless of the finding. (§99.31(a)(13))

- To the general public, the final results of a disciplinary proceeding, subject to the requirements of §99.39, if the school determines the student is an alleged perpetrator of a crime of violence or non-forcible sex offense and the student has committed a violation of the school’s rules or policies with respect to the allegation made against him or her. (§99.31(a)(14))

- To parents of a student regarding the student’s violation of any Federal, State, or local law, or of any rule or policy of the school, governing the use or possession of alcohol or a controlled substance if the school determines the student committed a disciplinary violation and the student is under the age of 21. (§99.31(a)(15))

For further information regarding Rice’s policy on student education records, please contact the Office of the Registrar.

Rice University
Office of the Registrar–MS 57
6100 Main Street
Houston, TX 77005-1892
Email: registrar@rice.edu

Code of Student Conduct

The Office of Student Judicial Programs oversees the judicial system; enforces the Code of Student Conduct, which governs the administration of student order and discipline; and may participate in Title IX investigations. The Code of Student Conduct applies to all students, including undergraduate, graduate, and transfer students; those enrolled in professional and Continuing Studies programs; and visiting students (including Rice Online students), visiting post baccalaureates, second degree students, and auditors; from the time they arrive on campus for orientation until their degree is conferred or they have permanently left Rice. Organizations also are subject to this Code. All enrolled students also are subject to Rice University policies, rules, and regulations.

Alleged violations of university or college rules are handled in accordance with the Code of Student Conduct. Students may appeal decisions as described in the Code of Student Conduct. Rice retains ultimate authority in all matters of discipline and over all actions that affect its educational function or the safety and wellbeing of members of the university community. The Code is not intended to—and does not—confer any contractual rights on any individuals involved.

The Code of Student Conduct can be found at https://sjp.rice.edu/code-of-student-conduct.

After Rice’s grievance process has been exhausted and documented, students may also pursue an external complaints process (p. 1576).

Honor System

Students take all written examinations and complete any specifically designated assignments under the honor system. By committing themselves to the honor system, all students accept responsibility for assuring the integrity of the examinations and assignments conducted under it. The Honor Council is responsible for investigating reported violations and for conducting a hearing when the facts warrant. The Office of Student Judicial Programs, which reviews the results of the investigations and hearings, considers the Council’s recommendations when issuing penalties. Procedures for accusations arising out of summer classes or Rice Online classes may differ.

The Honor Council conducts an ongoing program to acquaint new students and faculty with the honor system. The Honor Code and other related information and resources are located at the homepage of the Honor Council: http://honor.rice.edu/.

Student Responsibility

The university expects all Rice students to exercise personal responsibility over their actions. Their behavior should reflect a respect for the law and for their contractual obligations, a consideration for the rights of others, and shared standards of considerate and ethical behavior.

Students are responsible for knowing and following all information, policies, and procedures listed in this General Announcements. Questions should be directed to the appropriate office or administrator.

Rice utilizes e-mail as an official form of communication and sends correspondence to a student’s Rice email address. Students should frequently check and maintain their Rice email inbox. Failure to do so
does not relieve students of the responsibility to act or respond in a timely manner to official notices sent via email.

Rice encourages self-discipline, recognizing that effective student government, including judicial processes, and the integrity of the honor system depend on the willingness of all students to meet community standards of conduct.

The university, however, reserves the right to insist on the withdrawal of any student whose conduct it judges to be clearly detrimental to the best interests of either the student or the university. The appropriate authorities take such action only after careful consideration.

No individual or group may use the name of the university or one of its colleges without prior approval of the university or the college.
HONORS AND DISTINCTIONS

• Academic Honor Societies (p. 46)
• Honors Programs (p. 46)
• President’s Honor Roll (p. 46)
• University Honors (p. 47)

Academic Honor Societies

Honor societies at Rice include the following:

Chi Epsilon
The Civil Engineering Honor Society. It serves to recognize students of high scholarship, character, practicality, and sociability. Students are inducted into the society once or twice annually and are selected from the pool of upper division level civil engineering students. (Rice chapter: 1995).

Delta Phi Alpha
To promote an interest in the German language and literature (Gamma Xi chapter at Rice: April 1949).

Eta Kappa Nu
Founded in 1904 at the University of Illinois for electrical engineering students to stimulate and reward scholarship as well as assist and encourage its members to grow professionally throughout their lives (Rice chapter: January 1981).

Omicron Delta Epsilon
To promote study in economics (Rice chapter: 1981).

Phi Beta Kappa
Founded in 1776 at the College of William and Mary to recognize intellectual achievement and the love of learning among students in the liberal arts and sciences (Rice chapter: March 1, 1929).

Phi Lambda Upsilon
National honorary chemical society promoting high scholarship and original investigation in all branches of pure and applied chemistry (Rice chapter: 1926).

Pi Delta Phi
Organized to interest French students in competing for high standing in scholarship (Theta chapter at Rice: May 1930).

Pi Sigma Alpha
The National Political Science Honor Society. It aims to provide networking opportunities for political science students and to promote campus interest in political science (Rice chapter: 2008).

Psi Chi
Founded in 1929 at Yale University to encourage, stimulate, and maintain excellence in scholarship and to advance the science of psychology (Rice chapter: April 23, 1990).

Sigma Delta Pi
To promote an interest in the Spanish language and literature (Rice chapter May 14, 1953).

Sigma Xi
For the promotion of research in science (Beta of Texas chapter at Rice: March 23, 1938).

Tau Beta Pi Association
Organized to interest engineering students in competing for high standing in scholarship (Gamma of Texas chapter at Rice: December 18, 1940).

Tau Sigma Delta
National honor society in architecture and applied arts (Tau chapter at Rice: May 7, 1961).

For more information on these honor societies, please visit the Rice Club Listings page (https://studentcenter.rice.edu/club-listings) or the department associated with the Honor Society.

Honors Programs

To enroll in the two semester Rice Undergraduate Scholars Program, students register for HONS 470 and HONS 471 Proposal Development and Research. This program is for juniors and seniors in all disciplines who are considering graduate study and an academic career after graduation. Students enroll in the program plan and execute independent research under the supervision of a sponsoring faculty member (they may apply for funding to cover expenses related to their projects). They meet once a week to discuss each other’s work and to hear a range of presentations on life in academia. Students may apply in the spring of each year. For more information, contact the program’s faculty co-director.

Individual departments may offer undergraduates the option of honors program enrollment. These programs enable students to receive advanced training or to deepen their understanding of a given discipline through an intensive program of independent supervised research. Customary procedure is for students to submit a proposed project to their department’s Undergraduate Committee, which helps them rework it, as needed, into a substantial but feasible proposal. Once accepted, students are assigned a faculty advisor to guide their research. The project concludes in an honors thesis, which the advisor and two readers evaluate, and an oral examination. Departments also use honors programs to recognize formally students who have shown outstanding work through the individual projects. Acceptance into a departmental honors program is at the discretion of the faculty. For specific requirements and procedures, students should contact the individual departments.

President’s Honor Roll

The President’s Honor Roll, published each semester, recognizes outstanding students. To be eligible, students must have earned grades in a total of 12 or more semester hours without receiving a grade of F. Courses taken as Pass/Fail may not be counted for the purposes of this rule. Approximately the top 30 percent of undergraduates receive recognition each semester. While undergraduates enrolled in a four-year bachelor's degree program are always eligible for the President’s Honor
Roll, students enrolled in five-year bachelor’s or master’s programs are eligible only during their first eight semesters.

**University Honors**

**Latin Honors**

Unlike the President’s Honor Roll, which recognizes academic excellence achieved over a single semester, eligibility for the three categories of Latin Honors (summa cum laude, magna cum laude, and cum laude) are based on the cumulative grade point average for all undergraduate work at Rice. Recipients are determined at the end of the spring semester and after receipt of all grades. The grade point average within the highest five percent of the year’s graduating majors within each school is recommended for the summa cum laude honor. The grade point average included within the next highest 10 percent is used to determine those eligible to graduate with the magna cum laude honor. Finally, the grade point average included within the next 15 percent is used to determine those majors eligible to graduate with the cum laude honor. Thus, approximately 30 percent of each graduating class, distributed approximately evenly across all schools, receives Latin Honors on graduation.

**Distinction in Research and Creative Work**

Distinction in Research and Creative Work is a university award for select undergraduates, granted at Commencement, which appears on the transcript and diploma. Students must apply to be considered for the award, and the application must be supported by a letter from a faculty member (or center director). The most common path of application would be to the student’s major department. A student whose research or other creative project is in a field outside of his or her major should submit an application to the academic department or program most closely associated with the subject matter of their project.

Eligibility for the award extends widely to include a variety of research, design, and other creative projects, as well as persistent dedication to research. Projects completed in part or entirely at other institutions or with community partners will be eligible for consideration.

Applicants must be in good academic standing and have a cumulative GPA of at least 3.30 in courses completed at Rice at the time of their graduation. The award will be granted only to projects that produce a concrete outcome—e.g. an essay, invention, design, musical composition—and demonstrate commitment and/or achievement above and beyond the norm. Students who complete senior theses, senior design projects, or other required senior capstone projects are eligible and may submit their thesis or capstone project for consideration; however, these students do not qualify automatically for consideration for this university distinction.

Responsibility for judging applications and determining those that merit the distinction award rests with the undergraduate degree programs or departments. Annually, departments and degree granting programs publish clear expectations and criteria for the research and design projects that will be considered for the award, as well as guidelines for what constitutes research or creative work above and beyond the norm within their respective fields. Departments may designate additional requirements as well, such as completion of a research seminar or oral defense.
GRADUATE STUDENTS

Since Rice opened in 1912, the university has recognized the importance of graduate study and research as a principal means of advancing knowledge. The first doctor of philosophy degree was awarded in 1918 in mathematics. Since that time, graduate study has expanded to encompass the schools of architecture, engineering, humanities, management, music, natural sciences, and social sciences, as well as interdepartmental programs. Rice now enrolls approximately 2,800 graduate students and offers advanced degrees in 37 fields of study.

Graduate programs lead to either research or professional degrees. Research programs generally require the completion of a publishable thesis that represents an original and significant contribution to the particular field of study. Research degrees include the doctor of philosophy (PhD), doctor of architecture (DArch), master of arts (MA), and master of science (MS).

Professional programs provide advanced course work in several disciplines but do not generally include independent research. These programs lead to degrees in most of the major schools, including many engineering disciplines.

All degrees conferred by the university are awarded solely in recognition of educational attainments and not as warranty of future employment or admission to other programs of higher education.

For additional information on graduate programs and requirements, please go to graduate.rice.edu.
ACADEMIC OPPORTUNITIES

- Auditing Courses (p. 49)
- Graduate Degrees (p. 49)
- Graduate Degree Chart (p. 50)
- Graduate Certificates (p. 53)
- Graduate Program Major Concentrations (p. 54)
- Non-Traditional Coursework (p. 54)

Auditing Courses

During the fall and spring semesters, currently enrolled degree-seeking Rice students may audit one or more courses at Rice without charge by securing permission of the instructor and by registering as an auditor with the Office of the Registrar. During the summer sessions, enrolled Rice students may audit one or more courses at Rice at the cost of the auditor fee for Rice alumni (see Cashier’s website (https://cashier.rice.edu)).

Upon completion, the audited course will appear on the student’s transcript with a grade of either "AUD" or "NC". As noted in Grades, instructors report the AUD grade in those instances where the auditing student has met the audit requirements of the course as defined by the instructor. A grade of NC (No Credit) is reported in instances where the auditing student has not met the audit requirements of the course as defined by the instructor.

There are no credit hours associated with audited courses, and auditing a course does not affect a student’s GPA. Requests to audit a class or to change from audit to credit or vice versa must be done by the dates and deadlines documented in the posted Academic Calendar (see Academic Calendar (http://registrar.rice.edu/calendars)).

Graduate Degrees

The General Announcements (GA) is the official Rice curriculum. In the event that there is a discrepancy between the GA and any other websites or publications, the GA shall prevail as the authoritative source.

Research Degrees

Research degrees are offered in seven of the eight schools at Rice, with some degrees combining studies in more than one school. Specific requirements for advanced research degrees in each field of study appear in the appropriate departmental pages (see Departments and Programs (p. 106)). Students seeking additional material should contact the appropriate department (see Graduate Degree Chart (p. 50)).

PhD Programs

The PhD degree is awarded for original studies in the departments listed in the Graduate Degree Chart (p. 50); in architecture, the equivalent degree is the DMA; in music, the equivalent degree is the DMA. Candidates receive a PhD degree after successfully completing at least 90 semester hours of graduate study and concluding an original investigation that is formalized in an approved thesis. As final evidence of preparation for this degree, the candidate must pass a public oral examination and submit the approved thesis to the Office of Graduate and Postdoctoral Studies. (See also Candidacy, Oral Examinations and Thesis (p. 64).) The residency requirement for the doctorate is four semesters of full-time study at the university.

Thesis Master’s Programs

The MA degree is available in the departments listed in the Graduate Degree Chart (p. 50), including certain scientific fields of study. The MS degree is offered in the engineering and science fields also listed in the chart. Candidates may undertake the MArch, MArch in Urban Design, and MMus degrees as research degrees by adopting the thesis option. Candidates receive a master’s degree after completing at least 30 graduate semester hours of study at the 500 level and above (including thesis hours), 24 hours of which must be taken at Rice. Thesis Master’s programs require original work reported in a thesis and a public oral examination. Most students take three or four semesters to complete a master’s degree (some programs may require more time). Students receiving a master’s degree must be enrolled in a graduate program at Rice University for at least one fall or spring semester of full-time study.

Non-Thesis Master’s Programs

Students also may pursue a nonthesis degree in certain departments. This degree would be based on alternative departmental requirements and would include, but not be limited to, the following:

- At least 30 graduate semester hours of study
- At least 24 semester hours must be at Rice University
- Minimum residency is one fall or spring semester of full-time graduate study, with the exceptions of professional master’s programs in the schools of engineering, natural sciences, and social sciences, as well as the Master’s of Liberal Studies. For these programs, minimum residency is one fall or spring semester in full-time or part-time graduate study.
- At least 30 hours of course work must be at or above the 500 level
- All courses must be in the relevant field

In certain departments, students may receive a master’s degree when they achieve candidacy for the doctoral degree. Students seeking a master’s degree in this manner must submit a petition for the degree, signed by their department chair, to the Office of Graduate and Postdoctoral Studies by the deadline specified in the official academic calendar (http://registrar.rice.edu/calendars) for degree conferral in the year in which the degree is to be awarded.

Professional Degrees

Rice University offers advanced degree programs to prepare students for positions in a number of professional fields. The professional degrees offered appear in the Graduate Degree Chart (p. 50). In some departments, the professional degree also prepares the student for a doctoral-level program.

Requirements for professional degrees include the successful completion of 30 graduate semester hours or more of courses at the 500 level or higher with at least 24 hours taken at Rice. Minimum residency for professional master’s degrees in the schools of natural sciences and engineering, as well as the Master’s of Liberal Studies, is one fall or spring semester of either full-time or part-time study. For all other professional master’s degrees, minimum residency is one fall or spring semester of full-time study. All courses must be in the relevant field. Specific information and requirements for individual degrees appear in the Graduate Degree Chart (p. 50). Program information and application materials also are available from the departments.
Institutional financial aid and tuition waivers are not available to professional master’s students. This should be stated in the department’s offer letter.

**Graduate Degree Chart**

**The School of Architecture**

**Architecture**
- Master of Architecture (MArch) Degree (p. 135)
- Master of Arts (MA) Degree in the field of Architecture (p. 138)
- Master of Urban Design (MAUD) Degree
- Doctor of Architecture (DArch) Degree

**The Glasscock School of Continuing Studies**

**Education**
- Master of Arts in Teaching (MAT) Degree (p. 735)

**School of Continuing Studies**
- Master of Liberal Studies (MLS) Degree (p. 452)
- Diploma in Liberal Studies (DLS) (p. 450)

**The George R. Brown School of Engineering**

**Applied Physics**
- Master of Science (MS) Degree in the field of Applied Physics
- Doctor of Philosophy (PhD) Degree in the field of Applied Physics (p. 126)

**Bioengineering**
- Master of Bioengineering (MBE) Degree (p. 159)
- Master of Business Administration (MBA) Degree / Master of Bioengineering (MBE) Degree (p. 161)
- Master of Science (MS) Degree in the field of Bioengineering
- Doctor of Philosophy (PhD) Degree in the field of Bioengineering (p. 157)
- Doctor of Philosophy (PhD) Degree in the field of Bioengineering / Doctor of Medicine (MD) Degree with Baylor College of Medicine (p. 158)

**Chemical and Biomolecular Engineering**
- Master of Business Administration (MBA) Degree / Master of Chemical Engineering (MChE) Degree (p. 276)
- Master of Chemical Engineering (MChE) Degree (p. 277)
- Master of Science (MS) Degree in the field of Chemical Engineering
- Doctor of Philosophy (PhD) Degree in the field of Chemical Engineering (p. 275)

**Civil and Environmental Engineering**
- Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree in the field of Civil Engineering (p. 306)
- Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree in the field of Environmental Engineering (p. 307)
- Master of Civil and Environmental Engineering (MCEE) Degree in the field of Civil Engineering (p. 308)
- Master of Civil and Environmental Engineering (MCEE) Degree in the field of Environmental Engineering (p. 309)
- Master of Science (MS) Degree in the field of Civil Engineering (p. 311)
- Master of Science (MS) Degree in the field of Environmental Engineering (p. 312)
- Doctor of Philosophy (PhD) Degree in the field of Civil Engineering (p. 303)
- Doctor of Philosophy (PhD) Degree in the field of Environmental Engineering (p. 305)

**Computational Science and Engineering**
- Master of Arts (MA) Degree in the field of Computational Science and Engineering
- Master of Business Administration (MBA) Degree / Master of Computational Science and Engineering (MCSE) Degree (p. 332)
- Master of Computational Science and Engineering (MCSE) Degree (p. 333)
- Doctor of Philosophy (PhD) Degree in the field of Computational Science and Engineering (p. 331)

**Computational and Applied Mathematics**
- Master of Arts (MA) Degree in the field of Computational and Applied Mathematics
- Master of Business Administration (MBA) Degree / Master of Computational and Applied Mathematics (MCAAM) Degree
- Master of Computational and Applied Mathematics (MCAAM) Degree (p. 329)
- Doctor of Philosophy (PhD) Degree in the field of Computational and Applied Mathematics (p. 328)

**Computer Science**
- Master of Business Administration (MBA) Degree / Master of Computer Science (MCS) Degree (p. 340)
- Master of Computer Science (MCS) Degree (p. 341)
- Master of Science (MS) Degree in the field of Computer Science (p. 344)
- Doctor of Philosophy (PhD) Degree in the field of Computer Science (p. 339)

**Electrical and Computer Engineering**
- Master of Business Administration (MBA) Degree / Master of Electrical Engineering (MEE) Degree (p. 376)
- Master of Electrical Engineering (MEE) Degree (p. 377)
- Master of Science (MS) Degree in the field of Electrical and Computer Engineering
- Doctor of Philosophy (PhD) Degree in the field of Electrical and Computer Engineering (p. 375)

**Materials Science and Nanoengineering**
- Master of Business Administration (MBA) Degree / Master of Materials Science and NanoEngineering (MMSNE) Degree (p. 468)
- Master of Materials Science and NanoEngineering (MMSNE) Degree (p. 468)
- Master of Science (MS) Degree in the field of Materials Science and NanoEngineering (p. 470)
- Doctor of Philosophy (PhD) Degree in the field of Materials Science and NanoEngineering (p. 466)

**Mechanical Engineering**
- Master of Business Administration (MBA) Degree / Master of Mechanical Engineering (MME) Degree (p. 482)
- Master of Mechanical Engineering (MME) Degree (p. 483)
- Master of Science (MS) Degree in the field of Mechanical Engineering (p. 484)
- Doctor of Philosophy (PhD) Degree in the field of Mechanical Engineering (p. 481)

**Statistics**
Master of Arts (MA) Degree in the field of Statistics
Master of Business Administration (MBA) Degree / Master of Statistics (MStat) Degree (p. 205)
Master of Statistics (MStat) Degree (p. 718)
Doctor of Philosophy (PhD) Degree in the field of Statistics (p. 716)

Systems, Synthetic, and Physical Biology
Master of Science (MS) Degree in the field of Systems, Synthetic and Physical Biology
Doctor of Philosophy (PhD) Degree in the field of Systems, Synthetic and Physical Biology (p. 731)

The School of Humanities

Art History
Master of Arts (MA) Degree in the field of Art History
Doctor of Philosophy (PhD) Degree in the field of Art History (p. 147)

Center for Critical and Cultural Theory
Certificate in Critical and Cultural Theory (p. 345)

Classical and European Studies
Master of Arts (MA) Degree in the field of French Studies
Doctor of Philosophy (PhD) Degree in the field of French Studies (p. 392)

English
Master of Arts (MA) Degree in the field of English
Doctor of Philosophy (PhD) Degree in the field of English (p. 392)

History
Master of Arts (MA) Degree in the field of History
Doctor of Philosophy (PhD) Degree in the field of History (p. 432)
Dual Doctor of Philosophy (PhD) Degree in the field of History, with Instituto Mora, in Mexico (p. 433)
Dual Doctor of Philosophy (PhD) Degree in the field of History, with Universidade Estadual de Campinas (UNICAMP), in Brazil (p. 434)

Philosophy
Master of Arts (MA) Degree in the field of Philosophy
Doctor of Philosophy (PhD) Degree in the field of Philosophy (p. 654)

Religion
Master of Arts (MA) Degree in the field of Religion (p. 691)
Master of Arts (MA) Degree in the field of Religion (Candidacy)
Doctor of Philosophy (PhD) Degree in the field of Religion (p. 690)
Certificate in Gnosticism, Esotericism and Mysticism (p. 421)

Study of Women, Gender and Sexuality
Certificate in Women, Gender and Sexuality (p. 725)

The Jones Graduate School of Business

Management
Master of Accounting (MAcc) Degree (p. 110)
Master of Arts (MA) Degree in the field of Business
Master of Business Administration (MBA) Degree / Doctor of Medicine (MD) Degree with Baylor College of Medicine (p. 195)
Master of Business Administration (MBA) Degree / Master of Bioengineering (MBE) Degree (p. 161)
Master of Business Administration (MBA) Degree / Master of Chemical Engineering (MChE) Degree (p. 276)
Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree in the field of Civil Engineering (p. 306)
Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree in the field of Civil and Environmental Engineering (p. 307)
Master of Business Administration (MBA) Degree / Master of Computational Science and Engineering (MCSE) Degree (p. 332)
Master of Business Administration (MBA) Degree / Master of Computer Science (MCS) Degree (p. 340)
Master of Business Administration (MBA) Degree / Master of Electrical Engineering (MEE) Degree (p. 376)
Master of Business Administration (MBA) Degree / Master of Materials Science and Nanoengineering (MMSNE) Degree (p. 201)
Master of Business Administration (MBA) Degree / Master of Mechanical Engineering (MME) Degree (p. 482)
Master of Business Administration (MBA) Degree / Master of Science in Bioscience and Health Policy (MSBHP) Degree (p. 202)
Master of Business Administration (MBA) Degree / Master of Science in Environmental Analysis and Decision Making (MSEADM) Degree (p. 203)
Master of Business Administration (MBA) Degree / Master of Science in Nanoscale Science (MSNS) Degree (p. 203)
Master of Business Administration (MBA) Degree / Master of Science in Space Studies (MSSpS) Degree (p. 204)
Master of Business Administration (MBA) Degree / Master of Science in Subsurface Geoscience (MSSG) Degree (p. 205)
Master of Business Administration (MBA) Degree / Master of Statistics (MStat) Degree (p. 205)
Master of Business Administration (MBA) Degree / Master of Computational and Applied Mathematics (MCAAM) Degree (p. 328)
Master of Business Administration (MBA) Degree, Executive Program (p. 207)
Master of Business Administration (MBA) Degree, Full-Time Program (p. 210)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Accounting (p. 215)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Energy (p. 219)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Entrepreneurship (p. 223)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Finance (p. 227)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Health Care (p. 231)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Marketing (p. 236)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Operations Management (p. 240)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Real Estate (p. 244)
Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Strategic Management (p. 248)
Master of Business Administration (MBA) Degree, Professional Program (p. 252)
Doctor of Philosophy (PhD) Degree in the field of Business (p. 194)
**The Shepherd School of Music**

**Music**

- Master of Music (MMus) Degree in the field of Bassoon Performance (p. 591)
- Master of Music (MMus) Degree in the field of Cello Performance (p. 593)
- Master of Music (MMus) Degree in the field of Clarinet Performance (p. 596)
- Master of Music (MMus) Degree in the field of Composition (p. 598)
- Master of Music (MMus) Degree in the field of Double Bass Performance (p. 600)
- Master of Music (MMus) Degree in the field of Flute Performance (p. 602)
- Master of Music (MMus) Degree in the field of Harp Performance (p. 605)
- Master of Music (MMus) Degree in the field of Horn Performance (p. 607)
- Master of Music (MMus) Degree in the field of Musicology (p. 610)
- Master of Music (MMus) Degree in the field of Oboe Performance (p. 612)
- Master of Music (MMus) Degree in the field of Orchestral Conducting (p. 615)
- Master of Music (MMus) Degree in the field of Organ Performance (p. 617)
- Master of Music (MMus) Degree in the field of Percussion Performance (p. 619)
- Master of Music (MMus) Degree in the field of Piano Chamber Music and Accompanying (p. 622)
- Master of Music (MMus) Degree in the field of Piano Performance (p. 624)
- Master of Music (MMus) Degree in the field of String Quartet Performance (p. 627)
- Master of Music (MMus) Degree in the field of Trombone Performance (p. 629)
- Master of Music (MMus) Degree in the field of Trumpet Performance (p. 631)
- Master of Music (MMus) Degree in the field of Viola Performance (p. 634)
- Master of Music (MMus) Degree in the field of Viola Performance (p. 636)
- Master of Music (MMus) Degree in the field of Violin Performance (p. 639)
- Master of Music (MMus) Degree in the field of Vocal Performance (p. 641)
- Artist Diploma (AD) in the field of Bassoon Performance (p. 498)
- Artist Diploma (AD) in the field of Cello Performance (p. 499)
- Artist Diploma (AD) in the field of Clarinet Performance (p. 500)
- Artist Diploma (AD) in the field of Double Bass Performance (p. 502)
- Artist Diploma (AD) in the field of Flute Performance (p. 503)
- Artist Diploma (AD) in the field of Harp Performance (p. 504)
- Artist Diploma (AD) in the field of Horn Performance (p. 506)
- Artist Diploma (AD) in the field of Oboe Performance (p. 507)
- Artist Diploma (AD) in the field of Opera Performance (p. 508)
- Artist Diploma (AD) in the field of Orchestral Conducting (p. 509)
- Artist Diploma (AD) in the field of Organ Performance (p. 511)
- Artist Diploma (AD) in the field of Percussion Performance (p. 512)
- Artist Diploma (AD) in the field of Piano Performance (p. 513)
- Artist Diploma (AD) in the field of Trombone Performance (p. 515)
- Artist Diploma (AD) in the field of Trumpet Performance (p. 516)
- Artist Diploma (AD) in the field of Tuba Performance (p. 517)
- Artist Diploma (AD) in the field of Viola Performance (p. 518)
- Artist Diploma (AD) in the field of Violin Performance (p. 520)
- Doctor of Musical Arts (DMA) Degree in the field of Cello Performance (p. 565)
- Doctor of Musical Arts (DMA) Degree in the field of Clarinet Performance (p. 567)
- Doctor of Musical Arts (DMA) Degree in the field of Composition (p. 569)
- Doctor of Musical Arts (DMA) Degree in the field of Double Bass Performance (p. 572)
- Doctor of Musical Arts (DMA) Degree in the field of Flute Performance (p. 574)
- Doctor of Musical Arts (DMA) Degree in the field of Oboe Performance (p. 576)
- Doctor of Musical Arts (DMA) Degree in the field of Organ Performance (p. 578)
- Doctor of Musical Arts (DMA) Degree in the field of Percussion Performance (p. 580)
- Doctor of Musical Arts (DMA) Degree in the field of Piano Performance (p. 582)
- Doctor of Musical Arts (DMA) Degree in the field of Viola Performance (p. 584)
- Doctor of Musical Arts (DMA) Degree in the field of Violin Performance (p. 586)
- Doctor of Musical Arts (DMA) Degree in the field of Vocal Performance (p. 588)

**The Wiess School of Natural Sciences**

**Biosciences**

- Master of Arts (MA) Degree in the field of Biochemistry and Cell Biology (p. 182)
- Master of Business Administration (MBA) Degree / Master of Science in Bioscience and Health Policy (MSBHP) Degree (p. 183)
- Master of Business Administration (MBA) Degree / Master of Science in Environmental Analysis and Decision Making (MSEADM) Degree (p. 203)
- Master of Science (MS) Degree in the field of Biochemistry and Cell Biology (p. 204)
- Master of Science (MS) Degree in the field of Ecology and Evolutionary Biology (p. 189)
Master of Science in Environmental Analysis and Decision Making (MSEADM) Degree (p. 395)
Bachelor of Arts (BA) Degree / Master of Arts (MA) Degree / Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology (p. 164)
Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology (p. 179)
Doctor of Philosophy (PhD) Degree in the field of Ecology and Evolutionary Biology (p. 180)
Chemistry
Master of Arts (MA) Degree in the field of Chemistry†
Doctor of Philosophy (PhD) Degree in the field of Chemistry (p. 286)
Earth, Environmental and Planetary Sciences
Master of Business Administration (MBA) Degree / Master of Science in Subsurface Geoscience (MSSG) Degree (p. 205)
Master of Science (MS) Degree in the field of Earth Science (p. 356)
Master of Science in Subsurface Geoscience (MSSG) Degree (p. 728)
Doctor of Philosophy (PhD) Degree in the field of Earth Science (p. 355)
Mathematics
Master of Arts (MA) Degree in the field of Mathematics†
Doctor of Philosophy (PhD) Degree in the field of Mathematics (p. 475)
Physics and Astronomy
Master of Business Administration (MBA) Degree / Master of Science in Nanoscale Science (MSNS) Degree (p. 203)
Master of Business Administration (MBA) Degree / Master of Science in Space Studies (MSSpS) Degree (p. 204)
Master of Science (MS) Degree in the field of Physics†
Master of Science Teaching (MST) Degree (p. 693)
Master of Science in Nanoscale Science (MSNS) Degree (p. 645)
Master of Science in Space Studies (MSSpS) Degree (p. 703)
Doctor of Philosophy (PhD) Degree in the field of Physics (p. 667)

The School of Social Sciences
Anthropology
Master of Arts (MA) Degree in the field of Anthropology†
Doctor of Philosophy (PhD) Degree in the field of Anthropology (p. 123)
Economics
Master of Arts (MA) Degree in the field of Economics†
Master of Energy Economics (MEEcon) Degree (p. 364)
Doctor of Philosophy (PhD) Degree in the field of Economics (p. 361)
Doctor of Philosophy (PhD) Degree in the field of Economics and a Major Concentration in Economics and Finance (p. 363)
Global Affairs
Master of Arts in Global Affairs (MAGA) Degree (p. 415)
Linguistics
Master of Arts (MA) Degree in the field of Linguistics†
Doctor of Philosophy (PhD) Degree in the field of Linguistics (p. 457)†
Political Science
Master of Arts (MA) Degree in the field of Political Science†
Doctor of Philosophy (PhD) Degree in the field of Political Science (p. 674)
Psychology
Master of Arts (MA) Degree in the field of Psychology†
Doctor of Philosophy (PhD) Degree in the field of Psychology (p. 685)
Sociology
Master of Arts (MA) Degree in the field of Sociology†
Doctor of Philosophy (PhD) Degree in the field of Sociology (p. 700)

The Dean of Undergraduates
Center for Teaching Excellence
Certificate in Teaching and Learning (p. 737)
* Although students are not normally admitted to this degree program, graduate students may earn this degree as they work towards the PhD.
† This program is currently inactive and is not accepting applications for admission.

Graduate Certificates
Graduate certificate programs are formally recognized programs of study attesting to a level of competence or to the development of skills in a particular area or field. They are intended only for students already enrolled in graduate degree-granting programs at Rice, and are awarded when the student’s degree is conferred. Graduate certificates are offered both to recognize students who have achieved the defined level of competence or skill, as well as to encourage students to pursue additional areas of interest. A certificate comprises a specific grouping of courses and related activities (such as internships) that either:

1. form a coherent yet distinctive complement to a degree program, or
2. lead to the acquisition of specific skills or professional expertise

The certificate would include, but not be limited to the following requirements:

1. Minimum standards: twelve graduate (12) credits, or nine such (9) credits plus a graduate-level internship or other experiential learning opportunity. Each department or program is responsible for determining the number of credits and the courses that are acceptable for satisfaction of the certificate requirements.
   - All departments are eligible to submit proposals for the granting of certificates. Programs eligible to submit applications for certificates are restricted to faculty-based centers, institutes or other consortia reporting directly to one or more of the deans of the university or the vice provost of research.
   - All courses counting toward the certificate must be taken on an S/U basis. Courses taken for a letter grade must be completed with an overall GPA of 2.67 (B-) or better.
   - No more than one-third of the credit hours required for the certificate may be transfer credit.
   - No more than one-third of the credit hours required for the certificate may be transfer credit.
   - Students must obtain the approval of their director of graduate studies to apply for a certificate.
2. A certificate program is not intended to substitute for a graduate degree but may be taken by graduate students to complement their graduate program.

3. Multiple certificates: Students may acquire more than one certificate provided that the credits in each certificate are unique and non-redundant with those of any other certificate.

Additional information on graduate certificates can be found here (http://professor.rice.edu/uploadedFiles/Professor/Faculty_Senate/Graduate%20Certificate%20guidelines%2011-12-2014.pdf).

Graduate Program Major Concentrations

A graduate program concentration, otherwise known as a major concentration, is a formally recognized subfield of study within a discipline offered in a graduate program (masters or doctorate-level), and it represents a coordinated set of courses which emphasize a subfield within the graduate program. The major concentration indicates the student's focus according to research interests and/or professional goals.

Students must apply for and obtain the approval of their departmental Director of Graduate Studies or Department Chair to declare a major concentration. With departmental permission, students may apply for more than one major concentration for each graduate degree earned, assuming the program has multiple concentrations. A major concentration is available only to students in the graduate program within which the concentration is administered.

Non-Traditional Coursework

Courses tailored for individual students provide a valuable opportunity for them to pursue an academic or professional interest under the supervision of a Rice faculty member. Such courses are typically titled as independent study or research, directed reading, or internships. Although the organization of these courses is quite variable, they are subject to the same basic requirements as other course offerings. In particular:

- The subject matter and intellectual level of the course must be appropriate for Rice.
- The instructor of record must hold a regular faculty appointment at Rice. This instructor is responsible for submitting the final grade, in consultation with the student's immediate supervisor, if appropriate.
- The course must have a written syllabus that meets published Rice Syllabus Standards (p. 95). In addition, the syllabus must include a description of anticipated activities and topical content.
- Credit hours assigned are subject to the same amount-of-work considerations as other courses. Credit hours will be awarded in accordance with the Rice credit hour guidelines (http://registrar.rice.edu/facstaff/contact_hours) and fixed at the time of registration.
- All Academic Calendar and Registrar deadlines for registration, add/drop, completion of course work, and grade submission must be met.
ACADEMIC POLICIES AND PROCEDURES

- Academic Calendar (https://registrar.rice.edu/calendars)
- Admission (p. 55)
- All Graduate Students (p. 55)
- Doctoral Degrees (p. 64)
- Diploma Programs (p. 66)
- Non-Thesis Master’s Degrees (p. 66)
- Thesis Master’s Degrees (p. 67)

Admission

Graduate study is open to a limited number of extremely well-qualified students with a substantial background in their proposed field of study (this usually, though not always, means an undergraduate major in the field). Each department determines whether applicants have enough preparation to enter a given program, emphasizing the quality of their preparation rather than the particular academic program they completed or the credits they earned.

Admittance to a Rice University graduate-degree program, with the exception of those in the School of Music, requires a baccalaureate degree from a regionally accredited U.S. institution or an international institution officially recognized by that country’s Ministry of Education or its equivalent as determined by the Office of Graduate and Postdoctoral Studies. For the Shepherd School of Music, the equivalent to the baccalaureate degree will be determined by the school’s graduate committee.

Applicants for admission to graduate study should either contact the appropriate department for application forms and relevant information about the program or visit the department’s website for online application information. The Graduate Studies website (http://graduate.rice.edu) also has links to the graduate departments’ websites.

Application Process

An application for graduate study should include the completed application form, the application fee, transcript(s), recommendations, and writing samples, if required. Some departments require scores on the aptitude portion of the Graduate Record Examination (GRE) or the Graduate Management Admission Test (GMAT) and an appropriate advanced test. The ETS school code for Rice is 6609; in addition, applicants should send their test scores directly to the admitting department. See individual departmental listings for specific requirement information.

To make sure scores are available when admission decisions normally are made, applicants should take the GRE by the December before the fall for which they are applying. Application deadlines vary by department and degree program. In general, these occur between December and February for fall semester admission, and departments may occasionally consider late applications. Some departments will also accept spring applications. See individual departmental websites for specific information regarding application deadlines.

Admission depends on students’ previous academic records, available test scores, and letters of reference from scholars under whom they have studied. Writing samples, portfolios, statements of purpose, and work experience may be evaluated as part of the admissions decision. In general, applicants should have at least a 3.00 (B) grade point average, or the equivalent, in undergraduate work. Applicants who are foreign nationals or whose native language is not English must take either the TOEFL or IELTS test and must score at least 90 on the iBT TOEFL or at least 600 on the paper-based TOEFL. For those students who choose to take the IELTS in lieu of TOEFL, the minimum score is 7. The TOEFL school code for Rice is 6609. The TOEFL and IELTS are not necessary for an international student who has received a degree from a university in which English is the official language of communication. Waiver of the TOEFL and IELTS test may be requested by the admitting department if the department deems that the student has sufficient English communication skills to be successful in their degree program. If a student does not meet the minimum English language requirement above, then a formal request must be submitted to the Office of Graduate and Postdoctoral Studies by the graduate program. Letters of endorsement should be addressed to the dean of graduate and postdoctoral studies.

Graduate students seeking to transfer to another graduate department at Rice may do so after being admitted to the new degree program and being released from their current department. A student is not eligible to return to any Rice graduate program following a dismissal. Students previously on probation must petition the dean of graduate and postdoctoral studies for admission into any graduate program, regardless of their current enrollment status.

Regulations and Procedures for All Graduate Students

Academic and Judicial Discipline

Academic Probation

Graduate students are placed on academic probationary status by the Office of Graduate and Postdoctoral Studies if their cumulative grade point average falls below 2.67 or their semester GPA falls below 2.33. The period of probation extends to the end of the next semester in which the student is enrolled. If that probationary semester results in cumulative grade point average below 2.67 or semester grade point average below 2.33, the student will be immediately dismissed without further warning. As a courtesy, students will be notified of their probationary status once final grades have been received and posted to their records. S/U grades cannot be used to end probationary status for low GPA.

A degree program can define stricter standards by publishing those expectations in its graduate student handbook. A program can dismiss a student without a probationary semester by faculty vote.

Deadlines

Students must observe all deadlines listed in the Academic Calendar (https://registrar.rice.edu/calendars) and the General Announcements.

Dismissal

The two most common grounds for dismissal of a graduate student are (1) inadequate academic progress and (2) a disciplinary violation. The latter is discussed in detail under Disciplinary Probation, Suspension and Expulsion (p. 56). The following relates to academic progress.

Graduate programs must provide students upon entry to the program with detailed requirements, deadlines, and other program policies. Students are then responsible for meeting program and university requirements in their program of education. A student who is failing to
meet departmental or university requirements, such as failing to meet grade requirements, failing to pass required examinations by the required time, or failing to advance to candidacy or defend her or his thesis within the required time, is subject to dismissal without further warning.

When a student is judged not to be making adequate academic progress, he or she must be warned in writing of the possibility of dismissal and given clear information about what must be done within a specified time period to alleviate the problem. These expectations must be reasonable and consistent with expectations held for all students similarly situated in the program. If the student does not meet the stated requirements within the time frame specified, he or she will be dismissed by the graduate program. A student is not eligible to return to Rice following a dismissal.

It is difficult to give a precise and general definition of “adequate academic progress” for graduate students, due to the variation in requirements among different graduate programs. Nevertheless, some general principles do apply. For example, most graduate programs consist of two stages. The first stage, preceding candidacy, typically consists of explicit requirements and milestones, such as course requirements, exams, research projects, and the like. In this stage, adequate academic progress typically means compliance with the requirements and milestones of the program, as well as research progress when applicable. The second stage, post-candidacy, is often referred to as “all but dissertation” (ABD). In this stage, graduate students are expected to conduct research and write and defend their theses. As the second stage typically lacks explicit intermediate milestones, it is harder to assess academic progress during this stage. It is extremely important, therefore, for graduate programs to make their expectations explicit for post-candidacy graduate students.

Post-candidacy graduate students often enroll only in research courses. Such courses can offer standard letter grades or satisfactory/unsatisfactory (S/U) grades. Grading mode, however, must be uniform within a section of a research course. Thus, all students in such a section should receive letter grades or all should receive S/U grades.

Graduate programs must establish mechanisms for tracking, reviewing, and documenting academic progress of graduate students on an ongoing basis and must provide graduate students a written assessment of their academic progress at least annually. In some graduate programs, this ongoing progress review is carried out by a student’s thesis committee, while in others it is carried out by a standing faculty committee. Although a student’s supervisor plays an important role in reviewing the student’s academic progress, the responsibility for conducting the review process lies with the program and requires the involvement of additional faculty members in the program. For graduate students who are primarily engaged in coursework, for example, professional master’s students, the transcript is an adequate form of written assessment.

Dismissal of a graduate student requires that the student be notified of his/her dismissal from the graduate program. Such a notice is distinct from any earlier warning, which lets the student know of the possibility of dismissal. All dismissal notices, as well as warnings of possible dismissal, must be in writing, with a copy sent to the Office of Graduate and Postdoctoral Studies. Email communication is considered to be “in writing”. (Academic units should archive copies of all email communications pertaining to student dismissal.)

Because of the serious consequences of dismissal from a graduate program, dismissed students must receive a 15-day notice of the dismissal. Such a notice may precede the trigger for the dismissal. For example, a program can notify a student 15 days before an examination that failure to pass the examination with a certain minimal grade would result in dismissal. In general, dismissal should not take effect during a semester in which the student is enrolled. Dismissals that take effect during a semester are exceptional and must be approved by the Dean of Graduate and Postdoctoral Studies. A dismissal will be held in abeyance until the petition and appeal process is concluded, as students may petition for a dismissal to be revoked as described in the Dispute Resolution section (p. 81).

Disciplinary Probation, Suspension and Expulsion

The Code of Student Conduct (p. 81) applies to all Rice students and applies to conduct both on and off campus. The Office of Student Judicial Programs may sanction students, including implementing disciplinary probation or suspension or expulsion for violations of the Code of Student Conduct or the Honor Code. Students who have been expelled, who are serving a suspension, who are under investigation for disciplinary violations, or who have Code of Conduct or Honor Code proceedings pending against them may not receive their degree even if they have met all academic requirements for graduation. Students who are suspended or expelled must leave the university within the time frame specified by Student Judicial Programs, generally 48 hours of being informed of the decision, though in cases of unusual hardship, Student Judicial Programs may extend the deadline. Any tuition refund will be calculated from the official date of suspension or expulsion based on the refund schedule noted in the Academic Calendar, published by the Office of the Registrar. A grade of “W” will be awarded to all enrolled courses regardless of when the suspension or expulsion began. Expelled students will have the expulsion noted on their transcript.

While on disciplinary probation or suspension, students may not run for or hold any elective or appointed office in any official Rice organization. Participation in student activities on and off campus and use of Rice facilities, including, but not limited to, the student center, the colleges, the playing field, the recreation center, and the computer labs, are limited to enrolled students.

Students seeking readmission after a suspension for Honor Code or Code of Conduct violations or other nonacademic action should submit a petition in writing to the Office of Student Judicial Programs by emailing SJP@rice.edu. That petition should include information on what the student did while away from Rice, including any schooling or employment; how the student met any requirements described by Rice at the time of separation; what the student did to address any issues leading to the separation; and what the student learned from the separation. Once approved by Student Judicial Programs, the petition is forwarded to the dean of graduate and postdoctoral studies for final readmission approval and action.

Termination of Financial Support

Graduate students often receive financial support in the form of graduate stipend and tuition waivers. The termination of financial support to a graduate student, while not equivalent to dismissal, is a serious action that could deprive students of their financial ability to continue graduate studies. Consequently, the procedure to terminate a student’s financial support before the end of the financial-support commitment period should be analogous to those for dismissal as described above. Therefore, termination of financial support of a graduate student requires that the student be notified of the termination 15 days prior to the cancellation of support. Such a notice is distinct from any earlier warning, which lets the student know of the possibility of support termination. All termination of support notices, as well as warnings of possible
termination, must be in writing, with a copy sent to the Office of Graduate and Postdoctoral Studies.

Active participation in required academic activities (for example, laboratory work in certain science and engineering programs) is a basic condition for continued financial support. Students who are absent from such required activities for contiguous two weeks without permission and without mitigating circumstances may be subject to termination of financial support. In addition, they may be judged not to be making adequate academic progress. Thus, if absences have to occur, they must be prearranged with the student’s supervisor, except for medical and family emergencies, in which cases timely notification is required. Graduate advisors and programs should be aware of unexplained student absences and must provide immediate written warnings when students are not present and carrying out required academic activities for more than one week.

When the source of a graduate stipend is an externally sponsored research grant, the principal investigator is responsible for certifying that compensation paid to those who are supported by the grant faithfully corresponds to actual effort in carrying out the sponsored research. This process is referred to as “effort certification.” The requirements above to give students warnings and notices before dismissal or termination of stipend are separate and independent of the effort-certification requirement. If a principal investigator determines that a graduate student is not contributing to the sponsored project that is the source of the student’s stipend, then the charge for the affected pay period must be reallocated to another fund by the program.

**Degree Revocation**
Rice University reserves the right to revoke any degrees granted. A degree awarded may be revoked if the university becomes aware that the degree should not have been granted, such as a degree that was obtained by violating the Honor Code or Code of Student Conduct or by deception, misrepresentation, falsification of records, academic misconduct, research misconduct, or if the work submitted in fulfillment of — and indispensable to — the requirements for the degree are determined to fail to meet the academic standards that were in effect at the time the degree was awarded. Notification of the date of revocation will appear on the student’s transcript, and the student will be asked to return the diploma. The Provost receives all recommendations for revocation of degrees and, after consideration and review, forwards to the President any recommendations deemed to be warranted. The Provost may also initiate and forward to the President his or her own recommendation for a degree revocation. The President will consider all recommendations forwarded by the Provost and effectuate those he or she determines to be warranted. Procedures governing degree revocations may be obtained from the offices of the Registrar, Provost, or President.

The university also reserves the right to withdraw a degree to correct an administrative error, such as an incorrectly listed degree, or in a situation where it was found that a student had not actually fulfilled all graduation requirements.

**Academic Regulations and Good Standing**

**Good Standing**
Graduate students must meet the minimum deadlines and course or grade requirements detailed on this page and the Grades page to remain in good standing and to graduate from the university. Graduate students must meet other requirements specifically mandated as essential for good standing by the graduate student handbook published by the relevant department or program. Failure to remain in good standing may result in probation, separation from the university, or dismissal.

**Enrollment Requirements**
PhD and DMA students must complete at least four full fall and/or spring semesters in full-time study at Rice University. The minimum enrollment requirements for all thesis master’s programs and non-thesis master’s programs in Business, Architecture, and Music is one fall or spring semester of full-time graduate study. For non-thesis master’s programs outside of Business, Architecture, and Music, programs the minimum enrollment requirement is one fall or spring semester in full-time or part-time graduate study.

**Minimum Credit Hours**
Students must register for at least three credit hours in a semester.

**Continuous Enrollment**
Students must maintain continuous program involvement and enrollment during fall and spring semesters unless granted an official leave of absence. See Leaves, Interruptions of Study and Withdrawals for more information.

**Full-Time Study**
Semester course load for full-time students is nine hours or more as required by specific departments for the fall and spring semesters. Full-time enrollment during the summer semester is at least six hours. Graduate programs at Rice generally require full-time study. For information about dropping below full-time or changing to part-time status, see below.

**Part-Time Study**
Part-time students must register for at least three hours in a semester. All time boundary and degree requirements apply to part-time students. Students who wish to become part-time time in the upcoming semester must obtain written permission from the academic department before the semester begins. Students who wish to obtain part-time status after the semester has started must also obtain the approval of the Office of Graduate and Postdoctoral Studies. In order for students to receive the part-time tuition rate, they must obtain verification of part-time approval from the Office of the Registrar by the end of the second week of classes. Part-time students are not eligible to receive fellowships, assistantship aid, tuition scholarships, or reduced rate tuition from Rice. See also Financial Aid (p. 71). International students should consult the Office of International Students and Scholars about the possible impact on their visa status of dropping below full-time.

**Time to Degree (All Degrees)**
PhD and DMA students are required to complete their program, including thesis defense, within 10 years of initial enrollment in the degree program. All master’s students are required to complete their program, including thesis defense, within five years of initial enrollment. In both cases, students have a limit of six additional months from the date of defense to submit their theses to the Office of Graduate and Postdoctoral Studies. These time boundaries include any period in which the student was not enrolled or enrolled part time, for whatever reason. Failure to meet any university time to degree deadline may result in the student not being able to continue in their degree program.
Standard of Conduct
Students are expected to live up to the high standards Rice sets for its community members, as described in the Code of Student Conduct (p. 81). Graduate students should be in compliance with the Code of Student Conduct at all times and not have holds from Student Judicial Programs or other offices.

Research and Scholarly Activities
Research and other scholarly activities of all students must conform to Rice University policies. It is recommended that students familiarize themselves with these policies before embarking on research or other scholarly activities. Particularly pertinent to students are policy 324-00 (Research Misconduct) (http://professor.rice.edu/uploadedFiles/Professor/Independent_Pages/Policies/Rice_University_Policy_324.pdf), policy 326-98 (Human Health and Safety in the Performance of Research) (http://professor.rice.edu/Standard.aspx?id=301), policy 333 (Patent and Software Policies) (http://www.professor.rice.edu/professor/Patent_and_Software_Policies.asp?SnID=4), and policy 334 (Copyright Policy) (http://professor.rice.edu/IndependentPage.aspx?id=2757).

Non-course Training
Within their first semester of enrollment, graduate students are expected to complete some non-course training:

- Orientation – New graduate students are expected to attend all orientation events.
- Preventing Sexual Harassment – New graduate students are required to complete this online training.
- Responsible Conduct of Research – All graduate students are required to complete this online training. Students in the MBA and MLS programs are exempt from this training.
- Lab Safety Training - Lab Safety training is mandatory for all new students in the School of Engineering; in the School of Natural Science, with the exception of the Mathematics department; and any student outside those schools who will be working in a laboratory at Rice. This training is provided through the Office of Environmental Health and Safety (http://safety.rice.edu).

Applicable Academic Graduation Requirements
The General Announcements (GA) is the official Rice curriculum. In the event that there is a discrepancy between the GA and any other websites or publications, the GA shall prevail as the authoritative source.

Students enrolled in graduate programs at Rice may decide whether to follow the graduation general and degree program requirements in effect when they first matriculated at Rice or those in effect when they graduate. If a student has been separated from the university due to a voluntary or involuntary withdrawal, students must graduate under the regulations in effect at the time of their last readmission or those in effect when they graduate unless granted an exception by the dean of graduate and postdoctoral studies. An archive of General Announcements is available online here (p. 1585).

Graduate program degree requirements may vary from year to year during the period between a student’s matriculation and graduation. The graduate program may, at its discretion, make any of these variations available to a student for completion of the degree requirements. If a new academic credential is created during the student’s time at Rice, the new program will be available to the student as if the program appeared in the General Announcements at the time of matriculation.

Application for Degree
All students must complete and submit an Application for Degree Form available in ESTHER. This form is required for all students who plan to complete their degree requirements at the end of the fall or spring semester. A late fee will be assessed for applying after the deadline (please consult the semester-specific Academic Calendar (https://registrar.rice.edu/calendars) for deadline).

Grades
See also Faculty Grading Guidelines (p. 93) and Syllabus Standards (p. 95).

Minimum GPA
To remain in good standing, graduate students must maintain a cumulative grade point average (GPA) at or above the 2.67 minimum institutional threshold and any department or program thresholds. The term GPA must be at or above the 2.33 institutional threshold and any additional department or program thresholds.

In addition to the minimum institutional cumulative GPA requirement of 2.67, students must achieve a 2.67 GPA among courses required for their chosen program of study to graduate. Each department or program can identify and define stricter standards than the institutional cumulative 2.67 minimum and institutional term 2.33 minimum, and should communicate these requirements in their General Announcements Programs of Study listing.

Pass/Fail Option
Graduate students may not take a course pass/fail within their graduate degree requirements. Courses outside of their degree requirements must be designated as pass/fail no later than the end of the 10th week of classes; however, a pass/fail course may later be converted to a graded course by submitting the proper online form with the Office of the Registrar. Students should adhere to the applicable Pass/Fail deadlines, as stated in the Academic Calendar (https://registrar.rice.edu/calendars).

Registration During Summer Sessions
Currently enrolled Rice students should register for summer courses online via ESTHER (https://esther.rice.edu) as per normal registration processes and procedures. Rice students should be aware that the registration and payment deadlines do differ, depending on the summer session, and should familiarize themselves with the Academic Calendar (https://registrar.rice.edu/calendars). Summer courses that do not generate enrollments sufficient to cover their costs may be canceled prior to the first day of class. Please see the Graduate Student Financial Aid (p. 71) for information regarding course tuition and financial aid.

Pass/Fail During Summer Sessions
Currently enrolled Rice students can designate a summer course as Pass/Fail during the summer sessions, but can do so only by visiting the Office of the Registrar in person and completing a Pass/Fail Designation form. Similarly, conversions of summer Pass/Fail grades can only be done via paper form at the Office of the Registrar. Students should adhere to the applicable Pass/Fail deadlines, as stated in the Academic Calendar (https://registrar.rice.edu/calendars).
Satisfactory/Unsatisfactory

Satisfactory/unsatisfactory courses are those that do not use traditional grading procedures and instead assign a grade of S or U rather than a letter grade. With S/U courses, instructors report the S if the student successfully completes the course, or the U if they have not. Students should be aware that while a grade of S or U does not affect their grade point average, no credit will be awarded if a grade of U is received. Courses with a grade of S will count towards total credits earned. Visiting Post Baccalaureates cannot take courses on a satisfactory/unsatisfactory grading basis.

Audit

Students have the option of auditing courses. For auditing students, instructors report either the AUD or the NC grade symbol, the AUD if the student met the audit requirements of the class, or the NC if they have not. There are no credit hours associated with audited courses, and auditing a course does not affect a student's GPA. Request to audit a class or to change from audit to credit or vice versa must be done by the dates and deadlines documented in the posted Academic Calendar (https://registrar.rice.edu/calendars). (See Grade Designations AUD (p. 59) and NC (p. 59) below.)

Grade Designations

Instructors are required to report a grade for all students whose names appear on the class roster. They grade their students using the following conventional symbols: A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F.

Grade Points and Grade Point Average Calculation

To compute grade point average, letter grades are assigned numeric values as follows:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Numeric Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.33¹</td>
</tr>
<tr>
<td>A</td>
<td>4.00</td>
</tr>
<tr>
<td>A-</td>
<td>3.67</td>
</tr>
<tr>
<td>B+</td>
<td>3.33</td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
</tr>
<tr>
<td>B-</td>
<td>2.67</td>
</tr>
<tr>
<td>C+</td>
<td>2.33</td>
</tr>
<tr>
<td>C</td>
<td>2.00</td>
</tr>
<tr>
<td>C-</td>
<td>1.67</td>
</tr>
<tr>
<td>D+</td>
<td>1.33</td>
</tr>
<tr>
<td>D</td>
<td>1.00</td>
</tr>
</tbody>
</table>

¹ The highest possible grade point average is 5.00.
Voluntary separations include leaves of absence (generally one to two semesters in length) and withdrawals (medical and nonmedical). Students on a leave of absence are not required to petition for reinstatement or readmission processes. They do, however, count against time to degree.

Leaves, Interruptions of Study, and Withdrawals

There are two types of interruptions in study: short-term releases and separations. Both releases and separations may be either voluntary or involuntary. Separations are periods of nonenrollment and require specific reinstatement or readmission processes.

Short-Term Medical and Parental Release

There are two types of short-term releases: medical and parental. Short-term releases can be up to six weeks in length.

If a graduate student cannot fulfill the duties of his or her appointment due to a medical emergency or the adoption or birth of a child, the student may be temporarily released from their academic responsibilities.

Enrollment and stipend support may be continued for up to six weeks or until the appointment expires (whichever occurs first). A student may apply for short-term medical or parental release at any time during the semester. Complete guidelines for obtaining a medical or parental release are available at http://graduate.rice.edu/leaves. Students taking a voluntary short-term release should make arrangements with their advisor and instructors to complete their academic responsibilities in a timely way.

The university may also insist on a student’s short-term medical release if, in the judgment of the dean of graduate and postdoctoral studies, or her/his designee, the student has a serious medical or psychological condition that the student cannot effectively address while enrolled or which is likely to be severely exacerbated by the Rice academic and/or living environment.

Students may not do degree work or work involving Rice faculty or facilities while on short-term medical release. Students returning from a short-term medical release will be required to provide documentation that they are able to return to their studies.

Voluntary Separations

Voluntary separations include leaves of absence (generally one to two semesters in length) and withdrawals (medical and nonmedical). Students on a leave of absence are not required to petition for readmission. Withdrawn students are eligible to reapply. If students voluntarily withdraw for medical or psychological/psychiatric reasons, however, they must meet the readmission conditions for a medical or involuntary withdrawal.

Leave of Absence

A leave of absence allows a student to take time off from their studies and later resume study without having to petition for readmission to the university. Normally, students may take a leave of absence for no more than two consecutive semesters. The semesters that a student is on leave do not count against the time to candidacy or the time to defense. They do, however, count against time to degree.

A leave of absence is granted only by the Office of Graduate and Postdoctoral Studies on the recommendation of the department chair and only to graduate students in good standing with the university. Students must obtain approval for a leave before the beginning of the academic semester in which the leave is taken. Leave requests, endorsed by the department, must be received in the Office of Graduate and Postdoctoral Studies prior to the first day of classes (see http://graduate.rice.edu/leaves/).

Medical Leave of Absence

Students who take a leave of absence for medical/health issues must submit documentation of treatment and demonstration of medical stability from their treating healthcare provider prior to returning from leave.

Students must pay a reinstatement fee of $125 on their return from an official leave.

Nonmedical Withdrawal and Readmission

Students who wish to withdraw from Rice during the semester, for any nonmedical reason, are to notify the chair of their academic department in writing (see Refund of Tuition and Fees (p. 78)). Failure to register before the end of the fourth week of classes without a leave of absence granted by the Office of Graduate and Postdoctoral Studies constitutes a de facto withdrawal.

Students who later wish to resume study after a voluntary or de facto withdrawal must petition for readmission to the university. Petitions must be submitted to the Office of Graduate and Postdoctoral Studies no later than August 1 for Fall, December 15 for Spring and April 1 for Summer readmissions. International students should apply earlier to ensure enough time to secure a new visa.

- The petition must include an academic plan devised in consultation with the student’s advisor, advising committee, or director of graduate studies (depending upon the graduate program’s advising structure). Academic plan consultations should be initiated at least 3 weeks prior to the petition due date.
- The petition should also include a statement, addressed to the dean of graduate and postdoctoral studies, as to why the student withdrew and would now like to be readmitted.
- Readmission requires the recommendation of the department chair and the approval of the dean of graduate and postdoctoral studies. Therefore the petition should be reviewed by the department chair and a written statement of recommendation should be submitted with the petition or emailed directly to the graduate office (graduate@rice.edu).

The semesters that a student is not enrolled do not count against the time to candidacy or the time to defense. They do, however, count against the time to degree. Readmitted students must pay a readmission fee of $350.
Further information is available by contacting the Office of Graduate and Postdoctoral Studies.

Medical Withdrawal and Readmission
Graduate students may request a medical withdrawal from the university by applying in writing to the Office of Graduate and Postdoctoral Studies at any time during the semester, up until the last day of classes; the withdrawal does not take effect until approved in writing. Email communication is considered to be “in writing”.

Students considering taking time off for personal reasons related to their wellbeing and mental health are encouraged to contact the graduate affairs manager or the Student Wellbeing Office (http://wellbeing.rice.edu) about the roadmap back to Rice. The Student Wellbeing Office serves as a liaison to the medical readmission process, during the separation process, as well as when students are ready to return.

Graduate students who wish to seek readmission following a medical withdrawal must submit to the Office of Graduate and Postdoctoral Studies a written petition for readmission no later than June 1 for the fall semester and November 1 for the spring semester, and April 1 for the summer semester.

• This petition must include documentation of treatment provided and demonstration of medical stability (usually six months); students may also be required to interview with the director of the Rice Counseling Center or Student Health Services or their designees.
• The petition should include a letter to the Dean stating why the student feels they are ready to return to the University, actions they have undertaken in the interim that could support their return, and specific plans for their follow up treatment in Houston (if applicable).
• The petition also must include an academic plan devised in consultation with the student’s advisor, advising committee, or director of graduate studies (depending upon the graduate program’s advising structure) and approved by the department chair. Academic plan consultations should be initiated at least three weeks prior to the petition due date.

Detailed petition requirements can be found on the Graduate and Postdoctoral Studies website.

Students who withdraw for psychological reasons within the last five weeks of a semester are strongly encouraged to focus on their wellbeing needs and will not be eligible to apply for immediate readmission the following semester. Students who withdraw for psychological reasons while enrolled during the summer session are not eligible to apply for immediate readmission in the fall.

The semesters that a student is not enrolled do not count against the time to candidacy or the time to defense. They do, however, count against the time to degree. Readmission requires the approval of the dean of graduate and postdoctoral studies, and readmitted students must pay a readmission fee of $350.

Further information is available by contacting the Office of Graduate and Postdoctoral Studies (https://graduate.rice.edu/contactus).

Involuntary Separation
Sometimes, the university will require a student to withdraw, which requires a specific readmission process. An involuntary separation may result from a disciplinary and/or a medical reason.

The university may insist on a student’s involuntary separation from the university if, in the judgment of the dean of graduate and postdoctoral studies or her/his designee, or, in the case of disciplinary action, of Student Judicial Programs, the student’s behavior includes, but is not limited to, the following:

• Poses a threat to the safety or welfare of him/herself or other members of the Rice community;
• Has a serious medical or a psychological condition that the student cannot effectively address while enrolled or that is likely to be severely exacerbated by the Rice academic and/or living environment;
• Demonstrates behavior that seriously interferes with the education of other members of the Rice community; behavior that violates the Rice Code of Student Conduct, the Rice Honor Code, the Rice Sexual Misconduct Policy, the Rice Weapons Policy; or other relevant policies, or behavior that otherwise requires disciplinary action;
• Is not able to continue functioning as a student.

An involuntary separation can be the result of an interim decision or a final decision. An interim decision is usually a summary process that may result in a temporary separation.

A final decision comes after a process that includes notification, opportunity to respond, and opportunity to appeal. It can result in a suspension (i.e. temporary separation) or in an expulsion (i.e. permanent separation), as well as other sanctions.

Readmission Following Involuntary Separation
Following an involuntary separation, graduate students who wish to seek readmission must submit a written petition for readmission to the Office of Graduate and Postdoctoral Studies no later than June 1 for the fall semester, November 1 for the spring semester, and April 1 for summer semester.

Students taking time off due to an involuntary withdrawal are encouraged to contact the graduate affairs manager or the Student Wellbeing Office (http://wellbeing.rice.edu) about the roadmap back to Rice. The Student Wellbeing Office serves as a liaison to the readmission process, during the separation process, as well as when students are ready to return.

• The petition should include a letter to the graduate dean stating why the student feels they are ready to return to the university and actions they have undertaken in the interim that could support their return.
• Petitions must also include an academic plan devised in consultation with the student’s advisor, advising committee, or director of graduate studies (depending upon the graduate program’s advising structure) and approved by the department chair. Academic plan consultations should be initiated at least three weeks prior to the petition due date.
• Petitions for return following an involuntary medical withdrawal must include documentation of treatment provided and demonstration of medical stability (usually six months); students may be required to interview with the director of the Rice Counseling Center or Student Health Services or their designees.
• Students involuntarily separated from the university for violations of the Code of Student Conduct or other disciplinary reasons, including honor code violations, must also submit the petition to the Office of Student Judicial Programs and receive approval prior to returning to the university or for the award of a degree (See Academic and Judicial Discipline (p. 55)). Students should refer to their separation letter for any additional requirements.
Students who are involuntarily separated from the university for psychological reasons within the last 5 weeks of either fall, spring, or summer terms are not be eligible to apply for readmission for the following term.

The semesters that a student is not enrolled do not count against the time to candidacy or the time to defense. They do, however, count against the time to degree. Readmission requires the approval of the dean of graduate and postdoctoral studies, and readmitted students must pay a readmission fee of $350.

Further information is available by contacting the Office of Graduate and Postdoctoral Studies (https://graduate.rice.edu/contactus).

**Resignation**

A student may resign from the university by notifying the dean of graduate and postdoctoral studies in writing. Resignation means the student is withdrawing, is no longer a student at Rice, and will not return to Rice. A resignation becomes effective when accepted by the dean of graduate and postdoctoral studies. In general, if a student is under investigation for a potential Code of Student Conduct (p. 81) violation or has charges pending under the Code, disciplinary proceedings will terminate upon acceptance of the resignation by the dean of graduate and postdoctoral studies. A student who resigns is not eligible to receive a degree from Rice, even if the student has otherwise met all of the requirements for the degree.

**Nonenrollment Restrictions**

Students may not do degree work at Rice or work involving Rice faculty or facilities during any period of nonenrollment, except during the period following successful oral defense prior to submission of the final thesis. All separated students must return their student ID to the Office of Graduate and Postdoctoral Studies. All university keys must be returned to the appropriate offices. Participation in student activities on and off campus and use of Rice facilities, including, but not limited to, the student center, the playing fields, the recreation center, and the computer labs, are limited to enrolled students.

Separated students are expected to be away from Rice during the term of the separation. If the student is employed by Rice at the time of separation, he or she must relinquish such employment or petition the Office of Graduate and Postdoctoral Studies (graduate@rice.edu) for written permission to continue the on-campus employment; separated students may not begin employment with Rice during the separation. Noncompliance with these requirements may delay or prevent readmission.

**Name Changes**

To comply with a number of government agencies’ reporting requirements, the university must record the name of each student who is a U.S. citizen as the student’s name appears on his or her Social Security card. Students who need to change their names on Rice University records and who are U.S. citizens must notify the Office of the Registrar and present a Social Security card, marriage license, divorce decree or court order, and picture identification when submitting the form. After the change is implemented, the name on the Rice University transcript will read as printed on the supporting document(s).

**Registration and Courses**

See also Academic Regulations (p. 57).

**Drop/Add**

During the first two weeks of classes, students may change their registration, add or drop courses without penalty. After the second week, the following conditions apply for adds and drops. Graduate students:

- May not add courses after the second week of classes, except in extenuating circumstances and with the approval of the Office of Graduate and Postdoctoral Studies (a $75 penalty fee per course will be assessed). The student’s request to add a course first must be supported and approved by the student’s advisor along with the course instructor and then forwarded to the Dean of Graduate and Postdoctoral Studies for consideration.
- May drop courses through the seventh week without penalty.
- May not drop courses after the end of the seventh week of classes, except in extenuating circumstances and with the final approval of the Office of Graduate and Postdoctoral Studies (a $75 penalty fee per course will be assessed). The student’s request to drop a course first must be supported and approved by the student’s advisor, the course instructor, the appropriate department chair, and the school dean. Afterward, it should be forwarded to the Dean of Graduate and Postdoctoral Studies for consideration. Students who receive approval to drop a course after the designated drop deadline will receive a grade of “W” for that course.

Graduate students that drop a class after the second week should keep in mind that there is no refund of tuition, assuming the student continues to be enrolled in at least one other class.

**Course Registration**

Currently enrolled students register in April for the fall semester and in November for the spring semester. Students are strongly encouraged to meet with their advisor to discuss their courses for the upcoming semester. Please see the Drop/Add section above for requirements for adding or dropping a course after the semester has begun.

**Course Numbering System**

Courses numbered 100-499 are generally considered undergraduate level, with the 100-299 sequence classified as lower-level (freshman/sophomore) and the 300-499 sequence classified as upper-level (junior/senior). Courses numbered 500 and above are generally considered graduate level. Enrolled students may, with departmental approval, take certain courses outside their designated level.

**Holds**

Registration, official transcripts, degree verification, and other administrative processes may be impacted by a hold on a student account. Students may consult the website of the Office of the Registrar (https://registrar.rice.edu/students/holds) to discover why a hold exists and how to resolve the issue. The Office of the Registrar cannot remove holds governed by another office or department.

**Repeated Courses**

Students may repeat courses previously taken, but the record of the first attempt (and grade) remains on the transcript, and both grades are included in term and cumulative grade point average calculations. In most cases, if students repeat courses previously passed, credit is awarded only once. For example, a student took HIST 117 and received a grade of B. The student then repeated HIST 117 and received a grade of A. Both grades—the A and B—appear on the transcript and are included in his/her GPA; however, he/she only receives three credits toward his/
her degree. On the transcript, a repeated course is indicated by one of the following values:

- I – Included in GPA and earned hours
- A – Included in GPA, but excluded from earned hours
- E – Excluded from both GPA and earned hours

Some Rice University courses may be repeated for credit. They are specifically noted in the Course Offerings each semester. If a course may be repeated for credit, each grade appears on the permanent record and is included in the grade point average.

If students repeat courses for which they have received either advanced placement or transfer credit, credit will not be counted. Nor can credit be received twice for students transferring courses that repeat previous enrollment at Rice.

Students may not receive credit twice for cross-listed, equivalent, or graduate/undergraduate equivalency courses taken at the same time. If the course is not repeatable, students may not receive credit for cross-listed, equivalent, or graduate/undergraduate equivalency courses taken in different semesters.

Final Examinations in Graduate Courses

Graduate courses, especially those with significant undergraduate student enrollment, should follow the guidelines for undergraduate courses (see Final Examinations section) regarding scheduling of projects, papers, and finals during the last weeks of classes, reading periods, and final exam periods. However, instructors have the discretion to modify those guidelines as appropriate for their specific courses. Such modifications and the final schedule must be made clear at the beginning of the semester.

Transfer Credit

Transfer Credit Guidelines

Courses taken at another accredited college or university are not automatically approved for transfer credit. Transfer credit is only granted with the approval of the student’s major department. Transfer credits are subject to the following restrictions:

- Courses must be from a regionally accredited U.S. institution or an international institution officially recognized by that country’s Ministry of Education or equivalent.
- The course must be recorded on an official transcript sent directly from the original institution to Rice or hand-delivered by the student in an official sealed envelope.
- The minimum grade for transferred credits is a C- or equivalent. Some departments or programs may set a higher standard.
- The major department must approve the credits.

Students seeking transfer credit must submit an approved Graduate Request for Transfer Credit form to the Office of the Registrar.

Please note that all transferable credits will be converted to semester hours. In no instance will a course transfer in with credit greater than the semester hour equivalent originally earned for the course work.

Coursework Taken While an Undergraduate at Rice

Departments may consider counting courses taken by a student while an undergraduate at Rice as credit toward a master’s degree. The following guidelines must be followed:

- The courses must be chosen from those that normally satisfy requirements for the advanced degree
- No course can be used simultaneously to satisfy both an undergraduate and a graduate degree requirement
- Coursework taken as an undergraduate will not be converted to indicate a graduate level in the student’s academic history until after the bachelor’s degree is awarded
- Coursework taken as an undergraduate does not indicate the student’s matriculation term for the graduate program—the matriculation term will be the term the student officially enters the program as a graduate student after completing all undergraduate requirements
- Regardless of the number of graduate courses taken at the undergraduate level, a student must spend at least one semester (fall or spring) studying at Rice as a graduate student

Rice Undergraduates Entering Graduate Professional Degree Program

Rice undergraduate students who wish to enter a professional master’s degree program should apply for admission through the normal procedures and in accordance with the normal timetables for application to such programs. While the GRE requirement may be waived in these cases, the authority for the waiver rests with the graduate program. Graduate programs may consider counting courses taken by the students while an undergraduate as credit toward the degree, if the credit was not already counted towards the undergraduate degree. With these requirements, the student will complete a combined minimum of 150 semester hours for the baccalaureate and masters degrees, including a minimum of 30 graduate semester hours.

The graduate program has authority to accept or reject a particular graduate level course to meet the degree requirements for the master’s degree. For more information, see “Coursework Taken While an Undergraduate at Rice” in the Registration (p. 62) section. In addition, the graduate program also must include in the offer letter a list of those courses taken by the student as an undergraduate that the graduate program also must include in the offer letter to such programs. While the GRE requirement may be waived in these cases, the authority for the waiver rests with the graduate program. Transfer from Research/Thesis to a Professional/Non-thesis Program

Students who wish to change from a thesis program to a professional degree program must petition their department in writing. Upon

2017-2018 General Announcements
recommendation of the department and approval by the dean's office, the request is sent to the Office of Graduate and Postdoctoral Studies for consideration and final approval. If approved, students who received tuition waivers while enrolled in the thesis program will be expected to repay the tuition before their professional degrees are awarded.

Transferring from Non-Thesis to Research/Thesis Program Within the Department
Non-thesis degree programs terminate when the degree is awarded. Students who wish to continue graduate study after completing a non-thesis degree program must apply for admission into the research/thesis degree program. Upon recommendation of the department, the request for admission is sent to the Office of Graduate and Postdoctoral Studies for consideration and final approval. Some students may become eligible for tuition waivers in subsequent semesters. Tuition waivers will not be awarded retroactively.

Transferring to Master's Program (Non-thesis or Thesis) as a Result of Dismissal from Doctoral Program
A graduate program may offer a non-thesis or thesis master's opportunity to students who are being dismissed from a doctoral program. If the student accepts the master's opportunity, the graduate program would follow internal procedures and notify the Office of Graduate and Postdoctoral Studies of the change in degree program. Tuition will not be charged retroactively for courses already completed. If the student declines the master's opportunity, the student will be dismissed without a degree awarded. Students who are dismissed from a doctoral program are not eligible for admission to other doctoral programs at Rice.

Transferring Departments
Students who wish to change their graduate program to a graduate program in another department must apply for admission to the new department's degree program, stating that they are currently a graduate student in another program at Rice. The application must be vetted through the regular admissions process. In addition to admission to the new department, applications for a transfer must also be approved by the Dean of Graduate and Postdoctoral Studies.

Second Degree Programs
Graduate students may enroll in a second degree program only with the approval of their home academic department.

Veterans Information
Qualified veterans, dependents of deceased or disabled veterans whose death or disability is a direct result of their military service, or dependents in receipt of transferred benefits from a veteran may be eligible for VA educational benefits under one of the following programs while attending Rice University:

• Chapter 30: Montgomery G.I. Bill-Active Duty/Discharged
• Chapter 31: Vocational Rehabilitation
• Chapter 32: Veterans Educational Assistance Program (VEAP)
• Chapter 33: Post 9/11 G.I. Bill
• Chapter 35: Dependents Education Assistance
• Chapter 1606: Montgomery G.I. Bill-Selected Reserve
• Chapter 1607: Reserve Education Assistance Program (REAP)

At Rice University, veterans' benefits are managed through the Office of the Registrar. This office assists all veterans and their dependents who wish to receive Veterans Administration (VA) educational benefits.

Please see http://registrar.rice.edu/students/veterans/ regarding the documentation required to obtain educational allowances from the VA.

Veterans who are planning to attend the university should contact Rice University's Veterans Affairs Representative (registrar@rice.edu) at least two months before the date of entry. Such time is required to expedite the processing of paperwork for educational allowances from the VA.

For certification of benefits, students should have an enrollment of at least half time (4.5 credits for graduate students).

For additional information regarding other veterans' educational programs, contact the Office of the Registrar at 713-348-4999 or registrar@rice.edu.

Regulations and Procedures for Doctoral Degrees
University Graduation Requirements for Doctoral Degrees
Candidates receive the PhD degree after successfully completing:

• A minimum of 90 graduate semester credit hours of study at the 500-level and above (including thesis credit hours).
• An original investigation that is formalized in an approved thesis.
• As final evidence of preparation for degree, a public oral examination after submitting the approved thesis to the Office of Graduate and Postdoctoral Studies.

Candidacy, Oral Examinations, and Thesis

Time Boundaries for Candidacy and Defense
Time To Candidacy
PhD and DMA students must be approved for candidacy before the beginning of the 9th semester of their enrollment at Rice.

Time to Defense
PhD and DMA students must defend their theses before the end of the 16th semester of their enrollment at Rice.

Time to Thesis Submission
Candidates who successfully pass the oral examination in defense of the thesis must submit the thesis to the Office of Graduate and Postdoctoral Studies no later than six months from the date of the examination. See Candidacy, Oral Examinations and Thesis (p. 65).

Time to Degree
PhD and DMA students are required to complete their program, including thesis defense, within 10 years of initial enrollment in the degree program. This time boundary includes any period in which the student was not enrolled or enrolled part time, for whatever reason. Failure to meet any university time to degree deadline may result in the student not being able to continue in their degree program.
Approval of Candidacy

Candidacy marks a midpoint in the course of graduate education. Achieving candidacy for the PhD/DMA signals that a graduate student has:

1. completed required course work,
2. passed required exams to demonstrate his/her comprehensive grasp of the subject area,
3. demonstrated the ability for clear oral and written communication, and
4. shown the ability to carry on scholarly work in his/her subject area.

Requirements for achieving candidacy for the doctoral degree are determined at the departmental (p. 106) level. The department is also authorized to grant waivers or substitutions of specific course requirements, but not to make exceptions to university requirements.

Students enrolled in research degree programs submit their petitions for candidacy for a doctoral degree through the department chair to the dean of graduate and postdoctoral studies. In the petition sent to the dean, the department chair identifies the student's thesis director, recommends a thesis committee, certifies that the applicant has fulfilled the departmental requirements, and provides a course transcript as evidence that work completed within the department is of high quality.

PhD/DMA students must be approved for candidacy before the beginning of the ninth semester of their enrollment at Rice. However, in order to qualify for a given commencement, they must meet the submission deadline for that commencement per the Academic Calendar (http://registrar.rice.edu/calendars). This date falls at the end of October for December degree conferral and the end of February for May degree conferral.

Students who are unable to meet the university time boundary for candidacy may petition the dean of graduate and postdoctoral studies or his/her designee for an extension of time to candidacy. Students who exceed their time boundaries without an approved extension request will be charged a fee of $125 for reinstatement to good standing. Students who exceed their time boundaries and do not receive an extension to their time to candidacy are subject to immediate dismissal by the Office of Graduate and Postdoctoral Studies.

Thesis Committee

The thesis committee administers the oral examination for the student’s thesis defense and has final approval/disapproval authority and responsibility for the written thesis.

A thesis committee is composed of at least three members. Two, including the committee chair, must be members of the student’s department faculty; in doctoral thesis committees one member must have his or her primary appointment in another department within the university. At least three members of the committee must meet one of the following requirements:

- Tenured or tenure-track members of the Rice faculty
- Research faculty holding the rank of assistant research professor, associate research professor, or research professor
- Qualified individuals who have been certified as thesis committee members by the dean of graduate and postdoctoral studies

The composition of the thesis committee must always meet the guidelines mentioned above, with the following exceptions:

- Interdisciplinary programs (Applied Physics & SSPB)- The chair of the thesis committee is either the advisor or in the host department of the student, and is affiliated with the program. The second member of the committee is affiliated with the program. The third committee member of these programs must not be affiliated with either the student’s graduate program or the department where their advisor has their primary appointment. The formal structure of the thesis committee for the programs can be found in the program specific sections of the General Announcements and are regularly reviewed by the Office of Graduate and Postdoctoral Studies.

The thesis director must be a tenured or tenure-track member of the Rice University faculty or a research faculty holding the rank of assistant research professor, associate research professor, or research professor. Faculty whose primary appointment is at another institution may serve as thesis director if approved by the dean of graduate and postdoctoral studies. Emeritus professors may not accept new graduate students without the approval of the dean of graduate and postdoctoral studies and an appointment letter from the school dean.

The committee chair need not be the thesis director. The chair, however, must be either a tenured or tenure-track member of the major department or a research faculty member of the student’s major department. In addition to the three required members, additional members of the committee may be selected with the approval of the department chair.

In the event that a member of a students’ thesis committee leaves their position at Rice University, they may continue serve on the thesis committee if they continue to have the support of the department chair (or in the case of interdisciplinary programs, the graduate program director) to serve in this capacity.

Candidates are responsible for keeping the members of their committee informed about the nature and progress of their research. They also must establish a schedule for thesis completion and review. The members of the committee, in turn, should review the thesis in a timely manner, approving a preliminary form of the thesis before scheduling the oral examination.

Announcement of Thesis Defense

Oral examinations for the doctoral degree must be announced at least 14 days in advance. Oral examination announcements are to be submitted to the Office of Graduate and Postdoctoral Studies by entering the information into the Graduate Students Thesis Defense Announcement form at http://events.rice.edu/rgs.

Oral Examination in Defense of Thesis

The public oral defense of a thesis is intended to be an examination of a completed body of work and should be scheduled only when the thesis is essentially completed. Students may take the final oral examination in defense of their thesis only after the dean of graduate and postdoctoral studies approves their candidacy.

PhD and DMA students must defend their theses before the end of the 16th semester of their enrollment at Rice. Students who are unable to meet the university time boundary for thesis defense may petition the dean of graduate and postdoctoral studies or his/her designee for an extension of time to defense. Students who exceed their time boundaries without an approved extension request will be charged a fee of $125 for reinstatement to good standing. Students who exceed their time boundaries and do not receive an extension to their time to defense are subject to dismissal by the Office of Graduate and Postdoctoral Studies.
A candidate must be enrolled in the semester in which his or her oral examination is held. Students who defend during the summer must enroll in the summer session of classes. For the purpose of the oral defense only, enrollment in a semester is considered valid through the Friday of the first week of class of the following semester. Students passing the oral examination on or before the end of the first week of classes of any semester do not have to register for that or any subsequent semester even though they may be continuing to make minor revisions to the final copy of their thesis.

In addition to announcing the planned defense as described above, at least one copy of the thesis must be available in the departmental office not less than two calendar weeks prior to the date of the oral defense. Graduate programs may allow or require the thesis to be submitted and stored in an electronic format.

The length of the oral examination and the subject matter on which the candidate is questioned are left to the judgment of the thesis committee. The defense should be scheduled by the student after consultation with the thesis advisor, who agrees that the thesis is completed and ready to be defended. All oral thesis defenses must take place on the Rice University campus with the candidate and all thesis committee members in physical attendance. In exceptional cases, appeals to this requirement can be made in writing to the dean of graduate and postdoctoral studies.

Should a candidate fail, the committee chair may schedule a second examination. Students who fail a second time will be dismissed from the university.

Following their defense, students must submit a copy of their approval of candidacy form, signed by the thesis committee signifying successful defense of the thesis, to the Office of Graduate and Postdoctoral Studies within one week after the oral examination. Instructions to submit this form are located online at graduate.rice.edu/thesis. The original approval of candidacy form must be turned in when the thesis is submitted.

Thesis Submission Regulations and Procedures

The thesis is the principal record of a student’s work for an advanced degree. Instructions for online thesis submission and guidelines for thesis formatting are available at: graduate.rice.edu/thesis.

Candidates who successfully pass the oral examination in defense of the thesis must submit the thesis to the Office of Graduate and Postdoctoral Studies no later than six months from the date of the examination. If the thesis is not submitted by the end of the six-month period, the “pass” will be revoked and an additional oral defense will need to be scheduled. Applications for an extension without reexamination must be made by the candidate with the unanimous support of the thesis committee, endorsed by the department chair (or in the case of interdisciplinary programs, the graduate program director), and approved by the Office of Graduate and Postdoctoral Studies. Extensions of this six-month period for completion without reexamination will be granted only in rare circumstances. Approved petitions for extension without reexamination received after the 6 month time boundary expired will be charged a fee of $125 for reinstatement to good standing.

Students must have the original signatures of each member of their thesis committee on two title pages of their dissertation. Students submitting a dissertation for the PhD, DArch, or DMA must fill out a Survey of Earned Doctorates form and a ProQuest/University Microfilms International (UMI) publishing contract. Students must pay their thesis submission fee before submitting the thesis to the Office of Graduate and Postdoctoral Studies for degree approval.

All theses are permanently preserved in Rice’s Institutional Repository and are available via scholarship.rice.edu shortly after the final submission of the thesis. In limited cases, a student’s advisor may request an embargo of six months, one year, or two years; this is subject to approval by the dean of graduate and postdoctoral studies or his/her designee.

Students have six months from the date of their defense to submit their thesis. However, in order to qualify for a given degree conferral, they must meet the submission deadline for that degree conferred per the Academic Calendar (https://registrar.rice.edu/calendars). This date falls on the last day of classes in the Fall and Spring semesters.

Departmental Duties

In most research degree programs, students must undertake a limited amount of teaching or perform other services as part of their training. Assigned duties should not entail more than 10 hours per week, averaged over the semester, or extend over more than eight semesters.

Other Requirements

There are other additional requirements, regulations and procedures for all graduate programs. They are found under Graduate Students > Academic Policies and Procedures > All Graduate Students, or can be accessed directly here (https://qa.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees).

Regulations and Procedures for Diploma Programs

University Graduation Requirements for Diploma Programs

Diploma programs at Rice are post-masters academic credential programs. For the current requirements for the Artist Diploma offered by the Shepherd School of Music, and the Diploma in Liberal Studies, offered by the Glasscock School, please see their Programs of Study listings here:

- Artist Diploma (p. 495)
- Diploma in Liberal Studies (p. 450)

Other Requirements

There are other additional requirements, regulations and procedures for all graduate programs. They are found under Graduate Students > Academic Policies and Procedures > All Graduate Students, or can be accessed directly here (p. 55).

Regulations and Procedures for Non-Thesis Master's Graduate Degrees

University Degree Requirements for Non-Thesis Master’s Degrees

Students also may pursue a non-thesis master’s degree in certain departments. This degree would be based on alternative departmental requirements and would include, but not be limited to, the following:

- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level and above).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University. (Exceptions include some specific non-thesis master’s programs in the schools of engineering, natural sciences, and social sciences (and the Master’s of Liberal Studies program in the school of continuing studies). For these programs, the minimum residency requirement is one fall or spring semester in full-time or part-time graduate study.)
• All courses taken must be in the relevant field.

Time to Degree
All master’s students are required to complete their program within five years of initial enrollment. This time boundaries includes any period in which the student was not enrolled or enrolled part time, for whatever reason. Failure to meet any university time to degree deadline may result in the student not being able to continue in their degree program.

Other Requirements
There are other additional requirements, regulations and procedures for all graduate programs. They are found under Graduate Students > Academic Policies and Procedures > All Graduate Students, or can be accessed directly here (p. 55).

Regulations and Procedures for Thesis Master's Graduate Degrees

University Graduation Requirements for Thesis Master's Degrees
Candidates receive a master's degree after completing:

• A minimum of 30 graduate semester credit hours of study at the 500-level and above (including thesis credit hours).
• A minimum of 24 credit hours must be taken at Rice University.
• A minimum residency enrollment of one fall or spring semester of full-time graduate study at Rice University.
• Original work reported in a thesis and a public oral examination.

Candidacy, Oral Examinations, and Thesis

Time Boundaries for Candidacy and Defense

Time To Candidacy
MArch students must be approved for candidacy before the October 31st prior to their juries. All other thesis master’s students must be approved for candidacy before the beginning of the 5th semester of their enrollment at Rice. See Candidacy, Oral Examinations and Thesis (p. 67).

Time to Defense
Master’s students must defend their theses before the end of the 8th semester of their enrollment at Rice. See Candidacy, Oral Examinations and Thesis (p. 68).

Time to Thesis Submission
Candidates who successfully pass the oral examination in defense of the thesis must submit the thesis to the Office of Graduate and Postdoctoral Studies no later than six months from the date of the examination. See Candidacy, Oral Examinations and Thesis (p. 68).

Time to Degree
All master’s students are required to complete their program within five years of initial enrollment. This time boundary includes any period in which the student was not enrolled or enrolled part time, for whatever reason. Failure to meet any university time to degree deadline may result in the student not being able to continue in their degree program.

Approval of Candidacy
Candidacy marks a midpoint in the course of graduate education. Achieving candidacy for the master’s degree signals that a graduate student has:

1. completed required course work,
2. passed any required exams to demonstrate his/her comprehensive grasp of the subject area,
3. demonstrated the ability for clear oral and written communication, and
4. shown the ability to carry on scholarly work in his/her subject area.

Requirements for achieving candidacy for the master’s degree are determined at the departmental (p. 106) level. The department is also authorized to grant waivers or substitutions of specific course requirements, but not to make exceptions to university requirements.

Students enrolled in research degree programs submit their petitions for candidacy for a master’s degree through the department chair to the dean of graduate and postdoctoral studies. In the petition sent to the dean, the department chair identifies the student’s thesis director, recommends a thesis committee, certifies that the applicant has fulfilled the departmental requirements, and provides a course transcript as evidence that work completed within the department is of high quality.

Master's candidacystudents must be approved for candidacy before the beginning of the fifth semester of their enrollment at Rice. However, in order to qualify for a given commencement, they must meet the submission deadline for that commencement per the Academic Calendar (http://registrar.rice.edu/calendars). This date falls at the end of October for December degree conferral and the end of February for May degree conferral.

Students who are unable to meet the university time boundary for candidacy may petition the dean of graduate and postdoctoral studies or his/her designee for an extension of time to candidacy. Students who exceed their time boundaries without an approved extension request will be charged a fee of $125 for reinstatement to good standing. Students who exceed their time boundaries and do not receive an extension to their time to candidacy are subject to immediate dismissal by the Office of Graduate and Postdoctoral Studies.

Thesis Committee
The thesis committee administers the oral examination for the student’s thesis defense and has final approval/disapproval authority and responsibility for the written thesis.

A thesis committee is composed of at least three members. Two, including the committee chair, must be members of the student’s department faculty. At least three members of the committee must meet one of the following requirements:

• Tenured or tenure-track members of the Rice faculty
• Research faculty holding the rank of assistant research professor, associate research professor, or research professor
• Qualified individuals who have been certified as thesis committee members by the dean of graduate and postdoctoral studies

The composition of the thesis committee must always meet the guidelines mentioned above, with the following exceptions:

• **Interdisciplinary programs (Applied Physics & SSPB)** - The chair of the thesis committee is either the advisor or in the host department of the student, and is affiliated with the program. The second member of the committee is affiliated with the program. The formal structure of the thesis committee for the programs can be found in the program specific sections of the General Announcements and are regularly reviewed by the Office of Graduate and Postdoctoral Studies.

• **Master of Architecture** - The committee chair must be a tenured or tenure-track faculty member. Other committee members can be tenured, tenure-track, or non-tenure track Rice faculty.

The thesis director must be a tenured or tenure-track member of the Rice University faculty or a research faculty holding the rank of assistant research professor, associate research professor, or research professor. Faculty whose primary appointment is at another institution may serve as thesis director if approved by the dean of graduate and postdoctoral studies. Emeritus professors may not accept new graduate students without the approval of the dean of graduate and postdoctoral studies and an appointment letter from the school dean.

The committee chair need not be the thesis director. The chair, however, must be either a tenured or tenure-track member of the major department or a research faculty member of the student’s major department. In addition to the three required members, additional members of the committee may be selected with the approval of the department chair.

In the event that a member of a students’ thesis committee leaves their position at Rice University, they may continue serve on the thesis committee if they continue to have the support of the department chair (or in the case of interdisciplinary programs, the program director) to serve in this capacity.

Candidates are responsible for keeping the members of their committee informed about the nature and progress of their research. They also must establish a schedule for thesis completion and review. The members of the committee, in turn, should review the thesis in a timely manner, approving a preliminary form of the thesis before scheduling the oral examination.

**Announcement of Thesis Defense**

Oral examinations for the master’s degree must be announced at least 7 days in advance. Oral examination announcements are to be submitted to the Office of Graduate and Postdoctoral Studies by entering the information into the Graduate Students Thesis Defense Announcement form at [http://events.rice.edu/rqs](http://events.rice.edu/rqs).

**Oral Examination in Defense of Thesis**

The public oral defense of a thesis is intended to be an examination of a completed body of work and should be scheduled only when the thesis is essentially completed. Students may take the final oral examination in defense of their thesis only after the dean of graduate and postdoctoral studies approves their candidacy.

Master’s students must defend their theses before the end of the eighth semester of their enrollment at Rice. Students who are unable to meet the university time boundary for thesis defense may petition the dean of graduate and postdoctoral studies or his/her designee for an extension of time to defense. Students who exceed their time boundaries without an approved extension request will be charged a fee of $125 for reinstatement to good standing. Students who exceed their time boundaries and do not receive an extension to their time to defense are subject to dismissal by the Office of Graduate and Postdoctoral Studies.

A candidate must be enrolled in the semester in which his or her oral examination is held. Students who defend during the summer must enroll in the summer session of classes. For the purpose of the oral defense only, enrollment in a semester is considered valid through the Friday of the first week of class of the following semester. Students passing the oral examination on or before the end of the first week of classes of any semester do not have to register for that or any subsequent semester even though they may be continuing to make minor revisions to the final copy of their thesis.

In addition to announcing the planned defense as described above, at least one copy of the thesis must be available in the departmental office not less than two calendar weeks prior to the date of the oral defense. Graduate programs may allow or require the thesis to be submitted and stored in an electronic format.

The length of the oral examination and the subject matter on which the candidate is questioned are left to the judgment of the thesis committee. The defense should be scheduled by the student after consultation with the thesis advisor, who agrees that the thesis is completed and ready to be defended. All oral thesis defenses must take place on the Rice University campus with the candidate and all thesis committee members in physical attendance. In exceptional cases, appeals to this requirement can be made in writing to the dean of graduate and postdoctoral studies.

Should a candidate fail, the committee chair may schedule a second examination. Students who fail a second time will be dismissed from the university.

Following their defense, students must submit a copy of their approval of candidacy form, signed by the thesis committee, to the Office of Graduate and Postdoctoral Studies no later than six months from the date of the examination. If the thesis is not submitted by the end of the six-month period, the “pass” will be revoked and an additional oral defense will need to be scheduled. Applications for an extension without reexamination must be made by the candidate with the unanimous support of the thesis committee, endorsed by the department chair (or in the case of interdisciplinary programs, the program director), and approved by the Office of Graduate and Postdoctoral Studies. Extensions of this six-month period for completion without reexamination will be granted only in rare circumstances. Approved petitions for extension without reexamination received after the 6 month time boundary expired will be charged a fee of $125 for reinstatement to good standing.

**Thesis Submission Regulations and Procedures**

The thesis is the principal record of a student's work for an advanced degree. Instructions for online thesis submission and guidelines for thesis formatting are available at: [graduate.rice.edu/thesis/](http://graduate.rice.edu/thesis/).

Candidates who successfully pass the oral examination in defense of the thesis must submit the thesis to the Office of Graduate and Postdoctoral Studies no later than six months from the date of the examination. If the thesis is not submitted by the end of the six-month period, the “pass” will be revoked and an additional oral defense will need to be scheduled. Applications for an extension without reexamination must be made by the candidate with the unanimous support of the thesis committee, endorsed by the department chair (or in the case of interdisciplinary programs, the program director), and approved by the Office of Graduate and Postdoctoral Studies. Extensions of this six-month period for completion without reexamination will be granted only in rare circumstances. Approved petitions for extension without reexamination received after the 6 month time boundary expired will be charged a fee of $125 for reinstatement to good standing.
Students must have the original signatures of each member of their thesis committee on two title pages of their dissertation. All students submitting theses must complete a ProQuest/University Microfilms International (UMI) publishing contract. Students must pay their thesis submission fee before submitting the thesis to the Office of Graduate and Postdoctoral Studies for degree approval.

All theses are permanently preserved in Rice's Institutional Repository and are available via [scholarship.rice.edu](http://scholarship.rice.edu) shortly after the final submission of the thesis. In limited cases, a student's advisor may request an embargo of six months, one year, or two years; this is subject to approval by the dean of graduate and postdoctoral studies or his/her designee.

Students have six months from the date of their defense to submit their thesis. However, in order to qualify for a given degree conferral, they must meet the submission deadline for that degree conferral per the Academic Calendar. This date falls on the last day of classes in the Fall, Spring, and Summer semesters.

**Departmental Duties**

In most research degree programs, students must undertake a limited amount of teaching or perform other services as part of their training. Assigned duties should not entail more than 10 hours per week, averaged over the semester, or extend over more than eight semesters.

**Other Requirements**

There are other additional requirements, regulations and procedures for all graduate programs. They are found under [Graduate Students > Academic Policies and Procedures > All Graduate Students](http://scholarship.rice.edu), or can be accessed directly here (p. 55).
STUDENT SERVICES AND ORGANIZATIONS

- Clubs and Organizations (p. 70)
- Disability Support Services (p. 71)
- Financial Aid (p. 71)
- Graduate Student Government (p. 73)
- Graduate Student Life (p. 73)
- Health, Counseling and Wellbeing (p. 74)
- Tuition, Fees and Expenses (p. 76)

Clubs and Organizations

Office of Student Activities

The Office of Student Activities, located in the Rice Student Center, oversees the activities of various campus-wide student organizations, student requests for facilities usage, and coordination of various leadership development programs.

In addition to managing the registration process, finances, and general advising for over 250 registered clubs at Rice University, Student Activities provides direct advising to the following organizations:

- Graduate Student Association (GSA) (http://gsa.rice.edu) - Graduate student government with many opportunities for student involvement including a variety of social and professional development events and ways to volunteer
- Women LEAD (https://studentcenter.rice.edu/women-lead) - Female leadership empowerment and networking events

The Rice University clubs are divided into eleven genres: Academic/Honorary, Cultural/International, Departmental GSA, Environmentalism and Sustainability, Political, Recreational/Sport, Religious/Spiritual, Service, Social/Special Interest, STEM, and Visual/Performing Arts. The full list of registered clubs can be found online (https://studentcenter.rice.edu/club-listings). Student Activities also provides leadership development opportunities in the form of Lunch and Lead sessions, Women LEAD events, and partnership events through graduate clubs and the GSA.

A large number of student organizations address special student interests, such as the Black Graduate Student Association, Indian Students at Rice, Chinese Students and Scholars, and the GSA. There also are numerous sport-related clubs such as sailing, rugby, volleyball, and soccer. Additionally, department level government organizations also provide involvement opportunities for graduate students.

Student Activities also recognizes a number of religious and spiritual organizations. These include, but are not limited to, Chi Alpha Christian Ministries, the Baptist Student Ministry, Catholic Student Association, Hillel, the Muslim Student Association, and an interfaith association, the Boniuk Council. Many of these clubs are assisted by local clergy or staff and form the Joint Campus Ministers (https://studentcenter.rice.edu/student-activities/group/club-resources/joint-campus-ministries).

The Clubs Office is located in the basement of the Rice Student Center and provides computers, workspace, storage, and a color copier for club convenience.

For more information on the Office of Student Activities, please visit https://studentcenter.rice.edu/student-activities/.

Rice Student Volunteer Program

By heightening student awareness of community needs and generally raising social consciousness, the Rice Student Volunteer Program (RSVP) has organized volunteer projects for Rice students, faculty, and staff since 1985. The largest event of each semester is Outreach Day, a Saturday when approximately 500 students volunteer with more than 30 nonprofit agencies throughout the Houston area, learning how to take thoughtful action to build a stronger, more just community. With an office in the cloisters of the Rice Memorial Center, RSVP invites each student's involvement as an officer, a college representative, a committee member, a project organizer, or an interested participant in any RSVP event.

For more information on the Rice Student Volunteer Program, please visit http://www.ruf.rice.edu/~rsvp/.

Intercollegiate Speech and Debate

Consistently ranked in the top 10 nationally, the George R. Brown Forensic Society sponsors competition in the categories of Individual Events, Lincoln–Douglas, and Parliamentary Debate. The society provides students with the chance to hone their public speaking skills and to qualify for competition both at the American Forensic Association National Individual Events Tournament and at the National Parliamentary Debate Championships. Recognizing the importance of developing strong communication skills, the society has an open admission policy, inviting students with little or no previous experience as well as those with extensive high school backgrounds to become members of one of the most successful teams at Rice.

For more information on speech and debate, please visit: http://debate.rice.edu/.

Office of Multicultural Affairs

The Office of Multicultural Affairs (OMA) has, as its primary mission, coordinating and implementing comprehensive educational, cultural, and social programs designed to emphasize inclusiveness, while promoting intercultural dialogue, awareness, and respect for diversity. Through advocacy, cultural programs, and education, OMA also helps students understand and appreciate racial, ethnic, gender, and other differences, while creating opportunities for students to challenge prejudice and expand their cultural knowledge and appreciation.

OMA utilizes its programming and support systems to provide an optimum developmental environment where all members of the University community may develop to the highest level of their potential in an atmosphere free from harassment and bias, thereby ensuring Rice’s standing as an intellectually and culturally vibrant community. Cultural student clubs, such as the Black Student Association, the Hispanic Association for Cultural Enrichment at Rice, and the Rice Native American Student Association, meet regularly with OMA to discuss programming logistics and other issues. OMA also directly advises ADVANCE (Advancing Diversity and the Need for Cultural Exchange), a student club that hosts a weekly discussion on a topical issue, and organizes an annual cultural fair. Other programs for students under OMA include HARAMBE, (Swahili for “working together in unity” or “let’s pull together”), a group that seeks to create a unifying event for entering African-American students, allowing them to build social and academic connections with peers, faculty, and staff, and FRESH, a group dedicated
Disability Support Services

Located on the first floor of Allen Center, Disability Support Services coordinates campus services for individuals with documented disabilities. For academic accommodations, adaptive equipment, or disability-related housing needs, Disability Support Services is the campus resource for all students with disabilities. Information is maintained on scholarships, internships, and other programs specific to students with disabilities. Students can schedule an appointment with the director of Disability Support Services by calling 713-348-5841. For more information, see the Disability Support Services website at http://dss.rice.edu.

Section 504/ADA Coordinator

The director of affirmative action serves as the Section 504/ADA coordinator at Rice University. Concerns or complaints relative to disability issues should be directed to the Office of Affirmative Action (http://professor.rice.edu/professor/EEOAA.asp) 205 Allen Center, 713-348-4930.

Financial Aid

Fellowships, Scholarships, and Assistantships

A range of fellowships, scholarships, and assistantships are available at Rice. Most graduate students in degree programs requiring a thesis are supported by fellowships or research assistantships.

Rice Graduate Fellowships

Doctoral students with high academic records and strong qualifications receive support through Rice fellowships. In most cases, these fellowships provide a stipend plus tuition for the nine-month academic period.

Research and Teaching Assistantships

Usually funded from grants and contracts, research assistantships are available in many departments. Qualified students (usually second-year or later) receive these awards to provide assistance on faculty research projects, work that usually contributes to the student’s own thesis. In some departments, a limited number of teaching assistantships may be available to advanced students. In most cases, these assistantships provide a stipend plus tuition.

Fellowship, scholarship, and assistantship recipients are selected by the individual departments, subject to the approval of the Office of Graduate and Postdoctoral Studies. Students should send their applications for such awards directly to the department involved.

To receive Rice fellowships, graduate tuition scholarships, or assistantship aid, students must be engaged in full-time graduate study; part-time students and students who are not enrolled are not eligible for such aid.

Students receiving stipends from fellowships or assistantships may not accept any regular paid employment on or off campus without the explicit permission of the department. Full-time students, whether receiving stipend support or not, may not accept paid employment in excess of 20 hours per week.

Please see the Graduate and Postdoctoral Program website (http://graduate.rice.edu/financialsupport) for more information.

Summer Assistance

Graduate students may register for summer research hours at no charge. However, with limited exception, tuition is charged for all other courses offered in the summer semester. As with fall and spring, the Office of the Registrar manages the summer course schedule, and any questions on course offerings should be directed to that office. Tuition waivers are not available for summer classes, even for students who receive full tuition waivers during the fall and spring semesters.

Graduate students are eligible to apply for federal, state, and private educational loans if they are registered during the summer semester.

Loans

In addition to fellowships, scholarships, and assistantships, the Office of Financial Aid (http://financialaid.rice.edu) offers assistance in the form of loans. Interested students must file a Free Application for Federal Student Aid (FAFSA). If selected for federal verification, students may also be required to submit copies of income tax transcripts and W-2’s. The priority deadline to apply is May 15. (Loan assistance through Rice is not available to Master of Liberal Studies students.)

To be eligible to apply for loans, graduate students must maintain satisfactory academic progress as defined by their departments. Should a graduate student fail to make satisfactory academic progress, the student’s aid eligibility will be suspended. Graduate students who enroll for less than 4.5 hours in a term will not be eligible for financial aid.

Loans cannot exceed the student’s cost of education, as determined by Rice, minus other resources. Loans may be adjusted or canceled due to changes in eligibility or other resources.

A summary listing of student consumer information is available through the Office of Financial Aid (http://financialaid.rice.edu).

Federal Student Loans

These are loans made to students attending the university at least half time. Federal Direct Unsubsidized Loans and PLUS Loans are available to all students regardless of need. Loan eligibility is subject to annual and lifetime borrowing limits; Federal Direct PLUS Loans require a satisfactory credit check. In addition, loans cannot exceed the student’s cost of education, as determined by Rice, minus other resources.

Loan Counseling

Students who are recipients of federal student loans will be required to complete online loan entrance counseling before funds will be credited to student accounts. Students also will be required to complete online exit counseling at the completion of a program of study at Rice. Failure to complete online exit counseling will result in a transcript hold.

Private Loan Programs

Private loans are available to graduate and MBA students. These loans are not based on need but do require credit approval from the lender and cannot exceed the student’s cost of education, as determined by Rice, minus other resources.
Disbursements
Financial aid awards during the academic year occur in two equal disbursements (Fall and Spring), and are released to the student's account once all requirements are completed. The scheduled disbursements are credited a week prior to the start of each term or upon completion of financial aid requirements, whichever is later. Missing requirements may be reviewed through the financial aid tab in Esther. Additional disbursement information is available on the Office of Financial Aid (http://financialaid.rice.edu/Content.aspx?id=40) website.

Special Loan Programs
A Gulf Oil Corporation Foundation Loan Fund and the Benjamin S. Lindsey and Veola Noble Lindsey Memorial Loan Fund are available to help students working toward a degree meet their educational expenses; the funds are limited. Interested students may contact the Office of Financial Aid (http://financialaid.rice.edu).

The Mary Lyn and Niles Moseley Loan Fund and the Professor John A. S. Adams, Sr., Memorial Graduate Student Loan Fund
These funds provide financial assistance, in the form of loans, to graduate students at Rice University, with the exception of MBA and MLS students. Students wishing to apply for such a loan should obtain an application from the Office of Student Financial Services. Guidelines for the program are:

• Individual loans are made for an amount not to exceed $2,000.
• Loans are made for a period of up to one year and, upon request, may be renewable annually.
• The interest rate applicable to these loans is determined by the university.
• Graduate students must be enrolled on a full-time basis to be eligible to apply for a loan and must maintain full enrollment during the full term of the loan.
• Upon completion, applications are submitted to the Office of Graduate and Postdoctoral Studies for approval.
• Loans are available during the full course of the academic year.
• Loans must be repaid in full before graduation.
• Registration, transcripts, and diplomas will be held for students and former students who are in arrears on these loans.

For more information, visit http://graduate.rice.edu/mosleyadams.

Emergency Loan Fund
Established through gifts from the Graduate Wives Club of 1972–73, the Graduate Student Association, and various faculty members, this fund makes available emergency loans to help graduate students at Rice with short-term needs. Loans are limited to $500 and must be repaid within 90 days. In lieu of interest, a charge of 2% of the principal loan is assessed to maintain the fund.

Student On Campus Employment
Opportunities for employment are available to students during the academic year. Students are eligible to work under either the Federal Work-Study Program or the Rice Work Program. Students interested in employment should access the Office of Financial Aid (http://financialaid.rice.edu) webpage.

Deferred Payment Plan
Rice offers a deferred payment plan to enable families to finance students’ educational costs. This plan divides each semester’s charge over four installments. Details are available to eligible students each semester at the time of billing. Students arrange for deferred payment through the Cashier's Office.

Satisfactory Academic Progress
Federal regulations (CRF § 668.34) require that graduate students demonstrate satisfactory academic progress toward completion of their degree to continue to receive federal and state financial aid. In addition to meeting the standard for receiving financial aid, students must also meet the academic standards of Rice University.

Satisfactory academic progress is comprised of three areas as required by federal regulations. A student must complete their degree within a specified period that does not exceed 150% of the published length of the program, demonstrate they are making progress towards the completion of their degree by successfully completing 67% percent of all attempted courses, and maintain at least the minimum cumulative GPA requirement for the program in which they are enrolled. This regulation applies to each financial aid applicant, whether a previous recipient or not.

Credits counted in the maximum time are all attempted credits (even when not a financial aid recipient). Attempted credits include:

• Earned credits – Passed (A+ through D-), Satisfactory (S)
• Repeated courses
• Withdrawal
• Failures – Failed (F), Unsatisfactory (U)
• Incomplete
• All accepted transfer credits toward the degree program

If a student fails to meet the satisfactory academic progress standards by the end of the academic year, the student will be placed on Financial Aid Suspension and will not be eligible for aid until the satisfactory academic progress standards are met.

Appeal
Students are allowed to appeal their Financial Aid Suspension in cases of the death of a relative, an injury or illness of the student, or other special circumstances. Students must submit a letter discussing why the student failed to make satisfactory academic progress, and what has changed in the student’s situation that will allow the student to demonstrate satisfactory academic progress at the next evaluation. Supporting documentation (doctor’s letter or academic plan) must accompany the appeal letter and must be submitted to the Office of Financial Aid (http://financialaid.rice.edu) prior to the beginning of the subsequent term. The Appeals Committee will review appeals on a case-by-case basis.

If an appeal is approved by the Appeals Committee, the student will be placed on financial aid probation and may receive financial aid for one probationary semester. At the end of the probationary semester, the student must meet the satisfactory academic progress standards or meet the requirements of an approved academic plan developed by the student’s department or program.
Financial Aid after Academic Suspension
Students who have been suspended by the university for academic reasons need to be aware that if they are readmitted, they may not be eligible for financial aid based on their prior academic performance. Students who are petitioning for readmission are advised to contact the Office of Financial Aid (http://financialaid.rice.edu) to determine their aid eligibility.

Return of Title IV Funds
Students who receive federal funds as part of their aid packages and do not complete the academic term may be subject to returning a portion of those funds. Contact the Office of Financial Aid (http://financialaid.rice.edu) for information about policies and procedures regarding the return of Title IV funds.

Other Fellowships, Honors, and Prizes
Provisions are made for a variety of fellowships, scholarships, and prizes available to graduates of this and other universities. Memorial fellowships that have been founded and endowed by gift or bequest on the part of friends of Rice University provide stipends enabling the holders to devote their time to study and research in their chosen fields. There also are several industrial fellowships maintained by companies interested in the development of technical fields and the training of competent scientists, engineers, and business executives.

Persons desiring consideration for appointment as fellows should consult with the department in which they wish to do research. However, not all fellowships are available every year.

Graduate Student Government
Graduate Student Association
All full-time students in graduate programs are members of the Graduate Student Association (GSA). The mission of the GSA is to enrich the graduate student experience and to represent, support, and promote graduate student interests and values. An integral and essential part of the Rice community, the GSA provides programs and services aiding in recruitment and retention of graduate students, represents graduate student interests to the University administration, and builds a strong sense of community both on and off campus.

The GSA represents all graduate students and is comprised of two branches: the Council and the Executive. The Council consists of representatives from all departments who serve as the voting body for the graduate students. The Executive is led by the president, internal vice president, external vice president, secretary, and treasurer, and these positions are elected by the Council. Graduate students also participate in university affairs through their representatives on many standing and ad hoc university committees, such as the Graduate Council, the Research Council, and various department committees.

One function of the GSA is to promote academic, professional, and personal development of graduate students. The association accomplishes this by supporting professional development opportunities, alumni networking, and well-being programs for students. Another function of the GSA is to encourage social interaction among graduate students from different departments and cultures. To that end, the association organizes a variety of social activities, including picnics, intramural sports, and volunteer opportunities, that are open to all members of the graduate student body. For more information on the Graduate Student Association, see gsa.rice.edu.

School and Department Graduate Student Associations
A second strata of graduate student governance on campus are the specific GSAs of schools and departments who represent particular concerns and interests of students to the deans, to the chairs, and to the larger GSA. Each school and/or department is encouraged to develop its own governing structure to advocate for graduate concerns and initiatives at Rice.

Graduate Student Life
Housing for Graduate Students
Graduate students have two different housing facilities: Rice Graduate Apartments and Rice Village Apartments. Both properties are within walking distance from the campus, and also provide easy transportation to and from campus and all shopping needs on the weekend through a shuttle service. They also provide social activities and events to help students take a break from their studies. Each community is unique in its own way and provides a broad living environment. For all property information, please visit http://campushousing.rice.edu/graduate.

Rice Graduate Apartments is a garden style complex located just north of campus on Bissonnet. The community includes quick and easy access to campus, study rooms, laundry facilities, bike rooms, two courtyards, and recreational areas. Electronically controlled access gates for pedestrian and vehicular paths are provided. ADA accessible units are available to students requesting reasonable accommodations. Each apartment is furnished with a bed, desk, desk chair, night stand, chest of drawers, and a bookshelf. In addition, each unit includes basic cable, water, and Wi-Fi Internet. Housing is assigned through a lottery, with a high placement rate given to incoming graduate students. For further information, visit the website above, call 713-348-GRAD (4723), or email gradapt@rice.edu.

The Rice Village Apartments is a four-story contemporary style community located on Shakespeare Street within a short walk of the Village. It offers four ADA accessible units for students requesting reasonable accommodations, and also offers family housing. Each unit offers appliances equipped with Energy Star efficiency to conserve energy and protect the environment. In addition, it is furnished with a dresser, nightstand, desk, chair, and bed. Basic cable, Wi-Fi internet, and water also are included. The laundry facility has a system that can email alert you when your laundry is done. Other amenities include common areas, study rooms, a recreational area, bike room, and a community herb garden. Controlled security access is provided by a keyless front door using either a biometric fingerprint or a key fob system. Housing is assigned through a lottery, with a high placement rate given to incoming graduate students. For more information, call 713-348-4050, or email rvapts@rice.edu (msapts@rice.edu).

Rice Student Center
The Student Center provides services and developmental opportunities to build community and enrich the Rice experience through facilities, events, student run businesses, and student activities. It houses a variety of retail and dining operations including the campus store, Sammy’s, 4.Tac0, and Ambassador Cafe. The Graduate Student Lounge, Multicultural Center, and the Clubs offices are all located in the basement with other
Health, Counseling and Wellbeing

Health and Wellness Support Services Fee

By paying an annual Health and Wellness Support Services Fee, all students gain access to the Student Health Services (http://health.rice.edu), Rice Counseling Center (https://wellbeing.rice.edu) and the Student Wellbeing Office (http://wellbeing.rice.edu). Detailed information on the care and services each provide is available from these centers. The Health and Wellness Support Services Fee is a required fee for all enrolled students, except those in “away” status. See Away Status (p. 76) for more information.

Student Health Services

Student Health Services, an outpatient medical clinic, is located in the Morton L. Rich Health Center. The clinic is staffed by primary care physicians, nurses, and ancillary support staff. More information can be found at health.rice.edu.

Clinic hours are from 8:00 a.m. to 5:00 p.m., Monday through Friday, during fall and spring semesters. For after-hours and weekend medical care, students may choose among a number of local clinics and hospitals (guidance on self-care as well as local healthcare options can be found on the website). The clinic is open full-time from the first day of Orientation Week until the day before commencement. It is closed during Thanksgiving and the winter recess. The clinic also is open for reduced hours during the summer months. Visits to the clinic are covered by the services fee, however, students must pay for all medical care outside the clinic’s purview, including blood tests, x-rays, and outside physician consultations. Should such medical care be necessary, students are urged to review their insurance coverage and pick the best available option.

Care at the clinic is arranged through appointment at 713-348-4966. In emergencies, students should call the Rice University Police Department (http://rupd.rice.edu) at 713-348-6000.

The Student Health Service provides the following:

- Medical care for illness and injury with referrals to specialists when needed
- Maintenance of health records for all students
- Immunizations and other preventive services
- General information for all students
- Contraceptive counseling and routine Pap smears
- Allergy shots (students must provide serum after a specialist allergy workup)
- Physical examinations

Confidentiality for Health Services

The Student Health Service physician—patient relationship is a confidential one. Medical records will be released only on receipt of written authorization from the student or as required by law or when the patient poses a significant risk to herself or himself or another person. Physicians with Student Health Services are considered confidential employees under Title IX, meaning that should a student wish to speak about domestic or sexual violence or stalking with a physician, his/her information is confidential and will not be released without their expressed written consent. The only exception to this is for students under the age of 18.

Health Insurance

All registered students are required to maintain health insurance coverage, compliant with the Affordable Care Act, while enrolled at Rice University with the exception of visiting post baccalaureates, auditors, and students enrolled in the part-time Masters of Liberal Studies program through the Glasscock School of Continuing Studies.

Students are required to either enroll in the Rice student health insurance plan administered by Aetna Student Health, or complete an online waiver application demonstrating comparable insurance coverage. Every eligible student will have an Insurance Hold placed on their account until they have actively enrolled in insurance coverage or submitted a waiver. Once a student enrolls or waives coverage, the tuition bill will be updated based on the selection. Insurance and waiver applications, as well as specific dates for enrolling, frequently asked questions, and more can be found on the Rice Student Insurance website: http://studenthealthinsurance.rice.edu.

Fall semester students who do not complete an enrollment or waiver application by September 1st will be automatically enrolled in the annual insurance plan. The deadline to enroll or waive for the spring semester is January 19th. Please note the automatic enrollment process does require additional processing time. The premium amount will not be prorated. Once enrolled in coverage, students are unable to cancel coverage for any reason.

For questions concerning the Rice plan, please contact studentinsurance@rice.edu or call (713) 348-5544.

NOTE: If you waive coverage in the fall, you are still expected to have ACA compliant insurance coverage for the spring. If you experience a qualifying life event and need to enroll in coverage mid-year, please email studentinsurance@rice.edu.

International students that have an F1 or J1 visa are subject to the Rice University International Student Health Insurance Policy. For more information on the policy, please visit the OISS website (http://oiss.rice.edu). Here students will find detailed information concerning the approved alternative insurance option through Student Assurance Services (SAS), as well as application and rate information.

Wellbeing and Counseling Center Services

Center Contact Information

The Wellbeing and Counseling Center provides confidential counseling treatment as well as wellbeing case management services and Title
IX support for graduate and undergraduate students. The Center also provides mental health and wellbeing related education for the student body. The Wellbeing and Counseling Center is located in the Barbara and David Gibbs Recreation and Wellness Center. The Center is open Monday - Friday from 8:30a.m. to 5:00p.m. Walk-ins are available during business hours. For appointments contact the Wellbeing and Counseling Center at 713-348-3311 (24/7) or visit https://wellbeing.rice.edu/ for more information. In emergencies, students should call the Rice University Police Department (http://rupd.rice.edu) at 713-348-6000.

General Information about Counseling
The Rice Counseling Center addresses students' psychological needs with various programs and services. Services are confidential. Student information is not released to anyone without the student's written consent. There are no costs for Counseling Center services.

Typically, students who use the counseling services bring with them very common concerns: roommate problems, breakup of a relationship, academic and/or interpersonal anxiety, family problems, difficulties adjusting to Rice, or confusion about personal goals, values, and identity. Counselors are equipped to handle a variety of issues, including substance abuse, eating disorders, sexual assault and relationship violence, depression, and the coming-out process. Rice Counseling Center offers both individual and group counseling, as well as educational workshops and programs.

When students need long term or specialized counseling or treatment, counselors refer them to an outside provider. The students, or their health insurance, must pick up these costs. All students who have paid the Health and Wellness Support Services Fee are eligible for initial assessment sessions, consultations, crisis intervention, and educational programming. Individual or group counseling may also be available, if appropriate.

Students who have worked with a mental health professional prior to enrolling at Rice are encouraged to make contact with the Rice Counseling Center prior to coming to Rice. This will allow the student to make arrangements for a continued care plan. This plan may involve working with the Rice Counseling Center or working with the center to find a suitable off-campus provider.

The Rice Counseling Center can be contacted at 713-348-3311 or at https://wellbeing.rice.edu/. The Rice Counseling Center provides the following services:

- Psychological crisis intervention, on a walk-in emergency basis during regular office hours, or by phone at any time, 24 hours a day, by calling 713-348-3311. This includes after hours and weekends.
- Brief initial assessments, in person to receive information quickly about a situation and assign an appropriate counselor
- Short-term individual and couples counseling
- Group therapy and support groups
- Medication consultations with the center's psychiatrist for students in counseling at the center
- Other consultations (e.g., how to make a referral or how to respond to a friend in distress)
- Educational programming (e.g., various presentations on mental health issues)

Confidentiality for Counseling
Rice Counseling Center services are confidential; information about a student is not released without the student’s written consent. Before entering a therapeutic relationship with a counselor, students may review and discuss confidentiality with their counselor, ask all necessary questions, and be certain they understand how confidentiality will be applied in their case. As detailed in RCC’s treatment agreements, state law does not extend confidentiality to several circumstances, including where:

1. there is risk of imminent harm to the student or others;
2. the counselor has reason to believe that a child or an elderly or handicapped person is, or is in danger of, being abused or neglected;
3. a court order is issued to release information; or
4. the counselor suspects that the student has been the victim of sexual exploitation by a former health care provider during the course of treatment with that provider.

In addition, RCC sometimes provides de-identified information to administrative officials who are in a need-to-know capacity. In some cases the terms of the treatment engagement with RCC may require a student to share assessments, diagnoses, or treatment plans from non-Rice treating professionals with Rice counselors.

Therapists with Rice Counseling Services are considered “confidential” employees under Title IX, meaning that should a student wish to speak about domestic or sexual violence or stalking with their therapist, their information is confidential and will not be released without his or her written consent. The only exception to this is for students under the age of 18.

General Information about Wellbeing Advising
Wellbeing Advising provides case management services to support students who have experienced wellbeing challenges that may be impacting their personal and/or academic goals and overall success at Rice. Wellbeing advisors connect students to university resources and procedural options to help students during their enrollment. If students decide to take time off to focus on their wellbeing needs, Wellbeing advisors work with them and serve as liaisons to the medical readmission process when students are ready to return. Wellbeing advisors also coordinate with the clinical counselors and Title IX Support to provide wellbeing programs and education for the student body. For appointments and/or more information, contact Wellbeing Advising at 713-348-331 or visit https://wellbeing.rice.edu/.

Office of Sexual Violence Prevention and Title IX Support
Rice encourages any student who has experienced an incident of sexual, relationship, or another form of interpersonal violence, harassment, or gender discrimination to seek support. There are many options available both on and off campus for all students, regardless of whether the perpetrator was a fellow student, a staff or faculty member, or someone unaffiliated with the university. Students have access to a Title IX resource navigator who will assist the student in determining the best path for them. Furthermore, students who have been accused of committing interpersonal violence or harassment can also seek support (http://safe.rice.edu) under Title IX.

Students should be aware when seeking support (http://safe.rice.edu) on campus that most employees are deemed "responsible," and thus are required by Title IX to disclose all incidents of non-consensual interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs. Rice prioritizes student
privacy and safety, and only shares disclosed information on a need-to-know basis.

The therapists at the Rice Counseling Center and the doctors at Student Health Services are “confidential” employees, meaning that Rice will not be informed about the incident if a student discloses it to one of these staff members.

For more information, including how to reach out to Title IX Support, please visit safe.rice.edu or email titleixsupport@rice.edu.

## Tuition, Fees and Expenses

### Tuition

<table>
<thead>
<tr>
<th>Graduate Programs</th>
<th>Tuition</th>
<th>Hour</th>
<th>Semester / Annual / Reduced$^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>$1,728</td>
<td>$15,500 / $31,100 $1,728$^1$</td>
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<tr>
<td>Architecture Option 3 Extension – Minimum 3 credits</td>
<td>$1678</td>
<td>$31,100 / $1,728$^1$</td>
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<tr>
<td>Shepherd School of Music</td>
<td>$1,556</td>
<td>$14,000 / $28,000 $1,556$^1$</td>
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<tr>
<td>Professional Master’s in Natural Science</td>
<td>$1,667</td>
<td>$15,000 / $30,000</td>
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</tr>
<tr>
<td>Entered Fall ’15</td>
<td>$2,000</td>
<td>$18,000 / $36,000</td>
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<tr>
<td>Entering Fall ’17</td>
<td>$2,111</td>
<td>$19,000 / $38,000</td>
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<tr>
<td>Natural Science – Master of Science/Master of Science Teaching</td>
<td>$2,495</td>
<td>$22,450 / $44,900 $2,495$^1$</td>
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<tr>
<td>Professional Master’s in Engineering</td>
<td>$2,445</td>
<td>$22,000 / $44,000</td>
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<tr>
<td>All other graduate students</td>
<td>$2,495</td>
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<tr>
<td>Jones School PhD</td>
<td>$2,450</td>
<td>$44,900</td>
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</table>

### Required Fees

- **Student organization fund**: $4 / $8
- **Honor Council**: $1 / $2
- **Humanities GSA (School of Humanities only)**: $2.50 / $5

### Health and Wellness Support Services Fee (no spouses)

- Fall: $980, Spring: $2,575
- Reduced Tuition
  - After 10 semesters of full-time study in one doctoral degree program (excluding the summer semesters), continuing students may be eligible for a reduced tuition rate. A semester of full-time study is defined as a fall or spring semester in which at least 9 hours of credit are earned. Students in the Shepherd School of Music and the School of Architecture are eligible for reduced rate tuition after six semesters of full-time study.

### Health Insurance

- All students, full-time or part-time—including those on away status—must carry health insurance. For further information, visit the Health Insurance section.

### Graduate Program: (Glasscock School) MAT Degree

- **Tuition**: Per Course
  - Master of Arts in Teaching (MAT) degree program: $2,800
- **Required Fees**
  - **Semester**
    - MAT student activity fee: $45
    - Graduate Student Association: $22
  - **Annual**
    - MAT student activity fee: $90
    - Graduate Student Association: $44
    - Health Insurance - student premium only (unless waiver has been approved)$^1$:
      - Fall: $980, Spring: $1,595

### Graduate Program: (Glasscock School) MLS Degree

- **Tuition**: Per Course
  - Master’s of Liberal Studies (MLS) degree program: $2,800
- **Required Fees**
  - **Session**
    - MLS student activity fee: $45
    - Graduate Student Association (annual max $44): $22
  - **Annual**
Graduate Program: Jones School MAcc Degree

Tuition | Semester | Annual
---|---|---
Entering Fall '17 | $25,750 | $51,500

Required Fees

- Graduate Student Association: $22
- Student organization fund: $4
- Honor Council: $1
- Health and Wellness Support Services Fee (no spouses): $247
- Health Insurance - student premium only (unless waiver has been approved): $1,595
- Jones School student activity fee: $100
- Jones School material fee: $1,169.50

Health Insurance

All students, full-time or part-time—including those on away status—must carry health insurance. For further information, visit the Health Insurance section.

Graduate Program: Jones School Full-Time MBA Degree

Tuition | Semester | Annual
---|---|---
Entering Fall '17 | $27,750 | $55,500

Required Fees

- Graduate Student Association: $22
- Student organization fund: $4
- Honor Council: $1
- Health and Wellness Support Services Fee (no spouses): $247
- Jones School student activity fee: $100
- Jones School material fee: $1,169.50
- Jones School admission administrative fee - new students - Fall only: $103.50
- Health Insurance - student premium only (unless waiver has been approved): $1,595

Health Insurance

All students, full-time or part-time—including those on away status—must carry health insurance. For further information, visit the Health Insurance section.

Graduate Program: Jones School Executive MBA Degree

<table>
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<th>Annual</th>
<th>2-Year Program</th>
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<tr>
<td>Entered Fall '17</td>
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</table>

Required Fees

- Health Insurance - student premium only (unless waiver has been approved): $1,595

Health Insurance

All students, full-time or part-time—including those on away status—must carry health insurance. For further information, visit the Health Insurance section.

Graduate Program: Jones School MBA for Professionals — Evenings

<table>
<thead>
<tr>
<th>Semester</th>
<th>Annual</th>
<th>2-Year Program</th>
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<tbody>
<tr>
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<tr>
<td>Entered Fall '17</td>
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<td>$50,750</td>
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</table>

Required Fees

- Jones School MBA for Professionals Student Activity Fee: $50 per semester
- Health Insurance - student premium only (unless waiver has been approved): $1,595

Health Insurance

All students, full-time or part-time—including those on away status—must carry health insurance. For further information, visit the Health Insurance section.

Graduate Program: Jones School MBA for Professionals — Weekends

<table>
<thead>
<tr>
<th>Semester</th>
<th>Annual</th>
<th>2-Year Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entered Fall '16</td>
<td>$25,500</td>
<td>$51,000</td>
</tr>
<tr>
<td>Entered Fall '17</td>
<td>$26,375</td>
<td>$52,750</td>
</tr>
</tbody>
</table>

Required Fees

- Jones School MBA for Professionals Student Activity Fee: $50 per semester
Health Insurance  Fall: $980, Spring: $2,575  
- student premium only  
(unless waiver has been approved) ¹

¹ Health Insurance
All students, full-time or part-time—including those on away status—must carry health insurance. For further information, visit the Health Insurance section.

Graduate Program: Jones School MBA for Professionals — Extended

<table>
<thead>
<tr>
<th>Tuition</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entered Fall ‘15</td>
<td>$1,769 per credit</td>
</tr>
<tr>
<td>Entered Fall ‘16</td>
<td>$1,825 per credit</td>
</tr>
<tr>
<td>Entering Fall ‘17</td>
<td>$1,880 per credit</td>
</tr>
<tr>
<td>Health Insurance - student premium only (unless waiver has been approved)</td>
<td>Fall: $980, Spring: $1,595</td>
</tr>
</tbody>
</table>

¹ Health Insurance
All students, full-time or part-time—including those on away status—must carry health insurance. For further information, visit the Health Insurance section.

Billing Information
Electronic billing (E-Bill) is the official mechanism for student billing at Rice University. E-Bills are generated monthly. Fall and Spring E-Bills are generated on the 1st of each month, having a due date of the 10th.

Fall semester charges are due in full by August 10th. Spring semester charges are due in full by January 10th. Payment Plans are available for students who wish to pay installments over the course of the semester. Accounts not enrolled in a payment plan or paid in full by the term due dates are subject to Late Payment Fees.

Summer E-Bills are generated on the 5th for Summer months, having a due date on the 15th. Charges are due by the due date on the E-Bill notice. Payment Plans are not available for the Summer semester.

Away Status
Graduate students pursuing their studies outside of the Houston area (graduate students on “away” status) must be registered and pay tuition. Humanities students in away status must pay the Humanities GSA fee. Students on away status must carry health insurance. With these exceptions, graduate students in away status are exempt from the other required fees listed above.

Late Payment Fees
Student accounts not paid in full (or whose payment plan is not current) by the billing due date will be subject to a 1.5% late fee. Late fees are calculated based on the amount past due. Students experiencing difficulty with paying their balance should contact the Cashier’s Office promptly to discuss payment options.

Refunds
Refund of Tuition and Fees
Students withdrawing from the University during the first two weeks of the semester will receive a 100% refund of tuition and fees.

Students withdrawing from the University during the third week are entitled to a 70% refund of tuition only. Fees are not refundable. Refund of tuition for withdrawals succeeding week three are calculated on a 10% reduced refund proration per week until the 9th week of the semester. Students withdrawing after week 9 are not entitled to a refund of tuition.

Federal regulations require a refund calculation for all students receiving Federal Financial Aid. The length of time during which a refund must be calculated is up to 60% of the payment period (semester). Students withdrawing on or before the 60% point in time, a portion of the Federal Financial Aid awarded to a student must be returned, according to the provisions of the Higher Education Act as amended. The calculation of the return of funds may result in the student owing a balance to the university and/or the Department of Education.

Enrollment deposits will be forfeited.

Refund for Credit Balance on Student Accounts
Student account credits resulting from excess Federal Financial Aid payments, scholarship payments, and loan payments are automatically refunded by the Cashier’s Office; however, there may be certain circumstances where credits on student accounts occur that may not be automatically refunded. Reversed charges, over payments, tuition waivers, and other varying factors may lead to a credit balance on a student account.

For those credits not automatically refunded, students may request disbursement of the credit balance by completing the Refund Request Form.

Refunds are issued daily to students that are enrolled in Electronic Refunds (https://cashier.rice.edu/electronic-refunds). For students not enrolled in Electronic Refunds (https://cashier.rice.edu/electronic-refunds), refund checks are issued weekly and are mailed directly from JP Morgan Chase to the student mailing address on record.

Part-Time Students
Part-time enrollment refers to enrollment of less than 9 credits during a semester. Students seeking part-time enrollment must obtain approval from the Office of Graduate and Post-Doctoral Studies.

Part-time enrollment tuition is calculated on the per-credit rate. Students are also assessed a one-time per semester part-time enrollment fee. Students not approved for part-time enrollment will be assessed the full-time enrollment tuition charge.

Delinquent Accounts
Students in arrears on their financial obligation to Rice as of the last day to add courses for any semester may be withdrawn. The university will not issue certificates of attendance, diplomas, or transcripts at any time for a student whose account is in arrears.

Students who have not made satisfactory arrangements with the Cashier for payment of current charges may be withdrawn from the university. Accounts not settled by the first day of classes incur a late payment
penalty and are subject to a transcript/degree hold, preventing the release of official transcripts, verifications, and degrees.

### Special Charges
Courses with additional charges are noted on the Cashier’s website (http://professor.rice.edu/professor/FAQs2.asp). In some cases the associated charges may be in lieu of Rice tuition and/or required fees.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit fee: Rice alumni (per course)</td>
<td>$488</td>
</tr>
<tr>
<td>Audit fee: All others (per course)</td>
<td>$951</td>
</tr>
<tr>
<td>Late registration I (see academic calendar)</td>
<td>$75</td>
</tr>
<tr>
<td>Late registration II (see academic calendar)</td>
<td>$125</td>
</tr>
<tr>
<td>Part-time registration fee</td>
<td>$150</td>
</tr>
<tr>
<td>Visiting Post Baccalaureate application fee</td>
<td>$100</td>
</tr>
<tr>
<td>Visiting Post Baccalaureate registration fee</td>
<td>$75</td>
</tr>
<tr>
<td>Visiting Post Baccalaureate late registration fee</td>
<td>$125</td>
</tr>
<tr>
<td>Late payment fee (charged monthly)</td>
<td>1.5% of balance due</td>
</tr>
<tr>
<td>Late application for graduation fee</td>
<td>$75</td>
</tr>
<tr>
<td>Returned check fee</td>
<td>$30</td>
</tr>
<tr>
<td>Summer Health and Wellness Support Services Fee ¹</td>
<td>$135</td>
</tr>
<tr>
<td>Diploma fee: parchment</td>
<td>$50</td>
</tr>
<tr>
<td>Diploma mailing fee: Domestic</td>
<td>$30</td>
</tr>
<tr>
<td>Diploma fee: facsimile</td>
<td>$20</td>
</tr>
<tr>
<td>Transcript fee</td>
<td>$10</td>
</tr>
<tr>
<td>Letter of standing</td>
<td>$10</td>
</tr>
<tr>
<td>Intramural fees</td>
<td>$20</td>
</tr>
<tr>
<td>Readmission fee: graduate students</td>
<td>$375</td>
</tr>
<tr>
<td>Readmission fee: graduate students - after withdrawal for non-payment</td>
<td>$375</td>
</tr>
<tr>
<td>Reinstatement fee: graduate students - following leave of absence</td>
<td>$125</td>
</tr>
<tr>
<td>Reinstatement fee: graduate students - after exceeding time boundaries to candidacy or defense</td>
<td>$125</td>
</tr>
<tr>
<td>Replacement ID: faculty, staff, students, and dependents</td>
<td>$10</td>
</tr>
<tr>
<td>Graduate thesis submission fee</td>
<td>$100</td>
</tr>
<tr>
<td>Graduate application fee</td>
<td>$85</td>
</tr>
<tr>
<td>Jones School application fee—all MBA programs</td>
<td>$125</td>
</tr>
<tr>
<td>Jones School application fee—all EMBA programs</td>
<td>$125</td>
</tr>
<tr>
<td>Jones School application fee—all PMBA programs</td>
<td>$125</td>
</tr>
<tr>
<td>Late course change fee (add/drop)</td>
<td>$75</td>
</tr>
</tbody>
</table>

¹ Applies to early matriculants and summer returns from a leave of absence

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Recreation Center membership fees
- Student only:
  - Fall, Spring, Summer $134

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**2017-2018 General Announcements**
RIGHTS AND RESPONSIBILITIES

See also Faculty Grading Guidelines (p. 93).

Graduate students are entitled to at least one formal progress review (p. 93) with written feedback per year.

- Access to Student Records (p. 80)
- Code of Student Conduct (p. 81)
- Dispute Resolution (p. 81)
- Honor System (p. 83)
- Student Responsibility (p. 83)

Access to Student Records

Notification of Rights under the Family Educational Rights and Privacy Act (FERPA)

The Family Educational Rights and Privacy Act (FERPA) is a federal law designed to protect the privacy of, and limit access to, student education records. The law affords students the following rights with respect to their education records:

1. the right to inspect and review the student’s education records within 45 days after the date Rice University (“Rice”) receives a request for access;
2. the right to seek amendment of the student’s education records that the student believes are inaccurate, misleading, or otherwise in violation of the student’s privacy rights under FERPA;
3. the right to provide written consent to disclosures of personally identifiable information (“PII,” as defined by law) contained in the student’s education records, except to the extent FERPA authorizes disclosure without consent;
4. the right to file a complaint with the U.S. Department of Education concerning alleged failures by Rice to comply with the requirements of FERPA. The name and address of the federal office that administers FERPA is:

   Family Policy Compliance Office
   U.S. Department of Education
   400 Maryland Ave. S.W.
   Washington, DC 20202

Inspect and Review Records

A student should make written request to any offices that maintain student education records, identifying the record(s) the student wishes to inspect. Though not exhaustive, as a guide for students, this is a list of the primary offices that maintain student education records: Office of the Registrar, Office of the Dean of Undergraduates, Office of Graduate and Postdoctoral Studies, Office of Student Judicial Programs, Office of Admission, Office of Financial Aid, Center for Career Development, Office of Student Activities, Office of Academic Advising, Office of International Students and Scholars, Cashier’s Office, and departmental offices. The appropriate Rice official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the Rice official to whom the request is submitted, that Rice official will advise the student of the correct official to whom the request should be addressed.

Amendment of Records

Any questions, problems, or written requests for amendment of records should be submitted to the Office of the Registrar. A student requesting to amend a record should clearly identify the part of the record the student wants changed and specify why it should be changed. If Rice decides not to amend the record as requested, Rice will notify the student in writing of the decision and of the student’s right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when the student is notified of the right to a hearing.

Disclosure of Information

As permitted by FERPA, Rice reserves the right to publish or release the following directory information without prior consent:

1. Name, permanent, local, mailing, and campus address, residential college affiliation, telephone and mobile number(s), campus email address(es), and Net ID
2. Date and place of birth
3. Classification and major and minor fields of study
4. Participation in officially recognized activities and sports
5. Weight and height of members of athletic teams
6. Dates of attendance, degrees, honors, and awards received
7. The most recent previous educational agency or institution attended by the student
8. Photograph

Students who would like Rice to withhold this directory information may do so by logging in to ESTHER, clicking Personal Information, clicking Release or Withhold Directory Information, and indicating that the information should be withheld. Thereafter, Rice will withhold access to, or release of, the student’s directory information until further written instruction is received. For more information regarding FERPA, please visit the U.S. Department of Education’s website (https://www2.ed.gov/policy/gen/guid/fpco/ferpa).

FERPA permits the disclosure of PII from students’ education records, without consent of the student, if the disclosure meets certain conditions found in 34 C.F.R. §99.31 of the FERPA regulations. Except for disclosures to school officials, disclosures related to some judicial orders or lawfully issued subpoenas, disclosures of directory information, and disclosures to the student, Section 99.32 of the FERPA regulations requires the institution to record the disclosure. Eligible students have a right to inspect and review the record of disclosures. A postsecondary institution may disclose PII from the education records without obtaining prior written consent of the student —

- To other school officials, within Rice whom Rice has determined have legitimate educational interests and require this information in order to perform instructional, supervisory, advisory, administrative, or other duties for Rice. These school officials include faculty, research personnel, staff (including law enforcement unit personnel and health staff), trustees, or students serving on official committees (such as disciplinary or grievance committees) or assisting another school official. A school official has a legitimate educational interest if the official needs to review an educational record in order to fulfill his or her professional responsibility to Rice. This includes contractors, consultants, auditors, attorneys, collection agents, volunteers, or
other parties to whom Rice has outsourced institutional services or functions, provided that the conditions listed in §99.31(a)(1)(i)(B)(7) - (a)(1)(i)(B)(2) are met. (§99.31(a)(1))

- To officials of another school where the student seeks or intends to enroll, or where the student is already enrolled if the disclosure is for purposes related to the student's enrollment or transfer, subject to the requirements of §99.34. (§99.31(a)(2))

- To authorized representatives of the U.S. Comptroller General, the U.S. Attorney General, the U.S. Secretary of Education, or State and local educational authorities, such as a State postsecondary authority that is responsible for supervising the university's State-supported education programs. Disclosures under this provision may be made, subject to the requirements of §99.35, in connection with an audit or evaluation of Federal- or State-supported education programs, or for the enforcement of, or compliance with, Federal legal requirements that relate to those programs. These entities may make further disclosures of PI to outside entities that are designated by them as their authorized representatives to conduct any audit, evaluation, or enforcement or compliance activity on their behalf. (§§99.31(a)(3) and 99.35)

- In connection with financial aid for which the student has applied or which the student has received, if the information is necessary to determine eligibility for the aid, determine the amount of the aid, determine the conditions of the aid, or enforce the terms and conditions of the aid. (§99.31(a)(4))

- To organizations conducting studies for, or on behalf of, the school, in order to: (a) develop, validate, or administer predictive tests; (b) administer student aid programs; or (c) improve instruction. (§99.31(a)(6))

- To accrediting organizations to carry out their accrediting functions. (§99.31(a)(7))

- To parents of an eligible student if the student is a dependent for IRS tax purposes, though Rice limits such information to financial details of the student's enrollment. (§99.31(a)(8))

- To comply with a judicial order or lawfully issued subpoena. (§99.31(a)(9))

- To appropriate officials in connection with a health or safety emergency, subject to §99.36. (§99.31(a)(10))

- Information the school has designated as “directory information” above and pursuant to §99.37. (§99.31(a)(11))

- To a victim of an alleged perpetrator of a crime of violence or a non-forcible sex offense, subject to the requirements of §99.39. The disclosure may only include the final results of the disciplinary proceeding with respect to that alleged crime or offense, regardless of the finding. (§99.31(a)(12))

- To the general public, the final results of a disciplinary proceeding, subject to the requirements of §99.39, if the school determines the student is an alleged perpetrator of a crime of violence or non-forcible sex offense and the student has committed a violation of the school’s rules or policies with respect to the alleged violation made against him or her. (§99.31(a)(13))

- To parents of a student regarding the student’s violation of any Federal, State, or local law, or of any rule or policy of the school, governing the use or possession of alcohol or a controlled substance if the school determines the student committed a disciplinary violation and the student is under the age of 21. (§99.31(a)(14))

For further information regarding Rice’s policy on student education records, please contact the Office of the Registrar.

Rice University
Office of the Registrar–MS 57
6100 Main Street
Houston, TX 77005-1892
Email: registrar@rice.edu

Code of Student Conduct

The Office of Student Judicial Programs oversees the judicial system; enforces the Code of Student Conduct, which governs the administration of student order and discipline; and may participate in Title IX investigations. The Code of Student Conduct applies to all students, including undergraduate, graduate, and transfer students; those enrolled in professional and Continuing Studies programs; and visiting students (including Rice Online students), visiting post baccalaureates, second degree students, and auditors; from the time they arrive on campus for orientation until their degree is conferred or they have permanently left Rice. Organizations also are subject to this Code. All enrolled students also are subject to Rice University policies, rules, and regulations.

Alleged violations of university or college rules are handled in accordance with the Code of Student Conduct. Students may appeal decisions as described in the Code of Student Conduct. Rice retains ultimate authority in all matters of discipline and over all actions that affect its educational function or the safety and wellbeing of members of the university community. The Code is not intended to—and does not—confer any contractual rights on any individuals involved.

The Code of Student Conduct can be found at https://sip.rice.edu/code-of-student-conduct.

After Rice’s grievance process has been exhausted and documented, students may also pursue an external complaints process (p. 1576).

Dispute Resolution

Petitions and Appeals

Graduate students may petition for exceptions to academic requirements, regulations, and judgments. A course requirement is an example of an academic requirement. Allowed time to degree is an example of an academic regulation. Course grades and dismissals from programs are examples of academic judgments. If a petition is denied, one level of appeal is allowed.

Petitions

Petitions should include the circumstances that may qualify the student for an exception as well any supporting documentation or endorsements. In general, petitions will be handled at the lowest appropriate level.

- A petition regarding requirements, regulations, or judgments of a graduate program will be handled at that level, that is, by the program. Such petitions need to follow procedures established by these programs.
- A petition regarding University requirements, regulations, or judgment must be submitted to the Office of Graduate and Postdoctoral Studies; such a petition must be accompanied by a recommendation from the program.
- When the program’s recommendation is negative, or when the petition requests a major exception—for example, an extension of allowed time to degree by more than 1/2 semester—the Office
of Graduate and Postdoctoral Studies may also obtain the recommendation of the school overseeing the program (when relevant) and the Graduate Council with regard to such petitions.

Petitions for exceptions to academic requirements, regulations, and judgments should be viewed as unusual, rather than typical. Extensions of various time limits, such as time to candidacy or time to defense, will not be granted routinely. See Candidacy, Oral Examinations and Thesis (p. 64). Students requesting such extensions have to document the unusual circumstances justifying their request, demonstrate their academic progress towards the goal, and provide a concrete plan for meeting the goal within the requested extension.

Petitions regarding academic decisions must be submitted in writing within 15 days from the time that the student knew or should reasonably have known of the decision being petitioned, or within 15 days after an informal effort to resolve the situation has not been successful.

Petitions seeking exceptions to academic requirements or regulations should be submitted in writing at least 30 days before the requirement or regulation takes effect. For example, a petition to extend allowed time to degree should be submitted at least 30 days before the deadline in effect. Late petitions may be dismissed, except for unusual situations when a delay is found justifiable by the unit receiving the petition. Petitions must be acknowledged in writing immediately upon their receipt by the receiving unit. Email communication is considered to be “in writing.”

**Appeals**

If a petition is denied, a student (or other parties affected by the decision) is allowed only one level of appeal. In general, the appeal process will be resolved at the lowest level possible.

- When the petition is decided at the graduate program or department level, the appeal must be submitted to the Office of Graduate and Postdoctoral Studies.
- When the petition is decided at a school level, the appeal must be handled by the Office of Graduate and Postdoctoral Studies.
- When the petition is decided by the Office of Graduate and Postdoctoral Studies, the appellant may submit an appeal to the Provost.

An appeal must be submitted within 15 days from receipt of the decision that is being appealed. Late appeals will be dismissed, except for unusual situations when a delay is justified. Appeals must be acknowledged in writing immediately upon their receipt by the receiving unit. Email communication is considered to be “in writing.”

**Guidelines Regarding Petitions and Appeals**

- Grounds for a petition/appeal could be procedural errors by academic or administrative personnel or special circumstances found to be mitigating by the unit receiving the petition/appeal. Disagreement over evaluation of academic quality will not be considered as an appropriate basis for petitions/appeals unless the evaluation is found to be patently unreasonable by the unit receiving the petition/appeal.
- All petitions and appeals should indicate the requirement, regulation, or judgment that is the subject of the petition/appeal, the specific exception requested, and the grounds for the request.
- Additionally, an appeal must indicate why the decision involving the earlier petition was incorrectly decided.

**Guidelines Regarding Petitions and Appeals**

- Petitions involving a violation of University policy or improper conduct by University personnel will be handled as grievances (see Grievances below).

Petitions and appeals should be resolved within 30 days of their submission. When such resolution cannot be achieved within 30 days, students will be informed of the delay before the 30 days are over. A resolution of the petition or appeal must be achieved within 60 days. A lack of resolution of a petition within 60 days is an acceptable cause for an appeal.

An academic program directly managing graduate students must establish a standing Petitions, Appeals, and Grievances Committee. A petition concerning a graduate program regulation by a student will be handled by a committee consisting of at least three faculty members. The committee must be independent of the cause for the petition. Members of a student’s thesis committee must not participate in the handling of a petition by the student. (The department chair or dean may appoint ad-hoc members to the committee to ensure independence of the committee.) The committee will conduct an investigation of the circumstances and reach a decision regarding the petition. Their written report to the graduate director, and the chair (or dean) will describe the circumstances, the decision, and the rationale for the decision. The graduate director or chair (or dean) will convey the final decision to the student and include the committee report. (Redaction from the report is allowed to protect the privacy of other students.) In case of decisions by the faculty members of a graduate program acting as a committee of the whole, petitions will also be considered by the Petitions, Appeals, and Grievances Committee, which will reconsider the decision in view of the information provided in the petition. This committee may choose to bring the matter back for consideration by the faculty members of the academic program, acting as a committee of the whole. Petitions regarding University requirements, regulations, or judgments submitted to the Office of Graduate and Postdoctoral Studies may be handled by the dean or her or his designee. The dean may, at her or his discretion, handle these in a similar manner by enlisting the assistance of a subcommittee of the Graduate Council, which will submit its report to the chair of the Council and to the dean of graduate and postdoctoral studies.

An appeal handled by the Office of Graduate and Postdoctoral Studies may be referred to a subcommittee of the Graduate Council, composed of three faculty members (representing diverse disciplines within the university) and a graduate student. Such committees must be independent of the cause for the petition. In general, officers or committees handling the appeal should not try to substitute their judgment for that of the unit handling the petition. Rather, their task is to consider whether the petition was handled appropriately, whether all relevant circumstances have been considered, and whether University policy has been appropriately interpreted and applied. Nevertheless, a decision may be overturned if the officer or committee handling the appeal finds the petition decision to be patently unreasonable.

All time frames in this procedure refer to academic calendar days, and exclude mid-term, inter-term, and summer recesses. This exclusion does not apply to a student who is enrolled during the summer. All petitions and appeals, as well as responses to petitions and appeals, must be in writing. Email communication is considered to be “in writing.” Academic units should archive copies of all email communications pertaining to petitions and appeals.
Grievances

Grievances are different from petitions and appeals. Petitions and appeals involve exceptions to academic requirements, regulations, and judgments. A grievance is a complaint regarding inappropriate conduct by other students, faculty members, or staff. Inappropriate conduct encompasses both inappropriate personal conduct, such as sexual harassment, as well as inappropriate official conduct, such as violation of University policies. Specific policies exist to address grievances based on discrimination or sexual harassment and these policies must be followed in situations involving these issues. Grievances against another student may be raised with the director of student judicial programs and addressed under the Code of Student Conduct. In other cases, a student may present a grievance in writing at the lowest appropriate level, typically the graduate program or school. If a satisfactory resolution is not obtained at that level, the student may appeal the outcome of the grievance by presenting the problem at the next administrative level: the Office of Graduate and Postdoctoral Studies, followed by the provost, or president. Grievances against non-faculty staff members may also be brought to the employee relations director in Rice’s Human Resources office (http://people.rice.edu).

The procedures for handling grievances are analogous to those for handling petitions and appeals. Students submitting grievances must so indicate in their submissions.

Problem Resolution

During the course of graduate studies, problems that do not fall under the category of grievances, described above, may arise in the relationship between a graduate student and his/her program or his/her advisor. Students should attempt to resolve such problems by informing the appropriate faculty members and working together to resolve the problem. When attempts to resolve the problem informally are unsuccessful, the following problem-resolution procedure will be used:

1. The student will submit the problem in writing to the graduate program chair, who will then attempt to resolve it.
2. If the student remains unsatisfied, the problem will be presented to a committee of the program for resolution. This committee will be a standing committee and not the student's own thesis/dissertation committee. Both the student and the program chair will submit a written record of their views to this committee.
3. If the student remains unsatisfied, the problem will be referred to the Office of Graduate and Postdoctoral Studies. A written report of proceedings at stage 2 will be presented to the dean of graduate and postdoctoral studies, along with all other written materials generated during the investigation. The dean may, at her or his discretion, handle these in a similar manner by enlisting the assistance of a subcommittee of the Graduate Council, which will submit its report to the chair of the Council and to the dean of graduate and postdoctoral studies. The decision of dean of graduate and postdoctoral studies is considered final.

The time frame for handling problem resolution is similar to that for handling petitions, appeals, and grievances. Students may seek guidance on any of these procedures through discussions with the Office of Graduate and Postdoctoral Studies (http://graduate.rice.edu).

After Rice's grievance process has been exhausted and documented, students may also pursue an external complaints process (p. 1576).

Honor System

Students take all written examinations and complete any specifically designated assignments under the honor system. By committing themselves to the honor system, all students accept responsibility for assuring the integrity of the examinations and assignments conducted under it. The Graduate Honor Council (GHC) is responsible for investigating reported violations and for conducting a hearing when the facts warrant. The Office of Student Judicial Programs, which reviews the results of the investigations and hearings, considers the GHC’s recommendations when issuing penalties. Procedures for accusations arising out of summer classes or Rice Online classes may differ.

The Graduate Honor Council conducts an ongoing program to acquaint new students and faculty with the honor system. The Honor Code and other related information and resources are located at the homepage of the Honor Council: http://honor.rice.edu.

Student Responsibility

The university expects all Rice students to exercise personal responsibility over their actions. Their behavior should reflect a respect for the law and for their contractual obligations, a consideration for the rights of others, and shared standards of considerate and ethical behavior.

Students are responsible for knowing and following all information, policies, and procedures listed in this General Announcements. Questions should be directed to the appropriate office or administrator.

Rice utilizes e-mail as an official form of communication and sends correspondence to a student's Rice email address. Students should frequently check and maintain their Rice email inbox. Failure to do so does not relieve students of the responsibility to act or respond in a timely manner to official notices sent via email.

Rice encourages self-discipline, recognizing that effective student government, including judicial processes, and the integrity of the honor system depend on the willingness of all students to meet community standards of conduct.

The university, however, reserves the right to insist on the withdrawal of any student whose conduct it judges to be clearly detrimental to the best interests of either the student or the university. The appropriate authorities take such action only after careful consideration.

No individual or group may use the name of the university or one of its colleges without prior approval of the university or the college.

Teaching Assistant Responsibility

Individuals appointed as teaching assistants must abide by the policies stated below.

TA Policy

Teaching assistants are graduate students who help faculty with the delivery of courses. Services provided by teaching assistants include, but are not limited to, grading, monitoring, leading labs and/or discussion sessions, offering office hour assistance to students, and performing clerical tasks associated with course instruction.

Teaching assistants are supervised by the course instructor of record and are subject to established departmental policy.
Although they are not members of the faculty, teaching assistants are expected to conform to the same standards of conduct in the performance of their academic duties as are members of the faculty and shall respect the rights and opinions of students and uphold the academic standards of the University.

Teaching assistants are subject to the guidelines stated in the University Amorous Relationship Policy (https://professor.rice.edu/uploadedFiles/Professor/Faculty_Senate/CORRECTED%20Clean%20copy%20post%20Senate%20mtg%2012-3-2014.pdf) as well as the Family Educational Rights and Privacy Act (FERPA) (https://registrar.rice.edu/ferpa).

When serving in the role of a teaching assistant, graduate students are considered responsible employees under the University Title IX Policy (https://safe.rice.edu). As a responsible employee of Rice University, once a teaching assistant knows about any incident of sexual assault, harassment, relationship violence, stalking, or another non-consensual interpersonal behavior, Rice Title IX personnel need to know so they can act to support the student and keep our community safe. You can gain access to the Title IX Resource Navigator, Student Wellbeing, and the Rice Counseling Center by calling 713-348-3311. If a student wants to make a report through the university, wants Title IX accommodations without making a report, or isn't sure what to do, also call 713-348-3311 or extension 3311 on campus.

If the student wants to make a report through the legal system or is considering making a report, or needs immediate assistance, call the Rice University Police Department (RUPD) 713-348-6000 or extension 6000 on campus.
NON-TRADITIONAL STUDENTS

• Auditors (p. 86)
• Rice Learners (p. 87)
• Second Bachelor’s Degree for Rice Alumni (p. 88)
• Visiting Students (non-degree) (p. 89)
AUDITORS

Any interested person may audit one or more courses at Rice by securing permission of the instructor and by registering as an auditor with the Office of the Registrar. Detailed instructions to apply as an auditor can be found on the Office of the Registrar’s website. (http://registrar.rice.edu/students/visiting)

Upon completion, the audited course will appear on the student’s transcript with a grade of either “AUD” or “NC” (see Grade Symbols (p. 24)). Instructors report the AUD if the student met the audit requirements of the class, or the NC if they have not. There are no credit hours associated with audited courses, and auditing a course does not affect a student’s GPA.

During the fall and spring semesters, and/or during the summer sessions, an audit fee of $951 per course per semester is charged for the privilege of auditing (see Cashier’s website (https://cashier.rice.edu)). Rice alumni may audit a course at a reduced rate, $488 per course per semester.

A request to audit a class or to change from audit to credit or vice versa must be done by the deadlines as posted in the Academic Calendar (https://registrar.rice.edu/calendars) for the applicable semester.

Current enrolled Rice students will find more information regarding auditing in the undergraduate (p. 11) and graduate (p. 48) sections.

Please note that financial assistance is not available for auditing students.
RICE LEARNERS

Non-Credit Educational Opportunities at Rice
Rice University offers a number of opportunities for persons, or learners, to access various educational programs and materials. While not degree-granting, many of these programs or courses lead to certificates, continuing education credits, and other rewarding professional development opportunities.

Continuing Studies (at the Glasscock School of Continuing Studies)
The Glasscock School of Continuing Studies offers hundreds of non-credit course offerings throughout the year in a variety of areas of study. Choose from coursework focusing on non-credit preK - 12 education, philanthropy, professional studies, arts & design, humanities & social sciences, science, technology & health, foreign languages and much more. In addition, the Glasscock school offers several for-credit academic programs.

For additional information, please see the Glasscock School’s website: http://glasscock.rice.edu/.

Executive Education (at the Jones Graduate School of Business)
The Jones Graduate School of Business offers open enrollment, customized, and specialty non-credit programs to help learners and their organizations to take charge of their personal and professional development. These executive education programs and courses are deliberately designed to maximize learning and transfer of knowledge by incorporating assessments, lecture, case studies, group activity, simulations, and coaching. All are taught by world-class business school faculty who are prolific researchers in their areas of expertise, and have won numerous prestigious teaching awards. Additionally, executive education faculty leverage their consulting experience and the professional experience of classroom participants to co-create a rich learning environment.

For additional information, please see the Jones School’s website: https://business.rice.edu/about-executive-education.

Rice Online Learning
Rice Online Leaning develops innovative non-credit and for-credit courseware to improve educational and professional outcomes for learners of all ages, around the world. Rice Online Learning is dedicated to providing broad access to top quality Rice University education while enhancing the curriculum and student experience on the Rice campus, and is committed to advancing the research frontiers in technology for education. Rice Online Learning’s objectives are organized by around three goals:

1. Improve the quality of education at Rice University
2. Expand Rice University’s reach and reputation
3. Generate resources to support Rice University’s core mission

For additional information, please see Rice Online Learning’s website: http://online.rice.edu/.
SECOND BACHELOR’S DEGREE FOR RICE ALUMNI

Rice alumni with a Rice bachelor’s degree have the option of earning a second four-year bachelor’s degree at Rice in a different discipline. In addition to being in a different discipline, the second degree must also be a different bachelor’s degree from the one already held; for example, the holder of a BA degree may pursue coursework leading to a BS or BMus degree.

Rice alumni with a Rice bachelor’s degree desiring to earn a different four-year bachelor’s degree must:

• Be accepted for the major by the major department
• Fulfill all requirements for the second degree
• Complete at least 30 additional semester hours at Rice (must include two full-time fall and/or spring semesters) upon their return to Rice and beyond their first bachelor’s degree (these hours are applied to the second bachelor’s degree)

The entire undergraduate record for these students continues cumulatively. Those seeking admission to this program should complete the Second Four-Year Bachelor’s Degree Application available on the Office of the Registrar (http://registrar.rice.edu/online_forms) website. This application should include a written statement specifying the proposed major and course program for the second degree, a supporting letter from the chair of the major department, and an explanation of the student’s reasons for returning to Rice for a second degree. This letter of application and paperwork should be submitted to the Office of the Registrar no later than August 1 for the fall semester and November 1 for the spring semester.

Eligible students considering this option should note that coursework completed at Rice as visiting students can only be applied to the second degree with the approval of the major department for that degree. Additionally, coursework completed at Rice as Visiting Post Baccalaureates can only be applied to the second degree with the approval of the major department for that degree and the dean of graduate and postdoctoral studies.

Financial Aid

Students seeking information about financial aid available to participants in the second four-year bachelor’s degree program should contact the Office of Financial Aid (http://financialaid.rice.edu).

Second Four-Year Bachelor's Degree for Current Rice Undergraduates

Currently enrolled undergraduates who have not yet completed their first bachelor’s degree and desire to concurrently earn a second four-year bachelor’s degree, also known as a dual degree, should reference the Dual-Degree Requirements on the undergraduate Graduation Requirements (p. 25) page.
VISITING STUDENTS (NON-DEGREE)

Inter-Institutional Graduate Students

A number of inter-institutional graduate student enrollment agreements have been established enabling graduate students from one institution to take graduate-level courses at other participating institutions. The institutions currently participating in inter-institutional agreements include Rice University, Baylor College of Medicine, Texas A&M Health Science Center, University of Houston, University of Texas Health Science Center at Houston, and the University of Texas Medical Branch at Galveston. The number of credits allowed per term/semester and the course offerings may vary depending on the policy of the host school.

Registration Rules and Guidelines

The following registration rules and guidelines apply to graduate students (at participating inter-institutional institutions) seeking to be Rice University visiting students under an inter-institutional agreement:

• The student must be registered full-time (9 credit hours) between the student’s home institution and the host institution during the semester they register for courses.
• Requested class must not be offered by the home institution during the requested term/semester.
• Requested class must be necessary for completion of graduate degree at the home institution.
• The student may register for a total of no more than 12 credit hours outside the home institution.
• Tuition and fees are paid to the home institution.
• All paperwork with the appropriate approval signatures must be completed.
• Foreign students taking inter-institutional courses must check with the Office of International Students and Scholars (https://oiss.rice.edu) regarding additional paperwork (e.g., passport, I-94 arrival/departure card, and Check-In Sheet (https://registrar.rice.edu/sites/q/files/bxs751/f/Inter-Inst%20Grad%20CHECKiN%20SHEET.pdf)).
• For a comprehensive list of Registration Deadlines (including Add, Drop, Pass/Fail, Variable Credit deadlines etc.), please consult the semester-specific Rice University Academic Calendar (https://registrar.rice.edu/calendars).

Please Note: Due to the structure of the summer sessions at Rice University, this inter-institutional registration arrangement is not available to non-Rice students during the summer sessions.

For more information, including the enrollment process under an inter-institutional agreement, please see the Office of the Registrar’s website: https://registrar.rice.edu/students/inter_institutional.

Online-Distance Education

A complete list of all of Rice University’s online course offerings, both for-credit and non-credit offerings, can be found at Rice Online (http://online.rice.edu).

Rice Online for-credit Courses

Each academic year Rice offers a number of courses online. These courses use the online method of instruction, indicating that the majority of the class time instruction is occurring when and where students and instructors are not in the same place. These online course offerings can be found in the official Rice Course Schedule (https://courses.rice.edu/admweb/swkscat_main) by querying by method of instruction.

Visiting students seeking to register for a Rice Online for-credit course should follow the application procedures documented on the Office of the Registrar web site noted here (https://registrar.rice.edu/students/visiting). Upon admission and registration of a Rice Online for-credit course, all students, including non-degree seeking visiting students, must abide by and support the Honor System at Rice University. Prior to the first day of classes, affirmation and acknowledgement of the Honor Code (http://honor.rice.edu) will be required of all visiting students enrolled in any for-credit Rice course.

State Authorizations

The State Authorization Reciprocity Agreement (SARA) is a national initiative to provide more access to online courses while maintaining compliance standards with state regulatory agencies. SARA allows institutions to provide online courses outside of their own state borders by seeking and maintaining state approvals via a streamlined process. On June 19, 2017, the National Council for State Authorization Reciprocity Agreements (NC-SARA) approved institutional participation for Rice University.

For information regarding student complaints, please see Rice University Policy 701, Written Student Complaints, or NC-SARA at: nc-sara.org/content/sara-and-students (http://nc-sara.org/content/sara-and-students).

Rice Faculty and Staff Members

Fall and Spring semesters

With the appropriate authorizations, benefits-eligible employees of Rice may take one course per semester, either for-credit or audit. (See important note below regarding eligible courses.) Please see University Policy #409 (http://www.professor.rice.edu/professor/TUITION_WAIVER.asp) and/or #431 (http://www.professor.rice.edu/professor/Auditing_Courses.asp) for complete details about benefits eligibility. Employees must meet a six-month probationary period before using this benefit.

The registration period is the first two weeks of the semester. The following registration rules and guidelines apply to Rice benefits-eligible employees during the fall and spring semesters:

• Complete a Tuition Waiver Application Form (http://peopleblogs.rice.edu/hr-forms/tuition-waiver).
• Get an authorizing signature of the employee’s supervisor, the course instructor, and Human Resources.
• Complete a Visiting Student Application (https://riceuniversity.co1.qualtrics.com/SE/?SID=SV_1TSPXGlbIW6VYb7) and either upload the Tuition Waiver Application form to the application or bring it to the Office of the Registrar.
• Course registration is limited by availability, and priority is given to enrolled, degree-seeking students.

Retirees, spouses and domestic partners of benefits-eligible employees are also able to audit one course per semester. Spouses and domestic
partners should follow the same registration procedures as benefits-eligible employees.

Please Note: All graduate courses in the Jones Graduate School of Business, all courses offering individual instruction in the School of Architecture, all undergraduate and graduate courses offering individual instruction including musical performance or composition in the Shepherd School of Music, and Glasscock School of Continuing Studies classes are excluded from this program.

Summer Sessions
The tuition waiver or audit benefit is not available to Rice benefits-eligible employees during the Summer Sessions; however, with the appropriate authorizations, benefits-eligible employees of Rice may take courses offered during Rice's Summer Sessions (https://registrar.rice.edu/students/summersessions) and apply for tuition reimbursement. Please see University Policy #432 (http://professor.rice.edu/uploadedFiles/Professor/Independent_Pages/Policies/Policy432_TuitionReimbursement.pdf).

The following registration rules and guidelines apply to Rice benefits-eligible employees during the Summer Sessions:

• Adhere to the deadlines to apply as a visiting student (https://registrar.rice.edu/students/summersessions/#enroll_nonrice), depending on the session in which enrollment is requested.
• Application for tuition reimbursement. (http://people.blogs.rice.edu/hr-forms/tuition-reimbursement-form) This needs to be signed by the employee's supervisor and turned into Human Resources before the start date of the course.
• Visiting Student Application. (https://riceuniversity.co1.qualtrics.com/SE/?SID=SV_1TSPXGlbbWGyVb7)

Course registration is limited by availability, and priority is given to degree-seeking students.

Summer Sessions for Visiting Students
Rice’s Summer Sessions offer for-credit courses to Rice students, visiting undergraduates, and visiting post baccalaureates. Students can choose to take courses in combined summer sessions. Current Rice students follow the same registration policies and procedures that are in place for the fall and spring semesters.

Resources
• For a schedule of summer sessions, please refer to the Academic Calendar (https://registrar.rice.edu/calendars).
• For course offerings, please refer to courses.rice.edu.
• For information related to the Summer Sessions, please see http://registrar.rice.edu/students/summersessions/.

Enrollment Process for Visiting Students
To apply, students will need to submit the following materials to the Rice University Office of the Registrar. Applications will be notified as soon as possible of acceptance or non-acceptance:

• Visiting Student Application
• Dean of Students Recommendation Form (https://registrar.rice.edu/sites/q/files/bxs751/f/Dean_s_Recommendation_Letter.pdf) (visiting undergraduates from other institutions only)
• Application fee of $100. This must be paid online on the OTR Fees website (https://ebank.rice.edu/C21279_ustores/web/store_main.jsp?STOREID=8) and may be paid by credit card or electronic check.
• Course deposit of $200/course (payable by check or money order to Rice University)
• Official college transcript from all colleges or universities attended
• Official final high school transcript (waived if attended a college/university in the previous Spring semester) All transcripts must be mailed in and will not be accepted by fax or email.
• Proof of Meningococcal Vaccination Record or Waiver (required if under the age of 22)

Guidelines
• Tuition is due in full at registration before the beginning of classes.
• Enrollment in courses during the summer sessions carries no implications for regular admission to Rice.
• Visiting students may not take courses on a pass/fail basis.

It is essential that students follow the deadlines listed on the summer website at http://registrar.rice.edu/students/summersessions/ and the Academic Calendar (https://registrar.rice.edu/calendars). Students may apply after the deadline (but before the start of classes) by paying a late fee. Course offerings are at the discretion of Rice and may be canceled at any time for any reason.

Visiting Post Baccalaureates
The visiting post baccalaureate (VPB) program at Rice allows a visiting student who has an undergraduate or graduate degree from an accredited college or university to take courses at Rice for credit but not in a specific degree program. Students interested in taking courses, but not for credit, should audit the courses. (See Auditors (p. 86).)

VPB Applicants must have a 3.00 (B) or better grade average in the previous undergraduate or graduate program. Registration requires the permission of the course instructor or department chair and approval by the dean of graduate and postdoctoral studies. Visiting Post Baccalaureates must register for at least three hours and cannot take courses on a pass/fail basis. Visiting Post Baccalaureates must receive at least a B for all classes taken or they will not be allowed to remain in the program.

A student may not use courses taken under this arrangement to fulfill the requirements for a Rice degree unless and until the student has been accepted into a degree program by an academic department. A former Visiting Post Baccalaureate student may request that his or her department allow up to three courses taken as Visiting Post Baccalaureates to count toward the graduate degree. Once approved by the department, the student must also obtain the approval of the dean of graduate and postdoctoral studies.

Applications for Visiting Post Baccalaureate Program
Applications are available from the Office of the Registrar (http://registrar.rice.edu/students/visiting) upon request. Official transcripts from all colleges and universities the student has attended should be mailed directly by the institutions to the Office of Graduate and Postdoctoral Studies. A student who was previously a Visiting Post Baccalaureate must complete a new application (without transcripts) for each semester. All application materials are due by the workday nearest
to July 15 for fall semester courses and November 15 for spring semester courses. No late applications are accepted.

Individuals applying as Visiting Post Baccalaureates for the summer term should apply to enroll in Rice’s Summer Sessions (http://registrar.rice.edu/students/summersessions).

Tuition and Fees for Visiting Post Baccalaureate Program

Tuition and fee information can be found on the Cashier's Website (https://cashier.rice.edu). If a class fills with Rice degree-seeking students, instructors may drop Visiting Post Baccalaureates up to the end of the second week of class. In that case, the tuition (less the nonrefundable application fee) will be refunded. If a Visiting Post Baccalaureate withdraws, drops, or adds classes, the same rules regarding grades, refunds, and applicable fees apply as for degree-seeking graduate students. There is no refund for dropping a class after the second week as long as the student stays enrolled in at least one other class. Pro-rated refunds for complete withdrawals are according to the deadlines listed on the academic calendar (http://registrar.rice.edu/calendars). Please visit the Summer Sessions for Visiting Students (http://registrar.rice.edu/students/summersessions) page for information pertaining to summer sessions.

Please note that financial assistance is not available for Visiting Post Baccalaureate students.

Visiting Researchers

Visiting researchers are students who are enrolled in a degree-seeking program at another institution and, at the invitation by a Rice faculty member or department, engage in experiential research-specific learning. Such research is meant to assist the faculty with research efforts or to gain research experience which the student might apply toward degree requirements at his or her home institution.

Visiting researchers should first work with the academic department to apply for the specific research program. International visiting researchers and departments must also work with the Office of International Students and Scholars (https://oiss.rice.edu/vsugresearch) to obtain the necessary pre-certifications, if applicable.

For more information, see the Office of the Registrar’s website: https://registrar.rice.edu/students/visiting/researcher.

Visiting Undergraduate Students

A student who wishes to spend a semester or a year at Rice taking courses for credit to be applied toward his or her undergraduate degree at another school may apply for admission as a visiting student through the Office of Admission (http://admissions.rice.edu). The student’s application should be accompanied by the $75 application fee, an official high school transcript, an official transcript of college work to date, an SAT or ACT score, and recommendations from the dean of students and a faculty member who has taught the student within the past academic year. Visiting student applications are available on the Admission website (http://futureowls.rice.edu/futureowls/Visiting_Student.asp) and should be submitted by March 15 for the fall semester.

Visiting students are assigned membership to one of the residential colleges during their stay and are charged the same fees as other undergraduates. In classes where enrollment is limited because of space or other considerations, candidates for Rice degrees have priority over visiting students for registration.

Visiting students may apply to transfer to Rice only after having left Rice for at least one semester.

Please note that financial assistance is not available for visiting students.
FACULTY

- Faculty Grading Guidelines (p. 93)
- Non-Traditional Coursework (p. 94)
- Syllabus Standards (p. 95)
FACULTY GRADING GUIDELINES

The Committee on Examinations and Standing has drawn up the following guidelines on grading. Additional information is available in both the undergraduate (p. 11) and graduate (p. 48) student sections under the heading of "Grades."

- The evaluation of the student's performance in a course and a decision on the appropriate grade is the responsibility of the designated instructor or instructors in the course.
- No student should be given an extension of time or opportunities to improve a grade that are not available to all members of the class, except for verified illness or justified absence from campus. No course assignments may be due between the last day of classes and the first day of the final examination period.
- Students in independent study courses are not to be allowed an extension beyond the time when grades are due. Faculty are to submit grades at the end of the semester for such students based on work completed during the semester. The instructor directing the independent study assumes responsibility with the student for ensuring that the work undertaken is appropriate to the span of a semester and for determining the degree credit to be received.
- The basis for grading and the expectations on all written assignments or tests should be clearly explained to the class in advance, preferably in writing at the beginning of the semester. The instructor should explain clearly which assignments or homework are covered by the honor system and which are not. To prevent allegations of plagiarism on written assignments, students should be warned that all direct and indirect quotations from other sources should be properly acknowledged. The instructor should explain the extent to which the student's paper is expected to be independent of the references and clearly distinguishable from them.
- Instructors should be willing to give any student an explanation of his or her grade as consistent with the grading for the rest of the class. For this reason, the committee urges the faculty to preserve all examinations and written material not returned to students, as well as grade records, for at least the following semester so that students may, if they wish, review with their instructor the basis for the grade received.
- Instructors may not change a semester grade after the grade has been submitted to the Office of the Registrar, except when there is a clerical error in calculating the grade. This is a long-standing university rule of which the faculty are reminded by the Office of the Registrar at the end of each semester. It is designed, in part, to protect the faculty from student pressure for grade changes. All other grade changes, including retroactive change to withdrawal, incomplete, or other, must be approved by the Committee on Examinations and Standing on the basis of a written petition from the student and on information from the instructor.
- There is no university requirement that a final examination be given in a course. It is university policy that final examinations that cover more than the material since the last examination, that are the only exam in the course, or that are comprehensive of the entire course may be given only during the final examination period. Such examinations may not, for example, be labeled “tests” and administered during the last week of classes. Final examinations normally are of three-hour duration. Faculty who, under exceptional circumstances, wish to give longer examinations may do so only if the exam is scheduled as take-home. Under no circumstances may final exams exceed five hours.
- First-year undergraduate students receive mid-semester grades around the eighth week of the fall and spring semesters so that they can, if advisable, seek academic assistance or drop a class for which they may not be prepared. Faculty who teach first-year students in any of their classes will be asked to submit grades of standing for these students during the seventh week of the semester and should schedule the grading of tests, quizzes, or homework assignments accordingly. These grades are not recorded on the student's transcript nor calculated in the grade point average, but they are important indicators for students and their faculty advisors.
- Departments using teaching associates, adjunct professors, or visiting faculty of any kind should make sure these teachers are familiar with Rice grading procedures. A regular faculty member who is well-versed in the grading guidelines should be assigned to assist such instructors.

The chair of the Committee on Examinations and Standing, the Office of the Dean of Undergraduates, or the Dean of Graduate and Postdoctoral Studies will be glad to advise any faculty member faced with exceptional circumstances that may justify special consideration. Students may petition the committee or, for graduate students, their department chair concerning the application of these guidelines. Suspected or possible violations of the honor system should be submitted to the Honor Council.

Academic Progress Reviews for Graduate Students

Graduate programs must establish mechanisms for tracking, reviewing, and documenting academic progress of graduate students on an ongoing basis and must provide graduate students with a written assessment of their academic progress at least annually. In some graduate programs this ongoing progress review is carried out by a student's thesis committee, while in others it is carried out by a standing faculty committee. Although a student's supervisor plays an important role in reviewing the student's academic progress, the responsibility for conducting the review process lies with the program and requires the involvement of additional faculty members in the program. For graduate students who are primarily engaged in coursework, for example, professional master's students, the transcript is an adequate form of written assessment.
Non-Traditional Coursework

Courses tailored for individual students provide a valuable opportunity for them to pursue an academic or professional interest under the supervision of a Rice faculty member. Such courses are typically titled as independent study or research, directed reading, or internships. Although the organization of these courses is quite variable, they are subject to the same basic requirements as other course offerings. In particular:

- The subject matter and intellectual level of the course must be appropriate for Rice.
- The instructor of record must hold a regular faculty appointment at Rice. This instructor is responsible for submitting the final grade, in consultation with the student’s immediate supervisor, if appropriate.
- The course must have a written syllabus that meets published Rice Syllabus Standards (p. 95). In addition, the syllabus must include a description of anticipated activities and topical content.
- Credit hours assigned are subject to the same amount-of-work considerations as other courses. Credit hours will be awarded in accordance with the Rice credit hour guidelines (http://registrar.rice.edu/facstaff/contact_hours) and fixed at the time of registration.
- All Registrar deadlines for registration, add/drop, completion of course work, and grade submission must be met.
SYLLABUS STANDARDS

Faculty members and course instructors are required to provide a course syllabus to students on or before the first day of class. The syllabus should be uploaded into ESTHER, and may additionally be distributed in hard copy and/or on Canvas. For archiving purposes, updated versions of the course syllabus can be uploaded into ESTHER through the end of the semester. Each syllabus must include the following instructions:

1. Instructor’s name, office number, and email address
2. Office hours or a statement of either an “open-door” policy or hours by appointment
3. Overall course objectives and expected learning outcomes
4. Grade policies
5. Absence policies
6. List of required texts
7. Special materials required for the class, if any
8. Number of required examinations and papers
9. Statement of expectations regarding course work and the Rice Honor Code
10. A statement encouraging any student with a disability that requires accommodation to contact both the course instructor and Disability Support Services
11. It is permissible to include a statement indicating that the information contained in the course syllabus, other than the absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.

The Center for Teaching Excellence (http://cte.rice.edu) provides a syllabus outline (http://cte.rice.edu/syllabus) that aids in meeting the above requirements.
The contents of Rice's curricular programs are the collective responsibility of the faculty acting through their representatives in the Faculty Senate. There are specific guidelines for the creation, elimination, and modification of undergraduate and graduate programs, graduate major concentrations, and undergraduate certificates. The General Announcements is the official Rice curriculum. In the event that there is a discrepancy between the GA and any other websites or publications, the GA shall prevail as the authoritative source.

- Accounting (p. 109)
- African Studies (p. 113)
- Air Force Science (p. 115)
- Ancient Mediterranean Civilizations (p. 116)
- Anthropology (p. 120)
- Applied Physics (p. 126)
- Architecture (p. 129)
- Art History (p. 139)
- Asian Studies (p. 149)
- Bioengineering (p. 152)
- BioSciences (p. 162)
- Bioscience and Health Policy (p. 187)
- Business (p. 191)
- Chemical and Biomolecular Engineering (p. 258)
- Chemical Physics (p. 278)
- Chemistry (p. 280)
- Cinema and Media Studies (p. 287)
- Civic Leadership (p. 289)
- Civil and Environmental Engineering (p. 293)
- Classical and European Studies (p. 313)
- Cognitive Sciences (p. 319)
- College Courses (p. 324)
- Computational and Applied Mathematics (p. 325)
- Computational Science and Engineering (p. 331)
- Computer Science (p. 334)
- Critical and Cultural Theory (p. 345)
- Earth, Environmental, and Planetary Sciences (p. 347)
- Economics (p. 357)
- Electrical and Computer Engineering (p. 366)
- Energy and Water Sustainability (p. 379)
- Engineering Design (p. 381)
- Engineering Leadership (p. 383)
- English (p. 385)
- Environmental Analysis and Decision Making (p. 394)
- Environmental Science (p. 397)
- Environmental Studies (p. 410)
- Financial Computation and Modeling (p. 412)
- Global Affairs (p. 414)
- Global Health Technologies (p. 417)
- Gnosticism, Esotericism and Mysticism (p. 420)
- History (p. 422)
- Humanities Research Center (p. 435)
- Jewish Studies (p. 436)
- Kinesiology (p. 439)
- Languages and Intercultural Communication (p. 444)
- Latin American Studies (p. 446)
- Liberal Studies (p. 449)
- Lifetime Physical Activity Program (p. 453)
- Linguistics (p. 454)
- Managerial Studies (p. 458)
- Materials Science and NanoEngineering (p. 460)
- Mathematics (p. 471)
- Mechanical Engineering (p. 477)
- Medical Humanities (p. 485)
- Medieval and Early Modern Studies (p. 487)
- Military Science (p. 491)
- Museums and Cultural Heritage (p. 492)
- Music (p. 495)
- Nanoscale Science (p. 644)
- Naval Science (p. 647)
- Neuroscience (p. 648)
- Philosophy (p. 651)
- Physics and Astronomy (p. 655)
- Political Science (p. 669)
- Politics, Law and Social Thought (p. 675)
- Poverty, Justice and Human Capabilities (p. 678)
- Program in Writing and Communication (p. 682)
- Psychology (p. 682)
- Religion (p. 686)
- Science Teaching (p. 692)
- Social Policy Analysis (p. 694)
- Sociology (p. 697)
- Space Studies (p. 702)
- Spanish, Portuguese and Latin American Studies (p. 705)
- Sport Management (p. 708)
- Statistics (p. 714)
- Study of Women, Gender and Sexuality (p. 720)
- Subsurface Geoscience (p. 726)
- Systems, Synthetic and Physical Biology (p. 730)
- Teacher Education (p. 733)
- Teaching and Learning (p. 737)
- University Courses (p. 738)
- Visual and Dramatic Arts (p. 738)
THE SCHOOL OF ARCHITECTURE

The Rice School of Architecture offers an extremely innovative undergraduate program designed to educate architects who will act on a global stage and transform the field in the coming decades. Rice's Bachelor of Architecture degree is accredited by the National Architectural Accrediting Board (NAAB) and qualifies graduates to take the state professional licensing exams after completing the required internship in an architectural office. The undergraduate program approaches professional study as a way of synthesizing and focusing the broad and pressing questions of the 21st century through the lens of the architectural discipline so that its practice gains renewed agency, vitality and relevance for our shared environment.

The RSA's graduate program has two inseparable aims: to educate architects and to position our graduates as leaders in a rapidly changing world. The education of architects focuses on sharing knowledge... on a vibrant discussion of architecture's intellectual, formal, material, and representational composition. Positioning leaders centers on developing new knowledge... on affecting the contours of this new world.

Programs

- Architecture (p. 129)
THE JONES GRADUATE SCHOOL OF BUSINESS

Named in honor of the late Jesse H. Jones, a prominent Houston business and civic leader, the school is consistently ranked among the nation's top 25 business schools.

All courses are taught by a dedicated, nationally-recognized team of professors who integrate insights from their own rigorous, peer-reviewed research and help students understand these topics in the context of today's ever-changing business landscape. Learn more about the scholarship of our academics from our online ideas magazine, Rice Business Wisdom (http://ricebusinesswisdom.com), devoted exclusively to the practical, useful summaries of peer-reviewed research.

As a student, becoming a part of the business school at Rice University means they will live, study and play on a spectacular tree-lined campus nestled in the heart of Houston. Degree programs include the full-time MBA, MBA for Professionals, MBA for Executives, coordinated MBAs in engineering or professional science, a dual MD/MBA with Baylor College of Medicine, Ph.D., MAcc and undergraduate business minor. The business school also offers a full schedule of executive education open enrollment and customized courses for business and industry along with certificates in finance and accounting, health care, and marketing.

Each program works with the same top-notch faculty, in the same business school building, on the same campus.

Programs

- Accounting (p. 109)
- Business (p. 191)
THE GLASSCOCK SCHOOL OF CONTINUING STUDIES

The mission of the Susanne M. Glasscock School of Continuing Studies is to further Rice University's commitment to educational outreach by providing lifelong personal and professional development opportunities to the greater Houston community and beyond.

Programs

- Liberal Studies (p. 449)
- Teacher Education (p. 733)
Engineering has been a part of Rice’s curriculum since the university first opened as The Rice Institute in 1912. In those early days Rice offered courses in chemical, civil, mechanical and electrical engineering. Over the years, the engineering program grew, and in 1975 the George R. Brown School of Engineering was established.

Today the school is comprised of nine academic departments and includes seventeen research institutes and centers. Almost 40 percent of Rice undergraduates are engineering majors and one-third graduate students are in the School of Engineering.

Among the 128 engineering faculty are 9 members of the National Academies of Engineering, Science and Medicine. Four emeritus faculty are also members. Our approximately 1,500 undergraduate and 1,030 graduate students have easy access to professors in the classroom and also work closely with them in their labs.

Departments and centers within the School of Engineering take advantage of Houston’s role as a center for the energy industry, medical research, space exploration, and the city’s growing high-technology sector. Several departments have active industrial affiliates programs, and many research projects are undertaken with local companies. Students benefit from these relationships through collaborative design and research projects, summer internships, and making contacts for employment before graduation.

Departments and Programs

- Bioengineering (p. 152)
- Chemical and Biomolecular Engineering (p. 258)
- Civil and Environmental Engineering (p. 293)
- Computational and Applied Mathematics (p. 325)
- Computational Science and Engineering (p. 331)
- Computer Science (p. 334)
- Electrical and Computer Engineering (p. 366)
- Energy and Water Sustainability (p. 379)
- Engineering Design (p. 381)
- Engineering Leadership (p. 383)
- Financial Computation and Modeling (p. 412)
- Global Health Technologies (p. 417)
- Materials Science and NanoEngineering (p. 460)
- Mechanical Engineering (p. 477)
- Statistics (p. 714)
- Systems, Synthetic and Physical Biology (p. 730)
THE SCHOOL OF HUMANITIES

Led by a world-class faculty, Rice University’s School of Humanities offers programs in disciplines traditionally associated with humanities - such as art, classical studies, literature, history, philosophy, languages, and religion - while also pushing beyond disciplinary boundaries to explore in all its ramifications what it means to be human.

Departments and Programs

- African Studies (p. 113)
- Ancient Mediterranean Civilizations (p. 116)
- Art History (p. 139)
- Asian Studies (p. 149)
- Classical and European Studies (p. 313)
- Critical and Cultural Theory (p. 345)
- English (p. 385)
- Gnosticism, Esotericism and Mysticism (p. 420)
- History (p. 422)
- Humanities Research Center (p. 435)
- Jewish Studies (p. 436)
- Languages and Intercultural Communication (p. 444)
- Latin American Studies (p. 446)
- Medical Humanities (p. 485)
- Medieval and Early Modern Studies (p. 487)
- Museums and Cultural Heritage (p. 492)
- Philosophy (p. 651)
- Politics, Law and Social Thought (p. 675)
- Poverty, Justice and Human Capabilities (p. 678)
- Religion (p. 686)
- Spanish and Portuguese, and Latin American Studies (p. 705)
- Study of Women, Gender and Sexuality (p. 720)
- Visual and Dramatic Arts (p. 738)
INTERDISCIPLINARY

Interdisciplinary
  • Applied Physics (p. 126)
  • Civic Leadership (p. 289)
  • Naval Science (p. 647)
  • Teaching and Learning (p. 737)
THE SHEPHERD SCHOOL OF MUSIC

Founded in 1975, The Shepherd School of Music at Rice University in Houston, Texas is one of the nation’s youngest major university level music programs. In less than forty years, it has become one of the most prominent music schools in the country, attracting an international student body of 300 music majors. Our illustrious faculty of artist-teachers is dedicated to the highest possible cultivation of the talents and skills of each individual student.

Shepherd School alumni include Pulitzer Prize and Grammy Award winners; they have debuted on the stages of Carnegie Hall and have appeared with the Chamber Music Society of Lincoln Center and the Metropolitan Opera. They hold positions in prestigious orchestras across the globe, including the Boston Symphony Orchestra, the Chicago Symphony Orchestra, the Philadelphia and Cleveland orchestras, the Los Angeles Philharmonic, and the Metropolitan Opera Orchestra. Graduates of the Shepherd School Opera Program have sung in several of the world’s foremost opera houses and recital halls. The Program has had recent finalists and winners in the Metropolitan Opera National Council Auditions. Recent alumni are members of the Metropolitan Opera Lindemann Young Artist Program, the Houston Grand Opera Studio, the Domingo-Cafritz Young Artist Program, the Utah Opera Ensemble Program and the Seattle Opera Young Artist Program.

Since 1991, The Shepherd School of Music has been housed in Alice Pratt Brown Hall, an elegant, state-of-the-art facility designed by renowned Spanish architect Ricardo Bofill. The hall boasts four performance venues, 54 teaching studios, 55 practice rooms, seven classrooms, an orchestra rehearsal hall, an electronic music studio, and production and rehearsal spaces. The school makes an enormous impact on the cultural life of Rice University and the greater Houston community by welcoming 75,000 visitors who attend nearly 400 events annually.

Programs

- Music (p. 495)
THE WIESS SCHOOL OF
NATURAL SCIENCES

Natural Sciences faculty participate in several Interdisciplinary institutes and centers (http://naturalsciences.rice.edu/ShowContent.aspx?id=896) including the Institute of Biosciences and Bioengineering, Richard E. Smalley Institute for Nanoscale Science and Technology, Rice Quantum Institute, the W.M. Keck Center for Interdisciplinary Bioscience Training, Gulf Coast Consortia, and Rice Space Institute. Research partnerships encompass local institutions including Baylor College of Medicine, M.D. Anderson Cancer Center, NASA, The University of Texas Health Science Center, the University of Texas Medical Branch, and University of Houston, plus foundations, museums, industries, and other universities and corporations worldwide.

The research of Nobel Laureates Robert Curl and Richard Smalley heralded the new discipline of nanoscience and technology that brings together many fields across science and engineering. In addition to providing the foundation of nano-research, the School also recently recruited three renowned scientists, all members of the National Academy of Sciences. Their research labs in cancer, physics, and chemistry will work in partnership with cancer specialists in the Texas Medical Center to apply new concepts from physics to cancer research and treatment. Members of our faculty have received prestigious awards such as: Packard Fellowships, Beckman Foundation Fellowships, NSF CAREER Awards for junior faculty, Feynman Prizes, Norman Hackerman awards in Chemistry, the Athelstan Spilhaus Award for Enhancement of the Public Understanding of Earth and Space Science, and the Public Welfare Medal from the National Academy of Science.

The School offers numerous research opportunities to its undergraduates, and many publish work in top journals. A small sampling of research being conducted illustrates the broad range of possibilities: exotic plant and animal invasions into Texas ecosystems, evolutionary dynamics of genes and genomes in populations and species, effects of salt chemistry on freezing of saturated Martian soil, neurogenesis in Alzheimer’s Disease, and building lasers for cooling atoms to a millionth of a degree above absolute zero, to name a few.

The space that supports Natural Sciences is remarkably diverse in the state-of-the-art equipment provided to the undergraduate and graduate research programs. The School also supports a professional science master’s program in several areas.

Departments and Programs

- Applied Physics (p. 126)
- Bioscience and Health Policy (p. 187)
- BioSciences (p. 162)
- Chemical Physics (p. 278)
- Chemistry (p. 280)
- Earth, Environmental, and Planetary Sciences (p. 347)
- Environmental Analysis and Decision Making (p. 394)
- Environmental Science (p. 397)
- Environmental Studies (p. 410)
- Kinesiology (p. 439)
- Mathematics (p. 471)
- Nanoscale Science (p. 644)
- Neuroscience (p. 648)
THE SCHOOL OF SOCIAL SCIENCES

Our School
People. The School of Social Sciences focuses on how people think and act as individuals and in society. Just as scientists seek to uncover facts about the natural and physical worlds, social scientists seek to uncover facts about the social world. Across the school, you will find that our prestigious faculty and students engage in research that affect everyone in their everyday lives and generate solutions that make lives better.

Our Students
The School of Social Sciences serves the largest number of undergraduates, with over a third of Rice undergraduates choosing a major in the social sciences. One of the goals of the school is to give undergraduate students opportunities to have real life experiences so they are able to make informed decisions about what they would like to do after they graduate. To accomplish this goal, the school has created the Gateway program (http://socialsciencesgateway.rice.edu). Gateway allows students to participate in internships, research, and international experiences. At the graduate level, six of our seven departments have Ph.D. programs. Each of these programs achieves excellence by concentrating on selected areas for education and research.

Our Faculty
One of the reasons many students choose Rice is because of faculty who really take an interest in students and enjoy teaching. Nowhere on campus is that more evident than the School of Social Sciences, where our faculty consistently exhibit their student commitment by winning teaching awards and creating such a fascinating learning environment that students frequently change their majors to one of the social sciences.

Departments and Programs
- Anthropology (p. 120)
- Cognitive Sciences (p. 319)
- Economics (p. 357)
- Global Affairs (p. 414)
- Linguistics (p. 454)
- Managerial Studies (p. 458)
- Political Science (p. 669)
- Psychology (p. 682)
- Social Policy Analysis (p. 694)
- Sociology (p. 697)
- Sport Management (p. 708)
The General Announcements (GA) is the official Rice curriculum. In the event that there is a discrepancy between the GA and any other websites or publications, the GA shall prevail as the authoritative source.

<table>
<thead>
<tr>
<th>Academic Program</th>
<th>Department</th>
<th>School</th>
<th>Undergraduate</th>
<th>Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>Management</td>
<td>JS (p. 98)</td>
<td>-</td>
<td>MAcc (p. 110)</td>
</tr>
<tr>
<td>Ancient Mediterranean Civilizations</td>
<td>Ancient Civilizations</td>
<td>HU (p. 101)</td>
<td>BA (p. 117)</td>
<td></td>
</tr>
<tr>
<td>Anthropology</td>
<td>Anthropology</td>
<td>SS (p. 105)</td>
<td>BA (p. 121), Minor</td>
<td>MA(^*), PhD (p. 123)</td>
</tr>
<tr>
<td>Applied Physics</td>
<td>Applied Physics</td>
<td>EN (p. 100)</td>
<td>-</td>
<td>MS(^*), PhD</td>
</tr>
<tr>
<td>Architectural Studies</td>
<td>Architecture</td>
<td>AR (p. 97)</td>
<td>BA (p. 132)</td>
<td></td>
</tr>
<tr>
<td>Architecture</td>
<td>Architecture</td>
<td>AR (p. 97)</td>
<td>BA (p. 133), BArch (p. 130)</td>
<td>DArch(^<em>), MA (p. 138), MAUD(^</em>), MArch (p. 135)</td>
</tr>
<tr>
<td>Art History</td>
<td>Art History</td>
<td>HU (p. 101)</td>
<td>BA (p. 140)</td>
<td>MA(^*), PhD (p. 147)</td>
</tr>
<tr>
<td>Asian Studies</td>
<td>Asian Studies</td>
<td>HU (p. 101)</td>
<td>BA (p. 150)</td>
<td></td>
</tr>
<tr>
<td>Astronomy</td>
<td>Physics and Astronomy</td>
<td>NS (p. 104)</td>
<td>BA (p. 657)</td>
<td></td>
</tr>
<tr>
<td>Astrophysics</td>
<td>Physics and Astronomy</td>
<td>NS (p. 104)</td>
<td>BS (p. 659)</td>
<td></td>
</tr>
<tr>
<td>Bassoon Performance</td>
<td>Music</td>
<td>MU (p. 103)</td>
<td>BMus (p. 523)</td>
<td>AD (p. 498), MMus (p. 591)</td>
</tr>
<tr>
<td>Biochemistry and Cell Biology</td>
<td>Biosciences</td>
<td>NS (p. 104)</td>
<td>BA (p. 166), BS (p. 174), Minor</td>
<td>MA (p. 182), MS(^*), PhD</td>
</tr>
<tr>
<td>Bioengineering and Applied Mathematics</td>
<td>Bioengineering</td>
<td>EN (p. 100)</td>
<td>BSBE (p. 154)</td>
<td>MBE, MS(^*), PhD</td>
</tr>
<tr>
<td>Biological Sciences</td>
<td>Biosciences</td>
<td>NS (p. 104)</td>
<td>BA (p. 168)</td>
<td></td>
</tr>
<tr>
<td>Bioscience and Health Policy</td>
<td>Biosciences</td>
<td>NS (p. 104)</td>
<td>-</td>
<td>MBHSP</td>
</tr>
<tr>
<td>Business</td>
<td>Business</td>
<td>JS (p. 98)</td>
<td>Minor</td>
<td>MA(^*), MBA, PhD</td>
</tr>
<tr>
<td>Chemistry</td>
<td>Chemistry</td>
<td>SS (p. 105)</td>
<td>BA (p. 219)</td>
<td>BS (p. 278)</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>Chemical and Biomolecular Engineering</td>
<td>EN (p. 100)</td>
<td>BA (259), BSChE</td>
<td>MChE, MS(^*), PhD (p. 275)</td>
</tr>
<tr>
<td>Chemical Physics</td>
<td>Chemical Physics</td>
<td>NS (p. 104)</td>
<td>BA (281), BS (283)</td>
<td>MA(^*), PhD (p. 286)</td>
</tr>
<tr>
<td>Clarinet Performance</td>
<td>Music</td>
<td>MU (p. 103)</td>
<td>BMus (p. 527)</td>
<td>AD (p. 500), DMA (p. 567), MMus (p. 596)</td>
</tr>
<tr>
<td>Classical Studies</td>
<td>Classical and European Studies</td>
<td>HU (p. 101)</td>
<td>BA (314)</td>
<td></td>
</tr>
<tr>
<td>Cognitive Sciences</td>
<td>Cognitive Sciences</td>
<td>SS (p. 105)</td>
<td>BA (320)</td>
<td></td>
</tr>
<tr>
<td>Composition</td>
<td>Music</td>
<td>MU (p. 103)</td>
<td>BMus (p. 529)</td>
<td>DMA (p. 569), MMus (p. 598)</td>
</tr>
<tr>
<td>Computational Science and Engineering</td>
<td>Computational EN (p. 100)</td>
<td>-</td>
<td>MA(^*), MCSE, PhD (p. 331)</td>
<td></td>
</tr>
<tr>
<td>Computational Mathematics</td>
<td>Computational EN (p. 100)</td>
<td>BA (p. 326), Minor</td>
<td>MA(^*), MCAAM, PhD (p. 328)</td>
<td></td>
</tr>
<tr>
<td>Computer Science</td>
<td>Computer Science</td>
<td>EN (p. 100)</td>
<td>BA (p. 336), BS (p. 338)</td>
<td>MSc, MS (p. 344), PhD (p. 339)</td>
</tr>
<tr>
<td>Program</td>
<td>School, College</td>
<td>Degree(s)</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>----------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td>Critical and Cultural Theory</td>
<td>Center for Critical and Cultural Theory (p. 345)</td>
<td>HU (p. 101) - Certificate (p. 345)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double Bass Performance</td>
<td>Music (p. 495)</td>
<td>MU (p. 103) BMus (p. 531) AD (p. 502), DMA (p. 572), MMus (p. 600)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earth Science</td>
<td>Earth, Environmental and Planetary Sciences (p. 347)</td>
<td>NS (p. 104) BA (p. 348), BS (p. 351) MS (p. 356), PhD (p. 355)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecology and Evolutionary Biology</td>
<td>Biosciences (p. 162)</td>
<td>NS (p. 104) BA (p. 171), BS (p. 176), MS (p. 186), MA (p. 183), MS*, PhD (p. 180)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economics</td>
<td>Economics (p. 357)</td>
<td>SS (p. 105) BA (p. 358) MA*, PhD (p. 375)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Education (p. 733)</td>
<td>CS (p. 99) - MAT (p. 735)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>Electrical and Computer Engineering (p. 366)</td>
<td>EN (p. 100) BA (p. 367), BSEE (p. 371) MEE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical and Computer Engineering</td>
<td>Electrical and Computer Engineering (p. 366)</td>
<td>EN (p. 100) - MS*, PhD (p. 375)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>Economics (p. 357)</td>
<td>SS (p. 105) - MEEcon (p. 364)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy and Water Sustainability</td>
<td>Energy and Water Sustainability (p. 379)</td>
<td>EN (p. 100) Minor (p. 379)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering Design</td>
<td>Engineering Design (p. 381)</td>
<td>EN (p. 100) Minor (p. 382)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering Leadership</td>
<td>Rice Center for Engineering Leadership (p. 383)</td>
<td>EN (p. 100) Certificate (p. 384)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>English (p. 385)</td>
<td>HU (p. 101) BA MA*, PhD (p. 392)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Analysis and Decision Making</td>
<td>Biosciences (p. 394)</td>
<td>NS (p. 104) - MSEADM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Civil and Environmental Engineering</td>
<td>EN (p. 100) - MCEE, MS (p. 312), PhD (p. 305)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Science</td>
<td>Science (p. 397)</td>
<td>BA, BS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Studies</td>
<td>Environmental Science (p. 104)</td>
<td>BA BS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Computation and Modeling</td>
<td>Financial Computation and Modeling (p. 412)</td>
<td>EN (p. 100) BMus (p. 533) AD (p. 503), DMA (p. 574), MMus (p. 602)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flute Performance</td>
<td>Music (p. 495)</td>
<td>MU (p. 103) BMus (p. 533) AD (p. 503), DMA (p. 574), MMus (p. 602)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>French Studies</td>
<td>Classical and European Studies (p. 313)</td>
<td>HU (p. 101) BA (p. 316) MA*, PhD (p. 415)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>German Studies</td>
<td>Classical and European Studies (p. 313)</td>
<td>HU (p. 101) BA (p. 317)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global Affairs</td>
<td>Global Affairs (p. 414)</td>
<td>SS (p. 105) - MAGA (p. 415)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global Health Technologies</td>
<td>Global Health Technologies (p. 417)</td>
<td>EN (p. 100) Minor (p. 418)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gnosticism, Esotericism, and Mysticism</td>
<td>Religion (p. 420)</td>
<td>HU (p. 101) - Certificate (p. 421)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harp Performance</td>
<td>Music (p. 495)</td>
<td>MU (p. 103) BMus (p. 535) AD (p. 504), MMus (p. 605)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History</td>
<td>History (p. 422)</td>
<td>HU (p. 101) BA MA*, PhD (p. 423)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horn Performance</td>
<td>Music (p. 495)</td>
<td>MU (p. 103) BMus (p. 537) AD (p. 506), MMus (p. 607)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jewish Studies</td>
<td>Jewish Studies (p. 436)</td>
<td>HU (p. 101) Minor (p. 437)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kinesiology</td>
<td>Kinesiology (p. 439)</td>
<td>NS (p. 104) BA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Languages and Intercultural Communication</td>
<td>Center for Languages and Intercultural Communication (p. 444)</td>
<td>HU (p. 101) Certificate (p. 445)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latin American Studies</td>
<td>Spanish, Portuguese and Latin American Studies (p. 446)</td>
<td>HU (p. 101) BA (p. 447)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liberal Studies</td>
<td>School of Continuing Studies (p. 449)</td>
<td>CS (p. 99) - DLS (p. 450), MLS (p. 452)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department</td>
<td>Degree(s)</td>
<td>BA (p. 455)</td>
<td>MA*, PhD</td>
<td>AD (p. 511), DMA (p. 578), MMus (p. 617)</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-----------</td>
<td>-------------</td>
<td>----------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Linguistics</td>
<td></td>
<td>SS (p. 105)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managerial Studies</td>
<td></td>
<td>BA (p. 458)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials Science and Nanoengineering</td>
<td></td>
<td>EN (p. 100)</td>
<td>BA (462), BS (463), PhD (466)</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td>NS (p. 104)</td>
<td>BA (472), BS (473), Minor (476)</td>
<td></td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td></td>
<td>EN (p. 100)</td>
<td>BA (478), BSME (479), MME, MS (484), PhD (481)</td>
<td></td>
</tr>
<tr>
<td>Medical Humanities</td>
<td></td>
<td>HU (p. 101)</td>
<td>MA+, PhD (475)</td>
<td></td>
</tr>
<tr>
<td>Medieval and Early Modern Studies</td>
<td></td>
<td>HU (p. 101)</td>
<td>BA (488)</td>
<td></td>
</tr>
<tr>
<td>Museums and Cultural Heritage</td>
<td></td>
<td>HU (p. 101)</td>
<td>Minor (493)</td>
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### Sport Management
- **BA**

### Statistics
- **BA** (p. 715), **MA**, **MStat**, **PhD** (p. 716)

### String Quartet Performance
- **MMus** (p. 627)

### Study of Women, Gender and Sexuality
- **BA** (p. 721)

### Subsurface Geoscience
- **MSSG** (p. 731)

### Systems, Synthetic, and Physical Biology
- **MS**, **PhD** (p. 731)

### Teaching and Learning
- **Certificate** (p. 737)

### Trombone Performance
- **BMus** (p. 555)

### Trumpet Performance
- **BMus** (p. 557)

### Tuba Performance
- **BMus** (p. 559)

### Viola Performance
- **BMus** (p. 561)

### Violin Performance
- **BMus** (p. 563)

### Visual and Dramatic Arts
- **BA**

### Vocal Performance
- **DMA** (p. 588), **MMus** (p. 641)

### Women, Gender and Sexuality
- **Certificate** (p. 725)

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* Although students are not normally admitted to this degree program, graduate students may earn this degree as they work towards the PhD.

† This program is currently inactive and is not accepting applications for admission.

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### Accounting

#### Contact Information

**Accounting**  
[https://business.rice.edu/](https://business.rice.edu/)  
319 McNair Hall  
713-348-2347

**Ben Lansford**  
Program Director  
lansford@rice.edu

**Barbara Ostdiek**  
Sr. Assoc. Dean for Degree Programs  
ostdiek@rice.edu

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The Master of Accounting degree, offered by the Jones Graduate School of Business, is designed to enable students with a top-tier non-accounting undergraduate education to complete the educational requirements for becoming a certified public accountant. Certified public accountants conduct independent audits and provide accounting, tax, and consulting services. The program prepares students to enter careers in public accounting, corporate accounting, management accounting, governmental accounting, financial analysis, and law enforcement.

Graduates of the program will excel in analytics, critical thinking, ethics, judgment, and communications, built on outstanding technical accounting skills. An understanding of global capital markets and macroeconomic forces will complement graduates’ accounting expertise, along with proficiency in corporate finance, risk and valuation.

Accounting does not currently offer an academic program at the undergraduate level.

### Master's Program
- **Master of Accounting (MAcc) Degree** (p. 110)

#### Dean

**Peter Rodriguez**

#### Deputy Dean

**Jeff Fleming**

#### Sr. Associate Dean of Degree Programs

**Barbara Ostdiek**

#### Sr. Associate Dean of Executive Education

**D. Brent Smith**

#### Associate Dean of Degree Programs

**George Andrews**
Professors
Kerry Back
Alex Butler
Utpal Dholakia
Jeff Fleming
Jennifer M. George
William H. Glick
Gustavo Grullon
Thomas Hemmer
Robert E. Hoskisson
Ajay Kalra
Wagner Kamakura
Haiyang Li
Vikas Mittal
Amit Pazgal
K. Ramesh
Shiva Sivaramakrishnan
Scott Sonenshein
Robert A. Westbrook
James Weston
Duane Windsor
Stephen A. Zeff
Yan "Anthea" Zhang
Jing Zhou

Clinical Assistant Professors
Arzu Ozoguz
Constance Porter

Professor in the Practice of Management
William Arnold
Jack M. Gill
Vincent Kaminski
Benjamin Lansford
Dick Viebig

Associate Professor in the Practice of Management
David VanHorn

Visiting Assistant Professor
Heber Farnsworth
Sean Wang

Senior Lecturers
Jill Foote
Elizabeth O'Sullivan
Rick Schell
David Tobin

Lecturers
Abby Larson
Janet Moore
Lydia Musher
Hesam Panahi

Joint Appointments
Linda Driskill
Mikki Hebl
David Lane
Fred Oswald

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: MACC

Department Description and Code
• Management: MGMT

Graduate Degree Description and Code
• Master of Accounting degree: MAcc

Graduate Degree Program Description and Code
• Degree Program in Accounting: ACCO

Master of Accounting (MAcc) Degree

Clinical Assistant Professors
Arzu Ozoguz
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Description and Code Legend
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Course Catalog/Schedule
• Course offerings/subject code: MACC

Department Description and Code
• Management: MGMT

Graduate Degree Description and Code
• Master of Accounting degree: MAcc

Graduate Degree Program Description and Code
• Degree Program in Accounting: ACCO

Master of Accounting (MAcc) Degree
Program Learning Outcomes for the MAcc Degree

Upon completing the MAcc degree, students will be able to:

1. Demonstrate technical proficiency in the major aspects of public accounting.
2. Demonstrate financial valuation expertise.
3. Demonstrate strong written and verbal business communication skills.
4. Demonstrate a sound knowledge of public policy and corporate governance.
5. Demonstrate a critical and analytical approach to problem solving.

Requirements for the MAcc Degree

The MAcc degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MAcc degree must complete:

- A minimum of 17 courses (36 credit hours) to satisfy degree requirements.
- A minimum overall GPA of 2.67 (B-) in required coursework.
- A minimum GPA of 2.67 (B-) each term.
- A minimum grade of C (2.0 grade points) in each required course.

MAcc coursework is comprised of 24 credit hours of accounting coursework, 9 credit hours of business coursework, and 3 credit hours of ethics coursework. The program has been structured so that coursework should be completed during one academic year, fall and spring.

The MAcc degree program is a lockstep two-semester program that students typically complete during contiguous fall and spring semesters. Due to internship opportunities or other commitments, a student may take three semesters to complete the program. In such instances, the program must be completed in contiguous fall and spring semesters, and the ensuing fall semester. Students requesting the three-semester option must explain in the application cover letter why they need the three-semester option, given the academic goals of the program. Students approved for the three-semester option must agree to follow the specific course sequence as required by the program director.

Summary

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Degree Requirements

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Footnotes and Additional Information

1. MACC 503 and MACC 505 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

Proposed Plan-of-Study

The following plan-of-study represents the lockstep two-semester sequence in which students pursuing the MAcc degree complete the required coursework. As noted above, in some instances students may apply for, and be permitted to, pursue the MAcc degree as a three-semester program. In those instances, students must agree to follow a specific course sequence as required by the program director. Please see the program director for details.

Course | Title                                      | Credit Hours |
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<td>MACC 503</td>
<td>ACCOUNTING AND AUDITING REGULATION</td>
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</table>
Policies for the MAcc Degree

Admission Requirements

For general university requirements, see Graduate Degrees (p. 49). Criteria for evaluating participants include: completion of (or plans for completion of) required undergraduate prerequisite courses, academic and professional accomplishments, GMAT or GRE test score, an interview, and, possibly, an admissions assessment examination. Current Rice students and Rice alumni are exempted from the test score requirement, although they may provide a GMAT or GRE score at their discretion.

Rice Undergraduates

Students who are on track to fulfill the requirements of the Rice business minor prior to completing their undergraduate degree are eligible for admission to the program. Non-business minors are also eligible for admission if specific prerequisite courses will be completed before undergraduate graduation; the MAcc program director will consult prospective applicants to determine what prerequisite classes are needed. All MAcc applicants, regardless of being a business minor, need to have completed the introductory financial accounting course (BUSI 305), the first intermediate financial accounting course (BUSI 405), and the auditing course (BUSI 440) prior to beginning the MAcc program. Students potentially interested in the MAcc program are encouraged to take BUSI 305 in their sophomore year. Rice undergraduates can apply and gain conditional admission to the MAcc program as early as the fall semester of their junior year and as late as the spring semester of their senior year. Conditionally admitted students who lack any of the prerequisite accounting courses must take appropriate classes to correct their deficiency.

Non-Rice Undergraduates

Students should apply in the fall semester of their senior year. Admitted students who lack the prerequisite accounting course work must take summer pre-term classes.

Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MAcc program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards

A minimum cumulative grade point average of 2.67 (B-) is required for graduation. All courses taken towards the MAcc degree are counted in the cumulative grade point average calculation.

Students with a cumulative grade point average lower than 2.67 at the end of any semester will be notified of dismissal. A student who has been notified of dismissal may appeal to the Academic Standards Committee of the Jones Graduate School of Business. The committee will decide, based on the circumstances of the appeal, whether the student:

1. may resume studies on probation,
2. is to be suspended for one semester or an academic year, or
3. is to be dismissed from the MAcc program.

Students are removed from probation only upon achieving a cumulative grade point average of at least 2.67 at the end of the following semester of work.

Students proposing to return after a period of academic suspension must apply to the Academic Standards Committee and receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only grades of C (2.0 grade points) and above are counted for credit toward graduation. If a student receives a grade below a C (2.0 grade points) in a course, s/he must meet with the program director to determine remediation. Any plans for remediation must be approved by the Academic Standards Committee.

Professional Standards

Masters students are held to the high standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 81). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)

Guidelines for Appealing Academic Dismissal

The Process

A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee. These questions should be answered in the appeal letter:

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing

If the student intends to appeal the letter to the committee must be filed within two weeks after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up in with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals

Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from
other constituents of the school. All decisions rendered by the dean are final.

Confidentiality
The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.

2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.

3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.

4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.

5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).

6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

8. The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

Additional Information
For additional information, please see the Accounting website: https://business.rice.edu/academic-program/master-accounting-macc.

Opportunities for the MAcc Degree
For additional information, please see the Accounting website: https://business.rice.edu/academic-program/master-accounting-macc.

African Studies
Contact Information
African Studies
http://africanstudies.rice.edu
116 Humanities Building
713-348-4274
Kerry Ward

Program Director
kward@rice.edu

African Studies is a broad-ranging field that is committed to an interdisciplinary approach to the study of African peoples and their complex histories, cultures, and languages. Drawn from the Schools of Social Science and Humanities, African Studies at Rice University has strengths in archaeological and anthropological research, historical studies, African religions and theology, African arts, and global health technologies. These foci provide a unique opportunity for students broadly interested in historical, cultural, African diaspora studies, and contemporary issues and will attract students preparing for career fields related to their interest in Africa, including academia (potential applicants to graduate school, Fulbright, or other competitive scholarships), development, diplomacy, business and finance, governance, global health, law, and others.

The African Studies minor at Rice benefits undergraduate students by providing a course of study to explore the richness and complexity of the continent and its place in issues of wider global concern and import. The required interdisciplinary course(s) allow students to traverse departments and schools, creating links between diverse intellectual trajectories. Through study in the African Studies minor, students have the opportunity to appreciate the relationship contemporary Africa has with the large African Diaspora, and to understand not only the place of Africa in global histories and networks, but the crucial role that it has played in them.

Minor
• Minor in African Studies (p. 114)

African Studies does not currently offer an academic program at the graduate level.

Director
Kerry Ward

Advisors
Jeffrey Fleisher
Kerry Ward

Professors
Elias Bongmba
Susan McIntosh

Associate Professors
Kerry Ward
Jeffrey Fleisher

Assistant Professor
Daniel Domingues

Steering Committee
Elias Bongmba
Alexander Byrd
Jeffrey Fleisher
Susan McIntosh
Kerry Ward

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: Courses from various subjects may apply towards this program

Program Description and Code
• African Studies: AFST

Undergraduate Minor Description and Code
• Minor in African Studies: AFST

Minor in African Studies

Program Learning Outcomes for the Minor in African Studies

Upon completing the minor in African Studies, students will be able to:

1. Demonstrate the ability to complicate and challenge their understanding of African history, culture, and politics by critically examining the diversity of Africans’ own historical and contemporary perspectives.
2. Understand topics in African Studies in their interdisciplinary contexts, including being able to make connections between African religions, cultures, and politics as well as understand reasons for changes to these relationships across historical time.
3. Identify and explain key theoretical developments in African Studies, in addition to being able to identify and apply interdisciplinary methodologies to topics in African Studies.
4. Demonstrate the ability to read critically and evaluate a variety of sources on African religious thought, customs, and spirituality and critically apply their insights from these sources.

Requirements for the Minor in African Studies

Students pursuing the minor in African Studies must complete:

• A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
• A minimum of 3 courses (9 credit hours) at the 300 level or above.
• A maximum of 3 courses (9 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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Minor Requirements

<table>
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<td>Select 1 from the following:</td>
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<tr>
<td>ANTH 312 /</td>
<td>AFRICAN PREHISTORY</td>
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<tr>
<td>MDEM 311</td>
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<tr>
<td>HIST 231</td>
<td>INTRODUCTION TO AFRICAN HISTORY:</td>
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<td>NORTH, WEST, AND CENTRAL AFRICA:</td>
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<tr>
<td>HIST 232</td>
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<td>EAST, CENTRAL, AND SOUTHERN AFRICA,</td>
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<td>RELI 111</td>
<td>INTRODUCTION TO AFRICAN RELIGIONS</td>
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Elective Requirements 2

100% African Content 3

Select 3-5 from the following: 9-15

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<td>ARCHAEOLOGICAL LABORATORY TECHNIQUES AND ANALYSIS</td>
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<td>THE IDEA OF AFRICA</td>
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<td>HIST 334</td>
<td>AFRICAN VOICES, AFRICAN HISTORIES:</td>
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<td>TOPICS IN ORAL AND WRITTEN LITERATURE AS HISTORICAL SOURCE</td>
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<td>RELI 113</td>
<td>INTRODUCTION TO CHRISTIANITY IN AFRICA</td>
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<td>RELI 338</td>
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<td>RELI 340</td>
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<tr>
<td>RELI 342 /</td>
<td>NEW RELIGIOUS MOVEMENTS IN AFRICA</td>
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<td>ANTH 343</td>
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<tr>
<td>RELI 348</td>
<td>CHRISTIANITY AND ISLAM IN AFRICA</td>
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<tr>
<td>RELI 423 /</td>
<td>AFRICAN MYTHS AND RITUALS</td>
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<td>ANTH 423</td>
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<td>RELI 424</td>
<td>RELIGION AND POLITICS IN AFRICA</td>
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<td>25% African Content 4</td>
<td>0-6</td>
</tr>
</tbody>
</table>

Select up to 2 from the following: 0-6

2017-2018 General Announcements
Students pursuing the minor in African Studies should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the minor in African Studies should be aware of the following program-specific transfer credit guidelines:

- No more than 3 courses (9 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.

- No more than 2 courses (6 credit hours) of transfer credit in African languages may be applied to the minor. This may include courses on African languages or other individualized study in African languages with advisor approval. "African languages" does not include the languages of European colonial powers or Arabic. Other languages spoken on the continent, including Afrikaans, will be accepted.

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the African Studies website: http://africanstudies.rice.edu/

Opportunities for the Minor in African Studies

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this minor.

Air Force Science

The Air Force Reserve Officer Training Corps (ROTC) program prepares men and women of character, commitment, and courage to assume leadership positions as commissioned officers in the active duty United States Air Force. On completion of the curriculum, students will have a thorough understanding of the core values, leadership, teamwork, and other requirements to be an effective officer in the world's greatest Air Force.

For additional information regarding Air Force Science, please see the program's website, at: http://www.professor.rice.edu/professor/Air_Force_Science.asp.

Air Force Science is not a free-standing degree program; in addition to fulfilling the ROTC curriculum, candidates are required to successfully complete the degree program to which they have been admitted. Upon successful completion of both the Air Force Sciences curriculum and the conferral of their Rice undergraduate degree, the student will become an active duty commissioned officer in the United States Air Force.

Four-Year Program

The General Military Course (GMC) is the first half of the four-year ROTC program and is taken during the freshman and sophomore years. This program allows the student to experience Air Force ROTC without obligation (unless the student is on an Air Force ROTC scholarship).

Each semester of the GMC consists of one classroom hour of instruction as well as Leadership Laboratory each week.

During the first two years, the student will learn about the Air Force and the historical development of aerospace power.

During the summer preceding the junior year, the student will compete for the opportunity to attend a four-week Field Training Unit. Successful
completion of field training is mandatory for entrance into the Professional Officer Course (POC), the junior and senior years of the four-year program.

As a junior, the student will study the core values, leadership, teamwork, and management tools required to become an effective Air Force officer.

During the senior year, students study the national security policy process and regional and cultural studies, participate in a war-game, and complete final requirements for commissioning as second lieutenants.

Leadership Laboratory
As an Air Force ROTC cadet, each student is required to attend an additional two-hour class known as Leadership Laboratory.

Although not part of the academic class requirement, it is an essential element of officer training. Leadership Laboratory is an intensive military training program in which students gain invaluable leadership and managerial experience while learning about the Air Force way of life. Students have numerous opportunities to hear guest speakers and panel discussions, participate in field trips, and experience practical leadership exercises.

AFROTC Scholarship Opportunities
In-College Scholarship Program (ICSP) is a highly competitive scholarship program aimed primarily at college freshmen and sophomores in any major (students with a bachelor’s degree can compete to earn a master’s degree). The ICSP awards cover tuition capped at either $18,000 per year plus $900 per year for books or $9,000 per year plus $900 per year for books.

The Express Scholarship Program is operated on a fully qualified basis: those who meet the qualifications are awarded the scholarship. Though the list of eligible college majors differs from year to year, the express scholarship covers full tuition per year and $900 per year for books. Currently, majors that qualify include: Electrical and Computer Engineering, and Strategic foreign languages. For the most up-to-date information, visit https://www.afrotc.com/.

ROTC scholarship students incur a military obligation. For additional information on AFROTC scholarship opportunities, please visit the AFROTC website at https://www.afrotc.com/ or call 1-800-4AFROTC.

Stipend
All AFROTC scholarship recipients and POC cadets receive a nontaxable monthly stipend. The annual stipend amount ranges from $2,000 per year to $4,000 per year depending on the recipient’s enrollment year.

Field Training (FT)
Cadets completing the General Military Course attend four weeks of field training (FT) during the summer at Maxwell AFB, Alabama. Those who have not completed the GMC attend an extended FT Unit. This rigorous program of leadership training, physical conditioning and academics assesses the cadet’s potential to be an Air Force officer.

Cadets also receive survival and firearms training and career information. Cadets receive travel pay and daily pay for FT.

Flight Orientation Program
All cadets can volunteer to participate in a joint Air Force ROTC/Civil Air Patrol flight orientation program. This consists of eight flights, four in the front seat of a small passenger aircraft and four additional flights in the back seat as an observer. A soaring program also is available in which cadets get four sorties in gliders. In addition, an abbreviated flying ground school course is taught in the ROTC classrooms using FAA textbooks. The flight program and ground school course are both free for all cadets.

Physical Fitness Training
Cadets meet twice per week at the University of Houston Alumni Center to perform physical fitness training. The training is mandatory and emphasizes push-ups, sit-ups, and running in order to pass the USAF physical fitness test.

Professional Development Training (PDT)
Cadets are eligible to compete to attend PDT during the summer months.

PDT consists of several programs, including:

• Tours of nearby active duty Air Force bases
• Soaring and free-fall parachuting at the United States Air Force Academy
• (USAF Academy)
• Cultural and Foreign Language Immersion
• Hands-on research at Air Force laboratories
• Shadowing a Air Force officer in Operation Air Force
• Internships at NASA and other government organizations

Cadets receive travel pay and daily pay for the majority of these programs.

For more information contact the Unit Admissions Officer at 713-743-4932/3704 or visit the University of Houston Air Force website at http://www.uh.edu/class/airforce.

Summary
The mission of producing Air Force second lieutenants of character, commitment, and courage is more important than ever.

See AFSC in the Rice Course Schedule (these are taught at the University of Houston).

Air Force Science does not currently offer an academic program at the graduate level.

Commander and Professor
Lt. Colonel Lynn Bentley III

Associate Professors
Major Albert Meza
Major Shawn Owens

Ancient Mediterranean Civilizations

Contact Information
Ancient Mediterranean Civilizations
https://amc.rice.edu/
116 Humanities Building
713-348-4274

Michael Maas
Program Director
This interdisciplinary major in the cultures of ancient Greece and Rome, Judaism, early Christianity, and early Islam, as well as their antecedents, explores these traditions both for their intrinsic interest and for the contributions each has made to contemporary Western society. Our combined focus on ancient cultural history in its broadest sense and on perspectives offered by cultural criticism enables students to examine the beginnings of the civilization in which they now participate.

Courses for this major address common questions about the transmission and transformation of cultures in the ancient Mediterranean world. Students examine sources, such as texts and artifacts that illuminate the process. They study how shifting cultural centers and frontiers in this world are delineated, and they explore the general integration and disintegration of specific ancient cultures. This major also offers opportunities for archaeological fieldwork and study abroad.

Rice is a sponsor of the American School of Classical Studies at Athens, the American School of Oriental Research, the American Research Center in Sofia, and the Intercollegiate Center for Classical Studies in Rome. Students majoring in Ancient Mediterranean Civilizations are encouraged to study in these programs as well as in the College Year in Athens program.

Bachelor’s Program

- Bachelor of Arts (BA) Degree with a Major in Ancient Mediterranean Civilizations (p. 117)

Ancient Mediterranean Civilizations does not currently offer an academic program at the graduate level.

Director and Advisor

Michael Maas

Professors

April DeConick
James D. Faubion
Matthias Henze
Michael Maas
Scott McGill
Susan Keech McIntosh
Donald Ray Morrison
Paula Sanders
Charles Siewert
Harvey E. Yunis

Associate Professors

David Cook
Jeff Fleisher
Hilary S. Mackie

Assistant Professors

Niki Clements
John Hopkins
Maya Irish

Lecturer

Ted Somerville

Postdoctoral Fellow

Sarah Rous

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

- Course offerings/subject code: Courses from various subjects may apply towards this program

Program Description and Code

- Ancient Mediterranean Civilizations: AMCI

Undergraduate Degree Description and Code

- Bachelor of Arts degree: BA

Undergraduate Major Description and Code

- Major in Ancient Mediterranean Civilizations: AMCI

Bachelor of Arts (BA) Degree with a Major in Ancient Mediterranean Civilizations

Program Learning Outcomes for the BA Degree with a Major in Ancient Mediterranean Civilizations

Upon completing the BA degree with a major in Ancient Mediterranean Civilizations, students will be able to:

1. Explain the historical trajectory of at least two of these Ancient Mediterranean Civilizations: Graeco-Roman, Islamic, Jewish, Christian.
2. Identify and explain how cultural, political, intellectual, religious, and other aspects of Ancient Mediterranean Civilizations have affected aspects of contemporary societies.
3. Create convincing arguments about one or more aspects of Ancient Mediterranean Civilizations through the evaluation and critical analysis of textual and material evidence.

Requirements for the BA Degree with a Major in Ancient Mediterranean Civilizations

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Ancient Mediterranean Civilizations must complete:

- A minimum of 10 courses (30-32 credit hours depending on course selection) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 5 courses (15 credit hours) at the 300-level or above.

Although not required, courses in ancient languages are recommended.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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Degree Requirements

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Select 3 courses from 3 of the 5 following categories (from the Core Requirements course list below):

Graeco-Roman Civilization
- ANTH 325 / SWGS 332 SEX, SELF, AND SOCIETY IN ANCIENT GREECE
- ANTH 363 EARLY CIVILIZATIONS
- CLAS 101 / FSEM 101 FRESHMAN SEMINAR: SOCRATES: THE MAN AND HIS PHILOSOPHY
- CLAS 107 / HUMA 107 GREEK CIVILIZATION AND ITS LEGACY
- CLAS 108 / HUMA 111 ROMAN CIVILIZATION AND ITS LEGACY
- CLAS 225 / SWGS 225 WOMEN IN GREECE AND ROME
- CLAS 235 CLASSICAL MYTHOLOGY: INTERPRETATION, ORIGINS, AND INFLUENCE
- CLAS 316 / PLST 316 DEMOCRACY AND POLITICAL THEORY IN ANCIENT GREECE
- CLAS 318 / HIST 316 THE INVENTION OF PAGANISM IN THE ROMAN EMPIRE
- CLAS 336 / LING 336 INTRO TO INDO-EUROPEAN
- GREE 101 ELEMENTARY GREEK I
- GREE 102 ELEMENTARY GREEK II
- GREE 201 INTERMEDIATE GREEK I: PROSE
- GREE 202 INTERMEDIATE GREEK: EURIPIDES MEDEA/BIBLICAL KOINE
- HART 320 EIGHTEENTH CENTURY EUROPEAN ART
- HIST 200 ANCIENT EMPIRES: ORIGINS OF WESTERN CIVILIZATIONS
- HIST 307 IMPERIAL ROME FROM CAESAR TO DIOCLETIAN
- HIST 308 / MDEM 308 THE WORLD OF LATE ANTIQUITY
- HIST 357 / MDEM 357 JEWS AND CHRISTIANS IN MEDIEVAL EUROPE
- HIST 358 HUMANITARIANISM FROM THE 19TH CENTURY TO THE PRESENT
- LATI 101 / MDEM 101 ELEMENTARY LATIN I
- LATI 102 / MDEM 102 ELEMENTARY LATIN II
- LATI 201 / MDEM 211 INTERMEDIATE LATIN I: PROSE
- LATI 202 / MDEM 212 INTERMEDIATE LATIN II
- LATI 302 ADVANCED LATIN
- LATI 303 ADVANCED LATIN: PLAUTUS AND TERENCE
- LATI 313 CICERO AND CATULLUS: LITERATURE AND SOCIETY IN THE ROMAN REPUBLIC

Themes Across Time

Select 1 course from the Themes Across Time course list below.

Select 1 course from the Comparative Studies course list below.

Elective Requirements

Select 5 additional courses from any of the course lists below. 15

Total Credit Hours Required for the Major in Ancient Mediterranean Civilizations 30-32

Additional Credit Hours to Complete BA Degree Requirements 28-30

University Graduation Requirements (p. 25) 60

Total Credit Hours 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Courses in this requirement address the creation, transmission, and reception of traditions in the Mediterranean world.

2 Courses in this requirement address two different cultural traditions or reflect similar themes but from different cultures (e.g. Women in Greece & Rome).
ASIA 221 / RELI 221  THE LIFE OF THE PROPHET MUHAMMAD
HIST 382  CULTURAL TRENDS IN MEDIEVAL ISLAM,
750-1400
RELI 223  QUR'AN AND COMMENTARY
RELI 440  ISLAM'S MYSTICAL AND ESOTERIC TRADITION

Jewish Civilization
HIST 381 / RELI 385  GOD, TIME AND HISTORY
RELI 104 / MDEM 103  INTRODUCTION TO JEWISH MYSTICISM
RELI 108  INTRODUCTION TO JUDAISM
RELI 122  THE BIBLE AND ITS INTERPRETERS
RELI 125 / HEBR 125  INTRODUCTION TO BIBLICAL HEBREW I
RELI 126 / HEBR 126  INTRODUCTION TO BIBLICAL HEBREW II
RELI 127  INTERMEDIATE BIBLICAL HEBREW III
RELI 128 / HEBR 128  INTERMEDIATE BIBLICAL HEBREW IV
RELI 203 / HIST 201  JUDAISM OF JESUS AND HILLEL
RELI 382  LOST JUDAISMS: THE APOCRYPHAL WRITINGS
RELI 383  THE DEAD SEA SCROLLS

Christian Civilization
RELI 105 / MDEM 105  INTRODUCTION TO MEDIEVAL CHRISTIAN THOUGHT
RELI 122  THE BIBLE AND ITS INTERPRETERS
RELI 125 / HEBR 125  INTRODUCTION TO BIBLICAL HEBREW I
RELI 126 / HEBR 126  INTRODUCTION TO BIBLICAL HEBREW II
RELI 127  INTERMEDIATE BIBLICAL HEBREW III
RELI 128 / HEBR 128  INTERMEDIATE BIBLICAL HEBREW IV
RELI 243  THE BOOK OF GENESIS
RELI 271 / MDEM 271  MEDIEVAL POPULAR CHRISTIANITY
RELI 282  INTRODUCTION TO CHRISTIANITY
RELI 304  JESUS AND THE GOSPELS
RELI 307  BASIC COPTIC 1
RELI 308  BASIC COPTIC 2
RELI 309  BASIC COPTIC 3
RELI 365  PAUL AND THE NEW TESTAMENT
RELI 381  THE MESSIAH
RELI 383  THE DEAD SEA SCROLLS
RELI 449  EARLY CHRISTIAN CONTROVERSIES
RELI 456  HISTORY OF WESTERN CHRISTIANITY: REFORMATION TO THE PRESENT

Archaeological Methods and Theory
ANTH 203  HUMAN ANTIQUITY. AN INTRODUCTION TO PHYSICAL ANTHROPOLOGY AND PREHISTORY
ANTH 205  INTRODUCTION TO ARCHAEOLOGY
ANTH 312 / MDEM 311  AFRICAN PREHISTORY
ANTH 345  THE POLITICS OF THE PAST: ARCHAEOLOGY IN SOCIAL CONTEXT
ANTH 362  ARCHAEOLOGICAL FIELD TECHNIQUES
ANTH 363  EARLY CIVILIZATIONS
ANTH 425  ADVANCED TOPICS IN ARCHAEOLOGY
ANTH 460  ADVANCED ARCHAEOLOGICAL THEORY

Themes Across Time
Select 1 course from the following:  3-4
ANTH 363  EARLY CIVILIZATIONS
FSEM 151 / HIST 151  THE HERO AND HIS COMPANION FROM GILGAMESH TO SAM SPADE
HART 101 / CLAS 102 / MDEM 111  INTRODUCTION TO THE HISTORY OF WESTERN ART I: ANTIQUITY TO GOTHIC
HIST 200  ANCIENT EMPIRES: ORIGINS OF WESTERN CIVILIZATIONS
HIST 308 / MDEM 308  THE WORLD OF LATE ANTIQUITY
HIST 381 / RELI 385  GOD, TIME AND HISTORY
PHIL 201 / CLAS 201 / MDEM 201  HISTORY OF PHILOSOPHY I
PHIL 301 / CLAS 301 / MDEM 301  ANCIENT AND MEDIEVAL PHILOSOPHY
PHIL 307  SOCIAL AND POLITICAL PHILOSOPHY
PHIL 327  HISTORY OF SOCIAL AND POLITICAL PHILOSOPHY
RELI 104 / MDEM 103  INTRODUCTION TO JEWISH MYSTICISM
RELI 315 / ASIA 315 / SWGS 315  GENDER AND ISLAM
RELI 456  HISTORY OF WESTERN CHRISTIANITY: REFORMATION TO THE PRESENT

Comparative Studies
Select 1 course from the following:  3-4
CLAS 225 / SWGS 225  WOMEN IN GREECE AND ROME
CLAS 336 / LING 336  INTRO TO INDO-EUROPEAN
HIST 357 / MDEM 357  JEWS AND CHRISTIANS IN MEDIEVAL EUROPE
Anthropology

Contact Information

Anthropology
http://anthropology.rice.edu/
572 Sewall Hall

713-348-4847

Eugenia Georges
Department Chair
nia@rice.edu

Cymene Howe
Director of Graduate Studies
cymene@rice.edu

Zoe Wool
Undergraduate Advisor
zoe.wool@rice.edu

Anthropology is a discipline that encompasses many subjects of study, all related to understanding human beings and their cultures. A student may organize a major in one or more of anthropology's principal fields or may combine a major in anthropology with one in another discipline. The goal of anthropology is to understand and interpret cultural and biological differences among human societies, both past and present.

The Rice Anthropology department includes diverse offerings in all major subfields of the subject. In archaeology there are courses on the rise and decline of past civilizations and cultures, as well as practical courses that permit students to participate in excavations. In biological anthropology there are courses in human evolution, human nutrition, and on the practice of medicine in our own and other cultures. Cultural anthropology surveys the diversity of world cultures, offers courses on particular culture areas and provides critical perspectives on the study of contemporary culture changes globally. Social anthropology courses focus upon the study of myth, ritual, and religion among traditional and complex societies and the idea of history as cultural myth.

We also offer courses that explore the relationships between language, culture, and modes of thought in a number of societies. For those interested in the history of anthropology and its current concerns, there are a number of courses offered, including the art of ethnography and the study of the historical, political, and literary roots of anthropological ideas.

Bachelor's Program
• Bachelor of Arts (BA) Degree with a Major in Anthropology (p. 121)

Minor
• Minor in Anthropology (p. 124)

Master's Program
• Master of Arts (MA) Degree in the field of Anthropology*

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Anthropology (p. 123)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Chair
Eugenia Georges
Professors
Dominic C. Boyer
James D. Faubion
Susan Keech McIntosh

Associate Professors
Jeffrey B. Fleisher
A. Cymene Howe

Assistant Professors
Andrea Ballestero
Zoë Wool

Professors Emeriti
George E. Marcus
Roderick J. McIntosh
Julie M. Taylor
Stephen A. Tyler

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: ANTH

Department Description and Code
• Anthropology: ANTH

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in Anthropology: ANTH

Undergraduate Minor Description and Code
• Minor in Anthropology: ANTY

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Anthropology: ANTH

Bachelor of Arts (BA) Degree with a Major in Anthropology

Program Learning Outcomes for the BA Degree with a Major in Anthropology
Upon completing the BA degree with a major in Anthropology, students will be able to:

1. Acquire a solid foundation in anthropological debates, concepts, goals, and historical development of the discipline. They will develop an understanding of the major subfields; familiarity with the debates, concepts, and goals at the core of the discipline of anthropology;

2. Acquire a solid understanding of culture and social practice. Through the application of anthropological concepts, methods, and theories, they will acquire a historically-informed understanding of the salient aspects of culture and social practice, both theoretically and through the study of particular dimensions of culture, for example gender, sexuality, health, and media.

3. Develop an understanding of anthropological theory, method, and analytical tools. They will develop the critical and comparative tools of the discipline through acquisition of methodological, theoretical, and analytic skills.

4. Acquire conceptual tools for understanding contemporary cultures in the context of globalization. They will develop disciplinary tools for responsibly researching and describing other cultures, as well as for critically conceptualizing the relationship between globalization and culture.

5. Apply research and analytical tools. They will choose and effectively apply appropriate research and analytical skills to individual research questions and case studies in order to become effective producers and critical evaluators of anthropological knowledge.

Requirements for the BA Degree with a Major in Anthropology
For general university requirements, see Graduation Requirements (p. 16). Students pursuing the BA degree with a major in Anthropology must complete:

• A minimum of 10 approved courses (30 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 6 courses (18 credit hours) at the 300-level or above.
• A maximum of 4 courses (12 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.
• A final Honors or Capstone research project culminating in an oral presentation as well as a written paper.

The major in Anthropology has two distinct areas of specialization, as listed below:

• Anthropological Archaeology (p. ), or
• Social-Cultural Anthropology (p. )

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.
Summary

<table>
<thead>
<tr>
<th>Code</th>
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Degree Requirements

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<td>ANTH 201</td>
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<tr>
<td>ANTH 203</td>
<td>HUMAN ANTIQUITY. AN INTRODUCTION TO PHYSICAL ANTHROPOLOGY AND PREHISTORY</td>
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<td>Method Course</td>
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<td>ANTH 398</td>
<td>ETHNOGRAPHIC RESEARCH METHODS</td>
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<td>ANTH 458</td>
<td>HUMAN OSTEOLOGY</td>
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<td></td>
<td>Theory Course</td>
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<tr>
<td>or ANTH 460</td>
<td>ADVANCED ARCHAEOLOGICAL THEORY</td>
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<td>Select 6 additional courses from ANTH course offerings at the 300-level or above</td>
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<td>ANTH 493</td>
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<td>and ANTHROPOLOGY CAPSTONE</td>
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<td>&amp; ANTH 490</td>
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<td>&amp; ANTH 493</td>
<td>and SENIOR RESEARCH PREPARATION</td>
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Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Up to 2 courses (6 credit hours) consisting of relevant course work may be completed outside of the department. Courses taken to satisfy the Research Sequence requirement may be applied toward the Elective Requirements.

2 The research sequence consists of 2 courses (4 credit hours) for Capstone students and 3 courses (7 credit hours) for Honors students. All students take ANTH 493. Capstone students will also take ANTH 495. Honors students will also take ANTH 490 for 3 credit hours and ANTH 491 for 3 credit hours.

3 The Anthropology Capstone provides an opportunity for students to conduct an independent research project on a topic that interests them, while working one-on-one with a faculty supervisor. The project culminates in a research paper and a presentation to the faculty and assembled students. The Capstone includes a one-credit research preparation course, ANTH 493, and one three-credit independent research course (Anthropology Capstone ANTH 495).

4 See Opportunities for more information.

Anthropology Areas of Specialization

The major in Anthropology has two distinct areas of specialization, Anthropological Archaeology and Social-Cultural Anthropology. Depending on a student’s interest and desired area of focus, students should see specific department advisors for assistance with elective course selection.

Area of Specialization: Anthropological Archaeology

In this track (or area of specialization), the focus is on research skills in the library, the field, and the laboratory. Archaeology students will also engage theoretical developments and critical contemporary debates on issues such as the politics of the past and cultural heritage. Students also develop at least one analytical skill, such as, archaeological statistics, osteology, or geoarchaeology, drawing on the university’s laboratory and computer facilities. The archaeology program at Rice has a long-term focus on the archaeology of urban, complex societies in East and West Africa. The program offers students the opportunity to participate in archaeological excavations abroad as well as projects in Houston that focus on the city’s African-American past. Students inquiring about the major with a focus on anthropological archaeology should see Dr. Jeffrey Fleisher (jfleisher@rice.edu; Sewall Hall, 582).

Area of Specialization: Social-Cultural Anthropology

This track (or area of specialization) engages with contemporary issues, populations, and social dynamics that affect human life and culture broadly around the world. Social-cultural anthropology inquires across a vast range of human concerns from religion to social movements, from gender to medicine, from science studies to media, and from nature to law. Students are trained in ethnographic research methods and qualitative data collection and they learn the theoretical principles that have shaped the discipline as well as contemporary, innovative approaches that question how human sociality is constituted in the 21st century. The social-cultural anthropology program at Rice has always championed interdisciplinary, theoretical, and experimental modes of anthropological inquiry, and students are encouraged to add their creative intellectual insights to their research pursuits and goals. Students inquiring about the major with a focus on social-cultural anthropology should see Dr. Zoë Wool (zoe.wool@rice.edu; Sewall Hall, 574).

Policies for the BA Degree with a Major in Anthropology

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://
**Support Course**, The Honors Thesis includes a one-credit research preparation and due at the end of the last semester of the senior year.

Faculty advisor by the end of the first month of the senior year. Theses are members of the department's faculty. Topics should be approved by the faculty. Once admitted to the Program, each student must complete a requirements for the departmental Honors Program: Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Requirements for the Departmental Honors Program

The Honors Program is intended to acknowledge outstanding students, and to provide them with advanced training in the planning and execution of sustained, independent research. As a rule, students should petition the undergraduate advisor to be admitted to the Program no later than the 10th week of the spring semester of their junior year. Admission is at the discretion of the department faculty. The only formal prerequisite to admittance are a Grade Point Average in the major of at least 3.5 and a cumulative GPA at the end of the junior year of at least 3.0. Final decisions concerning admission are at the discretion of department faculty. Once admitted to the Program, each student must complete a thesis, on a topic of her or his choosing, under the direction of one of the members of the department's faculty. Topics should be approved by the faculty advisor by the end of the first month of the senior year. Theses are due at the end of the last semester of the senior year.

The Honors Thesis includes a one-credit research preparation and support course, ANTH 493, and two three-credit research courses (Directed Honors Research ANTH 490 and ANTH 491).

**Archaeological Field School in Sub-Saharan Africa**

The Department of Anthropology offers a six-week field school in June and July in sub-Saharan Africa, alternating between eastern and western locales. Past field schools have been on the island of Gorée, located off the coast of Senegal, where research focused on the development of Gorée as a supply port for the Atlantic trade, and at Songo Mnara, a 15th-century Swahili urban center on the southern Tanzanian coast. This course is offered for a total of six hours of credit (ANTH 364 and ANTH 370). The course is offered without specific prerequisites, but there is a general requirement that students have some prior course work in archaeology or African history. Program fees apply.

For additional information, please see the Anthropology website: [http://anthropology.rice.edu/](http://anthropology.rice.edu/).

**Doctor of Philosophy (PhD) Degree in the field of Anthropology**

**Program Learning Outcomes for the MA and PhD Degrees in the field of Anthropology**

Upon completing the MA and PhD degrees in the field of Anthropology, students will have:

1. Developed the skills to pursue successfully various professional endeavors, within and outside the academy.
2. Obtained comprehensive understanding of the history of the discipline and anthropological theory and practice.
3. Engaged with the key methodological, theoretical and critical analytical skills at the heart of the discipline with the capacity to become skilled producers of anthropological knowledge and to critique actively and reconfigure canonical anthropological knowledge.
4. Applied research and analytical skills to original research questions and case studies to produce actively innovative approaches to anthropological knowledge and to intervene effectively in extant disciplinary discussions and debates.
5. Conducted responsible, ethically appropriate research with their interlocutors and consultants in a world of increasingly complex interplay between small-scale and large-scale concerns and commitments.

**Requirements for the MA and PhD Degrees in the field of Anthropology**

The department seeks applicants to the PhD program with a defined research interest in sociocultural anthropology; an undergraduate background in anthropology is desirable, but not required. Entering students will devise a detailed first-year plan of study with provisional plans for succeeding years in consultation with a faculty advisory committee. The plan will emphasize broad training in the discipline before the eventual definition of a project for dissertation research. MA Degree Program

The MA degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 67). Although students are not normally admitted to study for an MA in the social-cultural area of specialization, graduate students may earn the MA degree after obtaining approval of their candidacy for the PhD. To earn an MA degree in the field of Anthropology, students must complete:

- 30 semester hours of approved course work
- One qualifying exam or one qualifying essay required for the PhD
- A thesis which meets the standards of the student’s candidacy committee.
PhD Degree Program

For general university requirements, please see Doctoral Degrees (p. 64). Students pursuing the PhD degree program in Anthropology with the social-cultural specialization must:

• Complete required course work: 90 semester hours of graduate study (undergraduate courses, including language courses, do not satisfy this requirement)
• Complete 5 Required Courses (15 credit hours) listed below.
• Complete 4 additional courses (12 credit hours) as electives in the Department of Anthropology (either ANTH 500-level or ANTH 600-level).
• Prior to achieving candidacy, successfully complete an end-of-year report. Students will write a 2-3 page (double-spaced) summary of their achievements for the year and consult with a faculty panel at the end of each spring semester.

Summary

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Degree Requirements

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<td>ANTH 506</td>
<td>HISTORY OF ANTHROPOLOGICAL IDEAS</td>
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<td>ANTH 507</td>
<td>ANTHROPOLOGICAL DIRECTIONS FROM SECOND WORLD WAR TO PRESENT</td>
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<td>GRADUATE PROSEMINAR IN ANTHROPOLOGY: THEORY, METHOD, AND PROFESSIONALIZATION</td>
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<td>ANTH 602</td>
<td>ANTHROPOLOGY PROPOSAL WRITING SEMINAR</td>
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<td>ANTH 650</td>
<td>PEDAGOGY ¹</td>
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<td>Students pursuing the social-cultural specialization must take at least 4 courses from departmental ANTH course offerings that are designated as 500-level or 600-level courses</td>
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Footnotes and Additional Information

¹ Only one semester of ANTH 650 is required, however a minimum of 18 credit hours of graduate credit is required in order to be eligible to take this course.

Requirements for PhD Candidacy (and thus eligibility for the candidacy MA)

Students pursuing the PhD degree program in Anthropology must complete the following. These requirements must be completed no later than the end of the eighth semester of enrollment in the program:

• Successful completion of all required courses. Students must receive at least a ‘B’ in a course for the department to deem it successfully completed. They must maintain a G.P.A. of at least 3.0 each semester to remain in good academic standing.

• The approval by the student’s candidacy committee of either two qualifying examinations or two qualifying essays (further details are noted in the Graduate Student Handbook on the Department of Anthropology’s website (http://gradhandbooks.rice.edu/2017_18/Anthropology_Graduate_Handbook.pdf)).
• The approval by the candidacy committee of the design and content of at least one undergraduate syllabus to be created in ANTH 650.
• The committee’s approval of the dissertation research.
• For students not bilingual, the passing of an examination in a period of 90 minutes, with the help of a dictionary, of at least 1,000 words into English from an academic journal article in anthropology in either the relevant field language or a major scholarly language, such as French, German, or Spanish.
• (For acquisition of the PhD) Complete and defend the dissertation to the satisfaction of the student’s dissertation committee.

Policies for the PhD Degree in the field of Anthropology

Department of Anthropology Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Anthropology publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Anthropology_Graduate_Handbook.pdf.

Financial Support

All first-year students receive the same level of support: a combination of graduate fellowships and tuition scholarships. These awards are renewed for a further four years of study contingent on satisfactory performance.

For additional information, please see the Anthropology website: http://anthropology.rice.edu/

Opportunities for the PhD Degree in the field of Anthropology

Special Options

The department will, in a limited fashion, arrange independent study tutorials on specialized topics relevant to student training if they are necessary outside of the regular curriculum; these seminars may be conducted in supervisory consultation with scholars in other disciplines as well as with departmental and adjunct faculty.

Students interested in the specialized field of medical anthropology may, in consultation with faculty, make use of the extensive resources of the Texas Medical Center through ties established with the University of Texas School of Public Health and Graduate School of Biomedical Sciences. Students may earn degree credit for formal courses taken at both schools if the coursework is in accord with the expectations of each degree program.

For additional information, please see the Anthropology website: http://anthropology.rice.edu/

Minor in Anthropology
Program Learning Outcomes for the Minor in Anthropology
Upon completing the minor in Anthropology, students will be able to:

1. Understand the origins and current state of approaches and methods across the discipline's subfield.
2. Describe anthropology's unique, comparative, and historically informed perspective on human social, cultural, and political continuity and variation.
3. Make use of anthropology's critical perspectives to understand contemporary social and cultural practices in the world around them.
4. Utilize critical reading and thinking skills to make original arguments about the significance of social and cultural practices in the world around them.

Requirements for the Minor in Anthropology
Students pursuing the minor in Anthropology must complete:

- A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
- A minimum of 3 courses (9 credit hours) at the 300-level or above.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Minor Requirements

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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Core Requirements

Select 2 from the following:

- ANTH 200 / LING 200: INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE
- ANTH 201: INTRODUCTION TO SOCIAL/CULTURAL ANTHROPOLOGY
- ANTH 203: HUMAN ANTIQUITY, AN INTRODUCTION TO PHYSICAL ANTHROPOLOGY AND PREHISTORY
- ANTH 205: INTRODUCTION TO ARCHAEOLOGY

Total Credit Hours

12

Elective Requirements

Select 4 additional courses from departmental (ANTH) course offerings.

Total Credit Hours

18

Footnotes and Additional Information
1. At least 3 of the elective courses must be completed at the 300-level or above.

Policies for the Minor in Anthropology
Program Restrictions and Exclusions
Students pursuing the minor in Anthropology should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the minor in Anthropology should be aware of the following departmental transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.
- Dr. Susan McIntosh is the undergraduate transfer credit advisor. All students seeking transfer credit in anthropology for courses taken elsewhere should see Dr. McIntosh for approval.
- Transfer credit coursework from online-only courses cannot be used to count towards the minor.

For additional information, please see the Anthropology website: http://anthropology.rice.edu/.

Opportunities for the Minor in Anthropology

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Archaeological Field School in Sub-Saharan Africa
The Department of Anthropology offers a six-week field school in June and July in sub-Saharan Africa, alternating between eastern and western locales. Past field schools have been on the island of Gorée, located off the coast of Senegal, where research focused on the development of Gorée as a supply port for the Atlantic trade, and at Songo Mnara, a 15th-century Swahili urban center on the southern Tanzanian coast. This course is offered for a total of six hours of credit (ANTH 364 and
ANTH 370). The course is offered without specific prerequisites, but there is a general requirement that students have some prior course work in archaeology or African history. Program fees apply.

For additional information, please see the Anthropology website: [http://anthropology.rice.edu/](http://anthropology.rice.edu/).

### Applied Physics

**Contact Information**

Applied Physics  
[https://sci.rice.edu/appliedphysics](https://sci.rice.edu/appliedphysics)  
713-348-3566  
Kevin Kelly  
Program Chair  
kelly@rice.edu

The Applied Physics program includes faculty from physics and astronomy, chemistry, materials science, electrical and computer engineering, bioengineering, chemical and biomolecular engineering, statistics, biosciences, computational and applied mathematics, and earth science.

A joint effort of both the natural sciences and the engineering schools at Rice where the application of physics principles is beneficial, and overseen by the Smalley-Curl Institute (SCI), the Applied Physics Program (APP) is administered by a committee composed of members from the participating departments mentioned above. The objective is to provide an interdisciplinary graduate education in the basic science that underlies important technology. The faculty believes that the experience obtained by performing research at the intellectually stimulating interface of physical science and engineering is particularly effective in producing graduates who succeed in careers based on new and emerging technologies.

Due to the interdisciplinary nature of the program, students can involve virtually any of the research facilities in either the natural sciences or engineering schools of Rice University. The Applied Physics Curriculum and Admissions Committee (APCAC) urges prospective students to contact individual departments or SCI for detailed descriptions of research facilities and ongoing research projects.

Applied Physics does not currently offer an academic program at the undergraduate level.

**Master's Program**

- Master of Science (MS) Degree in the field of Applied Physics*

**Doctoral Program**

- Doctor of Philosophy (PhD) Degree in the field of Applied Physics (p. 126)

*Although students are not normally admitted to a Master of Science (MS) degree program, graduate students must earn the MS as they work toward the PhD.*

### Chair, Applied Physics Graduate Program

Kevin F. Kelly

### Director, Smalley-Curl Institute

Naomi Halas

### Executive Director, Smalley-Curl Institute

Alberto Pimpinelli

### Description and Code Legend

**Note:** Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**

- Course offerings/subject codes: Courses from various subjects may apply toward the graduate degree

**Program Description and Code**

- Applied Physics: APPL

**Graduate Degree Descriptions and Codes**

- Master of Science degree: MS  
- Doctor of Philosophy degree: PhD

**Graduate Degree Program Descriptions and Codes**

- Degree Program for Applied Physics students in Bioengineering: APBI  
- Degree Program for Applied Physics students in Chemical and Biomolecular Engineering: APCB  
- Degree Program for Applied Physics students in Chemistry: APCH  
- Degree Program for Applied Physics students in Computational and Applied Mathematics: APCA  
- Degree Program for Applied Physics students in Earth Science: APEA  
- Degree Program for Applied Physics students in Electrical Engineering: APEL  
- Degree Program for Applied Physics students in Materials Science and NanoEngineering: APMS  
- Degree Program for Applied Physics students in Mechanical Engineering: APME  
- Degree Program for Applied Physics students in Physics: APPH  
- Degree Program for Applied Physics students in Statistics: APST  
- Degree Program offered to students in Applied Physics (1st year students only): APPL

### Doctor of Philosophy (PhD) Degree in the field of Applied Physics

**Program Learning Outcomes for the MS and PhD Degrees in the field of Applied Physics**

Upon completing the MS and PhD degree programs in the field of Applied Physics, students will be able to:
1. Acquire and demonstrate advanced knowledge in the foundational applications of physics including familiarity with past and current scientific literature in their chosen specialization.

2. Develop the ability to conduct independent applied physics research including the aptitude to identify, formulate, and overcome challenging scientific and engineering problems in this endeavor.

3. Make an original and significant technical contribution in their chosen specialization area.

Requirements for the MS and PhD Degrees in the field of Applied Physics

The Applied Physics Program (APP) offers a PhD degree. For general university requirements, please see Doctoral Degrees (p. 64). The MS degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 67).

The program does not offer a stand-alone thesis MS degree, although students admitted to the program are required to earn the MS within the program before proceeding to the PhD. For each degree, the student must fulfill the university requirements set forth in the General Announcements under which he/she entered. The semester hour requirements may be fulfilled both by classroom hours and research hours. A total of nine one-semester, 3-credit hour per course minimum, graduate level courses is required for the master’s degree in applied physics, ordinarily a requirement for advancement to candidacy in the PhD program. Four of these are core courses required of all students, and five are elective courses chosen according to individual research goals. The Applied Physics Curriculum and Admissions Committee (APCAC) may waive some course requirements for students who demonstrate a thorough knowledge of material in one or more core/elective course(s). Full requirements are available online at https://sci.rice.edu/academics/graduate/graduate.php.

By the end of the third year in the program, all APP students should have completed the university requirements for the master’s degree, fulfilled the course requirements of the APP, and defended a master’s thesis. The examination covers the work reported in the thesis in a public oral examination by a committee approved by the APCAC. The examination covers the work reported in the thesis as well as the entire field in which the student intends to work toward their PhD. The examining committee votes separately on awarding the master’s degree. The student also must fulfill the teaching/grading requirements set by the host department to achieve candidacy. Fulfillment of all university degree requirements and successful defense of a PhD thesis in a public examination by an APCAC-approved committee is necessary for the PhD.

### Summary

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### Core Requirements

Select 4 courses from the following, depending on area of research (see Specialization Curricula below):

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<tr>
<td>PHYS</td>
<td>535 CLASSICAL DYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>CHBE</td>
<td>501 FLUID MECHANICS AND TRANSPORT PROCESSES</td>
<td>3</td>
</tr>
<tr>
<td>PHYS</td>
<td>516 MATHEMATICAL METHODS</td>
<td>3</td>
</tr>
<tr>
<td>BIOE</td>
<td>502 / SSPB 501 PHYSICAL BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PHYS</td>
<td>563 / ELEC 563 INTRODUCTION TO SOLID STATE PHYSICS</td>
<td>3</td>
</tr>
</tbody>
</table>

### Elective Requirements

Students must complete a total of 5 additional courses as electives (See Specialization Curricula suggested courses below)

Total Credit Hours: 90

### Footnotes and Additional Information

1. Any course taken beyond the four-course requirement for the Applied Physics Core Requirements can be applied towards the Applied Physics Electives requirement.

2. It is assumed that the student has an adequate background in classical mechanics, electrostatics, and statistical and thermal physics. This background is determined from interviews or exams given to entering students by the APCAC or the host department.

3. A full list of elective courses can be found on the Applied Physics website (http://rqi.rice.edu/curriculum). No courses may be used for both core and elective courses. Due to overlap of curricula, only one from each of the pairs PHYS 521/ CHEM 530, and PHYS 526/ CHEM 520 may be used for the nine required courses.

### Specialization Curricula

Some examples of specialization tracks that one may choose are listed below. The lists are only suggested lists and are by no means a full list of possible courses for the specialization area.

#### Applied Biological and Soft Matter Physics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOE</td>
<td>502 / SSPB 501 PHYSICAL BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>CHBE</td>
<td>501 FLUID MECHANICS AND TRANSPORT PROCESSES</td>
<td>3</td>
</tr>
<tr>
<td>PHYS</td>
<td>515 CLASSICAL DYNAMICS</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Suggested Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOE</td>
<td>502 / SSPB 501 PHYSICAL BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOE</td>
<td>589 / BIOC 589 COMPUTATIONAL MOLECULAR</td>
<td>3</td>
</tr>
<tr>
<td>BIOE</td>
<td>589 / BIOC 589 BIOENGINEERING/BIOPHYSICS</td>
<td>3</td>
</tr>
<tr>
<td>BIOE</td>
<td>610 / PHYS 610 METHODS OF MOLECULAR SIMULATION</td>
<td>3</td>
</tr>
<tr>
<td>CHBE</td>
<td>560 / MSNE 560 COLLOIDAL AND INTERFACIAL PHENOMENA</td>
<td>3</td>
</tr>
<tr>
<td>MSNE</td>
<td>555 MATERIALS IN NATURE AND BIO-MIMETIC STRATEGIES</td>
<td>3</td>
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</table>
Doctor of Philosophy (PhD) Degree in the field of Applied Physics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>PHYS 551</td>
<td>BIOLOGICAL PHYSICS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 552</td>
<td>TOPICS IN BIOLOGICAL PHYSICS</td>
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</tr>
</tbody>
</table>

### Applied Mathematical and Computational Physics

#### Suggested Core Courses

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<thead>
<tr>
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<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>CHBE 501</td>
<td>FLUID MECHANICS AND TRANSPORT PROCESSES</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 520</td>
<td>CLASSICAL AND STATISTICAL THERMODYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 516</td>
<td>MATHEMATICAL METHODS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 532</td>
<td>CLASSICAL ELECTRODYNAMICS</td>
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</tr>
</tbody>
</table>

#### Suggested Elective Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOE 610</td>
<td>METHODS OF MOLECULAR SIMULATION</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 615</td>
<td>THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>CHBE 615</td>
<td>APPLICATION OF MOLECULAR SIMULATION AND STATISTICAL MECHANICS</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 531</td>
<td>ADVANCED QUANTUM CHEMISTRY</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 591</td>
<td>CARDIOVASCULAR AND RESPIRATORY</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 581</td>
<td>SYSTEM DYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>MECH 520</td>
<td>NONLINEAR FINITE ELEMENT ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 503</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MSNE 533</td>
<td>COMPUTATIONAL MATERIALS MODELING</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 516</td>
<td>MATHEMATICAL METHODS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 517</td>
<td>COMPUTATIONAL PHYSICS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 605</td>
<td>COMPUTATIONAL ELECTRODYNAMICS AND NANO PHOTONICS</td>
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</tr>
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<td>ELEC 605</td>
<td></td>
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</table>

### Applied Mechanics

#### Suggested Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 516</td>
<td>MATHEMATICAL METHODS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 521</td>
<td>QUANTUM MECHANICS I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 525</td>
<td>CLASSICAL ELECTRODYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 563</td>
<td>INTRODUCTION TO SOLID STATE PHYSICS</td>
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</table>

### Applied Optics and Photonics

#### Suggested Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 521</td>
<td>QUANTUM MECHANICS I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 526</td>
<td>STATISTICAL PHYSICS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 532</td>
<td>CLASSICAL ELECTRODYNAMICS</td>
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</tr>
<tr>
<td>PHYS 563</td>
<td>INTRODUCTION TO SOLID STATE PHYSICS</td>
<td>3</td>
</tr>
</tbody>
</table>

### Applied Physical Electronics

#### Suggested Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 516</td>
<td>MATHEMATICAL METHODS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 521</td>
<td>QUANTUM MECHANICS I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 532</td>
<td>CLASSICAL ELECTRODYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 563</td>
<td>INTRODUCTION TO SOLID STATE PHYSICS</td>
<td>3</td>
</tr>
</tbody>
</table>

### Applied Chemical Physics

#### Suggested Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 530</td>
<td>QUANTUM CHEMISTRY</td>
<td>3</td>
</tr>
</tbody>
</table>
The School of Architecture's undergraduate programs maintain a balance between a design-focused study of architecture and a broad general education. In addition to formal coursework, students benefit from lectures and presentations from distinguished practitioners and scholars, symposia and other cultural events, and the unique Rice Preceptorship program, which places students in an outstanding professional office for a nine-month internship.

The School of Architecture's graduate programs offer a design education in combination with a thorough grounding in architectural history, theory, and technology. Rice's graduate program culminates in an independent design thesis, on the principle that an architectural education provides a complete exposure to architecture's breadth, from which the student establishes his or her depth, or expertise, through the independent thesis.

Bachelor's Programs
• Bachelor of Arts (BA) Degree with a Major in Architecture (p. 133)
• Bachelor of Arts (BA) Degree with a Major in Architectural Studies (p. 132)

Post-Bachelor's Program
• Bachelor of Architecture (BArch) Degree (p. 130)

Master's Programs
• Master of Architecture (MArch) Degree (p. 135)
• Master of Arts (MA) Degree in the field of Architecture (p. 138)
• Master of Architecture in Urban Design (MAUD) Degree*

Doctoral Programs
• Doctor of Architecture (DArch) Degree*

*The MAUD and DArch degree programs are currently inactive and are not accepting applications for admission.

Dean and William Ward Watkin Professor
Sarah Whiting
Harry K. and Albert K. Smith Professors
John Casbarian
Lars Lerup
Gus Sessions Wortham Professor
Albert Pope

Professors
William Cannady
Carlos Jimenez
Gordon Wittenberg
Ron Witte

Associate Professors
Dawn Finley
Christopher Hight

Wortham Assistant Professor
Reto Geiser

The Rice School of Architecture (RSA) focuses on speculative practice – that is, the teaching and research of architecture and urban design as speculations that will advance professional practice as well as the built environment. Intimate student-faculty interaction, academic freedom, and unrestricted institutional cooperation within and outside the university are distinctive qualities of the architecture degree programs at Rice.

Policies for the PhD Degree in the field of Applied Physics

Applied Physics Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Applied Physics publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Applied_Physics_Graduate_Handbook%20-%20Copy.pdf

For additional information, please see the Applied Physics website: https://sci.rice.edu/appliedphysics

Opportunities for the PhD Degree in the field of Applied Physics
For additional information, please see the Applied Physics website: https://sci.rice.edu/appliedphysics

Architecture

Contact Information
Architecture
http://architecture.rice.edu/
Anderson Hall
713-348-4864

Sarah Whiting
Dean
sarah.whiting@rice.edu

Gordon Wittenberg
Director of Graduate Studies
gwitt@rice.edu

Christopher Hight
Director of Undergraduate Studies
chight@rice.edu

The Rice School of Architecture (RSA) focuses on speculative practice – that is, the teaching and research of architecture and urban design as speculations that will advance professional practice as well as the built environment. Intimate student-faculty interaction, academic freedom, and unrestricted institutional cooperation within and outside the university are distinctive qualities of the architecture degree programs at Rice.
Assistant Professors
Michelle Chang
Andrew Colopy
Scott Colman
Troy Schaum
Jesús Vassallo

Professors in the Practice
Nonya Grenader
Douglas Oliver
Danny Samuels
Mark Wamble

Senior Lecturers
Alan Fleishacker
Stephen Fox
James Furr
Christof Spieler

Lecturers
Tom Lord
Jacki Schaefer
Frank White

Technology Fellow
David Costanza

Wortham Fellows
Piergianna Mazzocca
Ajay Manthripragada

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: ARCH

School/Department Description and Code
• Architecture: ARCH

Undergraduate Degree Descriptions and Codes
• Bachelor of Arts degree: BA
• Bachelor of Architecture degree: BArch

Undergraduate Major Descriptions and Codes
• Major in Architecture (attached to the BA and BArch degrees): ARCH
• Major in Architectural Studies (attached to the BA degree): ARST

Graduate Degree Descriptions and Codes
• Master of Architecture degree: MArch
• Master of Arts degree: MA

Graduate Degree Program Description and Code
• Degree Program in Architecture: ARCH

Bachelor of Architecture (BArch) Degree
Program Learning Outcomes for the BArch Degree
Upon completing the BArch degree, students will be able to:

1. Innovate the knowledge and practice of architecture through advanced critical thinking, experimentation, and research.
2. Explore the practice of architecture through the Preceptorship Program, a year-long supervised internship in an architectural firm that subsequently informs advanced research and design.
3. Project innovative architectural practices and ideas through experimental research and design, synthesizing heterogeneous cultural and technical considerations into a coherent project.

Requirements for the BArch Degree
Students pursuing the BArch degree must complete:

• A minimum of 8 courses (62 credit hours) to satisfy major requirements.
• A minimum of 62 credit hours to satisfy degree requirements.
• A minimum grade of C (2.0 grade points) in each course.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the BArch Degree</td>
<td>62</td>
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</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Practice 2</td>
<td></td>
</tr>
<tr>
<td>ARCH 500</td>
<td>PRECEPTORSHIP PROGRAM (1st semester)</td>
<td>15</td>
</tr>
<tr>
<td>ARCH 500</td>
<td>PRECEPTORSHIP PROGRAM (2nd semester)</td>
<td>15</td>
</tr>
<tr>
<td>Select 1 from the following:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ARCH 423 / ARCH 623</td>
<td>PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL PRACTICE</td>
<td></td>
</tr>
<tr>
<td>1 ARCH course at the 300-level or above. 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Design 4</td>
<td></td>
</tr>
<tr>
<td>ARCH 601</td>
<td>ARCHITECTURAL PROBLEMS: STUDIO</td>
<td>10</td>
</tr>
<tr>
<td>ARCH 602</td>
<td>ARCHITECTURAL PROBLEMS</td>
<td>10</td>
</tr>
</tbody>
</table>

Elective Requirements
Select 9 credit hours from ARCH course offerings at the 300-level or above.

Total Credit Hours
62
Footnotes and Additional Information

1 All courses above must be taken in the sequence and semester prescribed by the School of Architecture and completed with a grade of C (2.0 grade points) or higher.

2 By accepting a place in the BArch degree program and Preceptorship, each student agrees to all the terms specified by Rice and/or the assigned Preceptorship office, including: registration fees, start and end dates, work responsibilities, performance expectations, and agreement to return to Rice the subsequent year. Failure to meet these expectations will result in an unsatisfactory grade evaluation and may prevent further progress in the program. Students’ concerns while on Preceptorship should be brought to the attention of the Director of External Programs as soon as possible. While on Preceptorship, a student remains a Rice student and is governed by applicable student codes of conduct, rights, and responsibilities.

3 Students will complete substitute a course at the 300-level or above from departmental (ARCH) offerings if the student completed ARCH 423/ARCH 623 during his/her first four years of study.

4 If students are attending the Rice School of Architecture in Paris, students must enroll in two semesters of ARCH 620 Architectural Problems as their studio courses, in place of ARCH 601 and ARCH 602.

Policies for the BArch Degree

The Bachelor of Architecture (BArch) degree program is open to students who have completed the undergraduate preprofessional architecture program at Rice. The BArch degree requires the successful completion of the Bachelor of Arts (BA) degree with a major in Architecture, completion of the two-semester preceptorship, and completion of two advanced option studios and approved lecture or seminar courses. Upon admission, students are assigned a preceptorship, which takes place immediately after receipt of the BA degree with a major in Architecture. The preceptorship program balances academic learning with professional experience. Students are assigned to work for a minimum of nine months in the United States or abroad with leading architectural offices designated by the school as Preceptors.

The academic year immediately following preceptorship, students must return for their final year of study to the School of Architecture, taking advanced level studios and courses. In this year, students may apply to Rice School of Architecture in Paris to complete a semester abroad. The autumn studios feature the Totalization studio, in which the student’s experience from preceptorship is integrated into academic research through a comprehensive design project. At the end of this final two-year stage, students graduate with a Bachelor of Architecture (professional) degree.

The Bachelor of Architecture (BArch) degree program is accredited by the National Architectural Accrediting Board (NAAB) and qualifies graduates to take the state professional licensing exams after completing the required internship in an architectural office.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the BArch degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the School of Architecture’s website: http://architecture.rice.edu/.

Opportunities for the BArch Degree

Rice School of Architecture - Paris

BArch students in their fifth year may apply to RSAP to complete one semester in Paris.

Recent Preceptor Offices

- BAR (San Francisco)
- Pei, Cobb, Freed & Partners (New York)
- Bohlin Cywinski Jackson (San Francisco)
- Pelli Clarke Pelli (New Haven)
- Diller Scofidio & Renfro (New York)
- PLP (London)
- Ennead Architects (New York)
- Renzo Piano Building Workshop (Genoa)
- Johnston Marklee (Los Angeles)
- Rogers Partners (New York)
- Kieran Timberlake (Philadelphia)
- SHoP (New York)
- KPF (London)
- SOM (San Francisco)
- KPF (New York)
- Thomas Phifer & Associates (New York)
- Machado and Silvetti Associates (Boston)
- Weiss/Manfredi (New York)
- NADAAA (Boston)
- Zimmer Gunsul Frasca (Los Angeles)
- OMA (Hong Kong)

For additional information, please see the School of Architecture website: http://architecture.rice.edu/.
Bachelor of Arts (BA) Degree with a Major in Architectural Studies

Program Learning Outcomes for the BA Degree with a Major in Architectural Studies

Upon completing the BA degree with a major in Architectural Studies, students will be able to:

1. Gain knowledge of the history and theory of architecture in relation to broader social, technological, and cultural practices and transformations.
2. Understand the design process in architecture through a variety of scales and problems and with an appreciation of design’s importance in the quality of our cities and environment.
3. Explore and develop specific interests concerning the discipline and/or its relationship to other fields and endeavors.

Requirements for the BA Degree with a Major in Architectural Studies

For general university requirements, see Graduation Requirements (p. 16). Students pursuing the BA degree with a major in Architectural Studies must complete:

- A minimum of 12 courses (48 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 2 courses (6 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Architectural Studies</td>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Architectural Studies</td>
<td>120</td>
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Degree Requirements

<table>
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<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 101</td>
<td>PRINCIPLES OF ARCHITECTURE I - ORDER</td>
<td>6</td>
</tr>
<tr>
<td>ARCH 102</td>
<td>PRINCIPLES OF ARCHITECTURE II - REPRESENTATION</td>
<td>6</td>
</tr>
<tr>
<td>ARCH 201</td>
<td>PRINCIPLES OF ARCHITECTURE III - ORGANIZATION</td>
<td>6</td>
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</table>

Elective Requirements

Select 4 additional courses from departmental (ARCH) course offerings.

Total Credit Hours Required for the Major in Architectural Studies

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 202</td>
<td>PRINCIPLES OF ARCHITECTURE IV - EFFECTS</td>
<td>6</td>
</tr>
<tr>
<td>ARCH 225 / HART 225</td>
<td>HISTORY &amp; THEORY I (INTRO)</td>
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<tr>
<td>ARCH 345</td>
<td>HISTORY AND THEORY II - PRE 1890</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 207</td>
<td>TECHNOLOGY I</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 309</td>
<td>TECHNOLOGY II</td>
<td>3</td>
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</table>

Total Credit Hours Required for the BA Degree with a Major in Architectural Studies

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Architectural Studies</td>
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</tr>
<tr>
<td></td>
<td>Additional Credit Hours to Complete BA Degree Requirements</td>
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</tr>
<tr>
<td></td>
<td>University Graduation Requirements (p. 25)</td>
<td>60</td>
</tr>
</tbody>
</table>

Total Credit Hours

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

Policies for the BA Degree with a Major in Architectural Studies

Admission

The BA degree with a major in Architectural Studies provides a foundation in architectural ideas and design while allowing a broader pursuit of other fields as an undergraduate. Enrollment is restricted to students admitted into the architecture program who have completed the first two years of required courses.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Architectural Studies should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the School of Architecture website: [http://architecture.rice.edu](http://architecture.rice.edu).
Opportunities for the BA Degree with a Major in Architectural Studies

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the School of Architecture website: http://architecture.rice.edu/.

Bachelor of Arts (BA) Degree with a Major in Architecture

Program Learning Outcomes for the BA Degree with a Major in Architecture
Upon completing the BA degree with a major in Architecture, students will be able to:

1. Formulate architectural projects that integrate design skills with critical thinking, engaging broader theoretical, social, political, economic, cultural, and environmental issues.
2. Explore how technology, issues of the environment, and construction inform innovative design solutions.
3. Strategize the relationship of architectural concepts, communication and representation techniques, and construction technology can innovate practice.

Requirements for the BA Degree with a Major in Architecture
For general university requirements, see Graduation Requirements (p. 16). Students pursuing the BA degree with a major in Architecture must complete:

- A minimum of 17 courses (75 credit hours) to satisfy major requirements.
- A minimum of 130 credit hours to satisfy degree requirements.
- A minimum of 11 courses (45 credit hours) taken at the 300-level or above.
- A minimum of 55 credit hours outside of major requirements, 45 of which must be taken outside of the School of Architecture (courses outside of departmental (ARCH) course offerings), and 10 of which may be taken as free electives from any subject code.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

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<tr>
<th>Summary</th>
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<td>ARCH 314 TECHNOLOGY III</td>
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<tr>
<td>Complete 45 credit hours from any course offerings outside of ARCH course offerings</td>
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<tr>
<td>Complete 10 additional credit hours as free electives from any course offerings.</td>
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Required Plan of Study
Students must complete the required ARCH course offerings below in the sequence and semester prescribed the School of Architecture.

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Policies for the BA Degree with a Major in Architecture

The BA degree with a major in Architecture, leading to a Bachelor of Architecture (BArch) degree, is the primary undergraduate architecture program at Rice. Students who apply and are accepted into the University and the School of Architecture enter directly into this program. The required courses for the BA degree with a major in Architecture, leading ultimately to the BArch degree, consist of four integrated sequences in the following areas: Design Studios, History and Theory, Technology, and Practice. Courses in these sequences must be taken in the order and semesters specified by the School of Architecture.

The curriculum for this professional degree program sequence has three two-year long stages. The first stage provides a foundation sequence in design, history and theory, and technology taken in the first and second years. Students are also expected to fulfill the majority of University general distribution requirements during these two years. The curriculum is designed to provide an intensive focus on architecture, while allowing each student to receive a broad education and to pursue other interests.

At the end of the first stage, students apply for the approval of their Architecture Major by the School of Architecture. Approval is based on academic performance and demonstrated aptitude. Approval is based on satisfactory academic performance, indicating that the student is on track for advanced study at the BArch level.

The second intermediate stage occurs in the third and fourth years. Students complete the courses required for the BA degree with a major in Architecture, remaining university requirements, and take electives through which each student can develop his or her particular interests in the field and in other areas. In their fourth year, students pursue a design research sequence through a seminar in the fall that is linked to the spring studio. At the end of this stage, and with the completion of all major and university requirements, students graduate, receiving the degree of a BA degree with a major in Architecture.

The third and final stage consists of the Bachelor of Architecture (BArch) degree and includes the year of Preceptorship. The BArch degree program is only open to students who have completed the first four years at the Rice School of Architecture and who apply for admission into this stage of the program during their fourth year. As with the approval for major two years prior, approval is based on satisfactory academic performance and preparation for the advanced studies of the BArch degree.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Architecture should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the School of Architecture website: http://architecture.rice.edu/.

Opportunities for the BA Degree with a Major in Architecture

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.
For additional information, please see the School of Architecture’s website: http://architecture.rice.edu/.

Master of Architecture (MArch) Degree

Program Learning Outcomes for the Master of Architecture (MArch) Degree

Students graduating from this program will be able to:

1. Innovate the knowledge and practice of architecture through advanced critical thinking, experimentation, and research.
2. Develop or augment a comprehensive knowledge of the technical aspects of design and construction including an understanding of their impact on design and the environment at a level commensurate with advanced study.
3. Project innovative architectural practices and ideas through experimental research and design, synthesizing heterogeneous cultural and technical considerations into a coherent project.
4. Develop or augment a comprehensive understanding of architectural practice and foster the development of innovative forms of practice at a level commensurate with advanced study.

Requirements for the Master of Architecture (MArch) Degree

The MArch degree can be either a thesis or a non-thesis master’s degree depending on the option the student pursues. For general university requirements for thesis master’s degrees, please see Thesis Master’s Degrees (p. 67). For general university requirements for non-thesis master’s degrees, please see Non-Thesis Master’s Degrees (p. 66).

- A minimum of 92-94 credit hours or 130-132 credit hours, depending on option pursued, to satisfy degree requirements.
- A minimum overall GPA of B (3.0) in required coursework and with a minimum grade of a B (3.0 grade points) for all required courses applied toward the MARCH degree requirements.
- One degree program option as listed below.

The Master of Architecture degree program understands architecture to be a generalist practice, while encouraging each student’s freedom to forge a specific trajectory within this generalist milieu. We prepare students to engage an ever more ambiguous world—one that can no longer simply be flattened by such binaries as local and global, quantity and quality, mind and nature, form and function, or standards and exceptions. The challenge we pose to our students is to transgress the obsolescence of opposing values and to navigate the tricky waters of a world no longer organized around presupposed notions of solidity, permanence, rootedness, centrality, protection, and identity. Our program is the very place where visions of the future are tested and where students are asked to understand the world’s complexity in order to focus on the tangible, the legible, and the relevant.

Individuals who possess a Bachelor’s degree in any discipline can apply to the MArch (Master of Architecture) degree program. Our curriculum offers a set of core courses (in Design, History and Theory, Technology, and Practice) and many free electives, both in the School of Architecture and across campus. In studio courses, strong emphasis is given to the very means by which architecture is able to change the world through program, form, and technology. Such fundamental aspects to design can, when mobilized, produce a practice of architecture that is as speculative as it is realist. Every fall, advanced “Totalization” studios are conducted in such a way as to have students rigorously weigh all aspects of building design while nonetheless biasing their engagement so as to produce highly specific architectural projects. In their final thesis semester, students are asked to face the world and engage it through architectural speculation and a precise understanding of historical, political, economic, and physical dimensions, which can together define a better future.

The Master of Architecture (MArch) degree program is accredited by the National Architectural Accrediting Board (NAAB) and qualifies graduates to take the state professional licensing exams after completing the required internship in an architectural office.

Programs of Study

There are two program options at the Master of Architecture (MArch) level: Option 1 and Option 2. They differ according to the Bachelor’s degree received prior to entering the graduate program. MArch students in Options 1 and 2 complete the degree requirements by either submitting a thesis or by taking alternative coursework. Thesis students are required to take Design Thesis Studio (ARCH 703, 10 credit hours) and Written Thesis (ARCH 729 or ARCH 730, 3 credit hours). Students who pursue the non-thesis MArch degree are required to take the Totalization Studio (ARCH 601, 10 credit hours) in lieu of the thesis studio and an additional elective (worth 3 credit hours) in lieu of the written thesis course ARCH 729 or ARCH 730. All students are required to take the pre-thesis seminar (ARCH 702), even if they pursue the non-thesis track.

Option 1 - MArch Degree Program

Offered to individuals who hold a four-year undergraduate degree with a major in a field other than Architecture or a major in Architecture with fewer than five semesters of architectural design studio. Preference for admission is given to those who have completed a balanced education in the arts, sciences, and humanities. A minimum of two semesters of college-level courses in the history of art and/or architecture and one semester of college-level courses in mathematics or physics is recommended. Previous preparation in the visual arts is also desirable, as are courses in philosophy, literature, and economics. In order to graduate, students in this program must complete, in addition to 6 semesters of design studios (70-72 credit hours), a curriculum of 33 credit hours with an additional free electives course load of 27 credit hours.

Summary

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<th>Credit Hours</th>
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Option 1 Degree Requirements

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<td>ARCH 504</td>
<td>CORE DESIGN STUDIO IV</td>
<td>10</td>
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<tr>
<td>ARCH 507</td>
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<td>ARCH 509</td>
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<td>ARCH 514</td>
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### Master of Architecture (MArch) Degree

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<td></td>
<td>PRACTICE</td>
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</tr>
<tr>
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<tr>
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<td>HISTORY AND THEORY III - 1890-1968</td>
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<tr>
<td>HART 606</td>
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<td>ARCH 652</td>
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<td>or ARCH 730</td>
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### Elective Requirements

Students must complete 9 additional courses from departmental course offerings (ARCH).

Total Credit Hours 130-132

### Footnotes and Additional Information

1. Students enrolled in the Paris program (RSAP) will register for ARCH 620 design studio in lieu of ARCH 601 (fall) or ARCH 602 (spring).

2. All students are required to take ARCH 702 even if they pursue the non-thesis track. Students who wish to remain enrolled as a registered student for an eighth semester will register for ARCH 703 in their seventh semester and ARCH 730 (instead of ARCH 729) in the eighth semester. Students who wish to take this extension must decide at the beginning of their seventh semester. Students who pursue the non-thesis MArch degree are required to take the Totalization Studio (ARCH 601, 10 credit hours) in lieu of the thesis studio and an additional elective (worth 3 credit hours) in lieu of the written thesis course ARCH 729 or ARCH 730.

3. ARCH 703, ARCH 729, and ARCH 730 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of B (3.0 grade points) in each required course.

### Option 1 Plan-of-Study

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Credit Hours 19

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Credit Hours 19

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Credit Hours 19

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Credit Hours 19

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Credit Hours 19

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Credit Hours 16

Total Credit Hours 130-132

### Footnotes and Additional Information

1. Students enrolled in the Paris program (RSAP) will register for ARCH 620 design studio in lieu of ARCH 601 (fall) or ARCH 602 (spring).

2. All students are required to take ARCH 702 even if they pursue the non-thesis track. Students who wish to remain enrolled as a registered student for an eighth semester will register for ARCH 703 in their seventh semester and ARCH 730 (instead of ARCH 729) in the eighth semester. Students who wish to take this extension must decide at the beginning of their seventh semester. Students who pursue the non-thesis MArch degree are required to take the Totalization Studio (ARCH 601, 10 credit hours) in lieu of the thesis studio and an additional elective (worth 3 credit hours) in lieu of the written thesis course ARCH 729 or ARCH 730.

3. ARCH 703, ARCH 729, and ARCH 730 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of B (3.0 grade points) in each required course.
Option 2 - MArch Degree Program
Offered to individuals who hold a four-year undergraduate degree with a major in Architecture. Advanced placement into Option 2 is at the discretion of the admissions committee, but generally preference for admission is given to those who have successfully completed five semesters or more of undergraduate design studio as well as undergraduate courses that are analogous to those given in the first year of Option 1. A minimum of two semesters of college-level courses in the history of art and/or architecture and one semester of college-level courses in mathematics or physics is expected. In order to graduate, students in this program must complete, in addition to 4 semesters of design studios (50-52 credit hours), a curriculum of 27 credit hours with an additional free electives course load of 15 hours.

Summary

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Option 2 Degree Requirements

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<td>ARCH 646 / HART 506</td>
<td>HISTORY AND THEORY III - 1890-1968</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 652</td>
<td>HISTORY AND THEORY IV - 1968 TO PRESENT</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 702</td>
<td>PRE-THESIS PREPARATION</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 703</td>
<td>DESIGN THESIS STUDIO</td>
<td>10</td>
</tr>
<tr>
<td>ARCH 729</td>
<td>THESIS WRITTEN DOCUMENT (FALL)</td>
<td>3</td>
</tr>
<tr>
<td>or ARCH 730</td>
<td>THESIS WRITTEN DOCUMENT (SPRING)</td>
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<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Elective Requirements</td>
</tr>
<tr>
<td></td>
<td>Students must complete 5 additional courses from departmental course offerings (ARCH).</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>92-94</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1. Students who have previously taken courses equivalent to Technology I and II at another institution may instead take electives with permission from the director of graduate students.
2. Students enrolled in the Paris program (RSAP) should register for ARCH 620 design studio in lieu of ARCH 601 (fall) or ARCH 602 (spring).
3. All students are required to take ARCH 702 even if they pursue the non-thesis track. Students who wish to remain enrolled as a registered student for an eighth semester will register for ARCH 703 in their seventh semester and ARCH 730 (instead of ARCH 729) in the eighth semester. Students who wish to take this extension must decide at the beginning of their seventh semester. Students who pursue the non-thesis MArch degree are required to take the Totalization Studio (ARCH 601, 10 credit hours) in lieu of the thesis studio and an additional elective (worth 3 credit hours) in lieu of the written thesis course ARCH 729 or ARCH 730.
4. ARCH 703, ARCH 729, and ARCH 730 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of B (3.0 grade points) in each required course.

Option 2 Plan-of-Study

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Semester</td>
<td></td>
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<tr>
<td>ARCH 503</td>
<td>CORE DESIGN STUDIO III</td>
<td>10</td>
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<td>ARCH 507</td>
<td>TECHNOLOGY I</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 646 / HART 506</td>
<td>HISTORY AND THEORY III - 1890-1968</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Credit Hours</td>
<td>19</td>
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<tr>
<td>2nd Semester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARCH 504</td>
<td>CORE DESIGN STUDIO IV</td>
<td>10</td>
</tr>
<tr>
<td>ARCH 509</td>
<td>TECHNOLOGY II</td>
<td>3</td>
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<tr>
<td>ARCH 652</td>
<td>HISTORY AND THEORY IV - 1968 TO PRESENT</td>
<td>3</td>
</tr>
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<td>Elective</td>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Credit Hours</td>
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<tr>
<td>3rd Semester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARCH 514</td>
<td>TECHNOLOGY III</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 601</td>
<td>ARCHITECTURAL PROBLEMS: STUDIO</td>
<td>10</td>
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<tr>
<td>ARCH 623</td>
<td>PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL PRACTICE</td>
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<td>Elective</td>
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<td>Credit Hours</td>
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<td>4th Semester</td>
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<tr>
<td>ARCH 516</td>
<td>TECHNOLOGY IV</td>
<td>3</td>
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<td>ARCH 602</td>
<td>ARCHITECTURAL PROBLEMS</td>
<td>10-12</td>
</tr>
<tr>
<td>ARCH 702</td>
<td>PRE-THESIS PREPARATION</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>Elective</td>
<td>3</td>
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<td>Credit Hours</td>
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<tr>
<td>5th Semester</td>
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</tr>
<tr>
<td>ARCH 703</td>
<td>DESIGN THESIS STUDIO</td>
<td>10</td>
</tr>
<tr>
<td>ARCH 729</td>
<td>THESIS WRITTEN DOCUMENT (FALL)</td>
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<td>Credit Hours</td>
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<td>6th Semester</td>
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<tr>
<td>Optional Additional Semester:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Master of Arts (MA) Degree in the field of Architecture

Program Learning Outcomes for the MA Degree in the field of Architecture

Upon completing the MA degree in the field of Architecture, students will be able to:

1. Integrate architecture and advanced research to address the most pressing and complex issues of design, environment, and culture.
2. Develop research techniques and knowledge of advanced systems, techniques, and processes.
3. Innovate the knowledge and practice of architecture through advanced critical thinking and experimentation.

Requirements for the MA Degree in the field of Architecture

The MA degree is a thesis master’s degree. For general university requirements, please see Thesis Master's Degrees (p. 67).

Present Future is a concentrated undertaking culminating in the MA (Master of Arts) degree, in the field of Architecture. The program is structured around a three-semester-long exploration of a topic led by a Rice School of Architecture faculty member. A select group of students form the core: a collective intelligence responsible for developing a discourse that synthesizes theoretical, historical, and design ambitions. Subjects will be of contemporary importance and will be framed by a 3-credit pre-seminar the first term, a 12-credit collective thesis in the second term, and a concluding seminar in the third term. In addition to free electives, each semester will include additional required credits that are appropriate to the selected topic, bringing the total credit hours to 39. The program’s student body will include those with backgrounds in architecture as well as other fields: individuals with BA, BS equivalent, or more advanced degrees in architecture or other disciplines are invited to present their present future.

Rice thesis students do not envision an endless frontier. Rather than turning away from the discipline, our students have found new territories embedded within architectural and urban paradigms, breathing into them new life and vitality. All Master of Architecture candidates are required to propose an independent thesis, articulating an ambition, and envisioning its architectural specificity. Students develop their individual thesis proposals during their penultimate semester in a required, pre-thesis seminar. MARCH students in Options 1 and 2 complete the degree requirements by either submitting a thesis or by taking alternative coursework. Thesis design evolves from the honing of that proposal and continues through the final semester, under the guidance of an individual advisor. In early January, thesis projects are reviewed publicly by a panel of eminent invited guests. In short, the school starts each new year with a batch of new visions.

RSA Paris

MArch degree (Option 1 and Option 2) students may apply to RSA Paris to complete one semester in Paris: Option 1 students may do so in their fifth or sixth semester, Option 2 in their third or fourth semester. BArch students may apply to RSA Paris in their final year of study.

For additional information, please see the Architecture website: http://architecture.rice.edu/

Notes for the MArch Degree Program

All courses above (for both Option 1 and 2) must be taken in the sequence and semester prescribed by the School of Architecture and completed with GPA of 3.0 or higher.

 Policies for the Master of Architecture (MArch) Degree

School of Architecture Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the school of Architecture publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Architecture_Graduate_Handbook.pdf

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Additional Information

For additional information, please see the Architecture website: http://architecture.rice.edu/

Opportunities for the Master of Architecture (MArch) Degree

Master of Architecture (MArch) Thesis Requirement

Thesis is payback time—it is when students build upward and outward from what they’ve learned over the years, giving back to the school by providing new disciplinary fodder. More immediate than a crystal ball, some of the common threads underlying a Rice thesis might well reveal tomorrow’s future. Despite working in the context of Texas’s vast horizon, tomorrow’s future. Despite working in the context of Texas’s vast horizon, technology I and II at another institution may instead take electives with permission from the director of graduate students.

Students enrolled in the Paris program (RSAP) should register for ARCH 620 in lieu of ARCH 601 (fall) or ARCH 602 (spring).

All students are required to take ARCH 702 even if they pursue the non-thesis track. Students who wish to remain enrolled as a registered student for an eighth semester will register for ARCH 703 in their seventh semester and ARCH 730 (instead of ARCH 729) in the eighth semester. Students who wish to take this extension must decide at the beginning of their seventh semester. Students who pursue the non-thesis MArch degree are required to take the Totalization Studio (ARCH 601, 10 credit hours) in lieu of the thesis studio and an additional elective (worth 3 credit hours) in lieu of the written thesis course ARCH 729 or ARCH 730.

ARCH 703, ARCH 729, and ARCH 730 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of B (3.0 grade points) in each required course.

Footnotes and Additional Information

1. Students who have previously taken courses equivalent to Technology I and II at another institution may instead take electives with permission from the director of graduate students.

2. Students enrolled in the Paris program (RSAP) should register for ARCH 620 in lieu of ARCH 601 (fall) or ARCH 602 (spring).

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4. ARCH 703, ARCH 729, and ARCH 730 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of B (3.0 grade points) in each required course.
apply. Coursework will include offerings from the School of Architecture and other departments across Rice University.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the MA Degree in the field of Architecture</td>
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### Degree Requirements

#### Required Courses

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<td>ARCH 602</td>
<td>ARCHITECTURAL PROBLEMS</td>
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<td>ARCH 651</td>
<td>PRESENT FUTURE SEMINAR</td>
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<tr>
<td>ARCH 751</td>
<td>PRESENT FUTURE II</td>
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#### Elective Requirements

Students must complete 7 additional courses from departmental (ARCH) course offerings.

<table>
<thead>
<tr>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>21</td>
</tr>
</tbody>
</table>

### Total Credit Hours

| 39           |

### Footnotes and Additional Information

1. With permission, thesis or a design studio may be taken as electives.

### Required Plan-of-Study

The Master of Arts in Architecture degree program is structured around a three-semester-long exploration of a topic led by a Rice School of Architecture faculty member.

#### 1st Semester

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
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<td>3</td>
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<td>Elective</td>
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<table>
<thead>
<tr>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>12</td>
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#### 2nd Semester

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>ARCH 602</td>
<td>ARCHITECTURAL PROBLEMS</td>
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<table>
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<tr>
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#### 3rd Semester

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</tr>
<tr>
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<table>
<thead>
<tr>
<th>Total Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
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</tbody>
</table>

### Footnotes and Additional Information

1. With permission, thesis or a design studio may be taken as electives.

### Policies for the MA Degree in the field of Architecture

#### School of Architecture Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the school of Architecture publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Architecture_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Architecture_Graduate_Handbook.pdf).

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

#### Additional Information

For additional information, please see the Architecture website: [http://architecture.rice.edu/](http://architecture.rice.edu/)

### Opportunities for the MA Degree in the field of Architecture

For additional information, please see the Architecture website: [http://architecture.rice.edu/](http://architecture.rice.edu/)

### Art History

#### Contact Information

Art History  
[http://arthistory.rice.edu/](http://arthistory.rice.edu/)  
103 Herring Hall  
713-348-4276  
Graham Bader  
Department Chair  
bader@rice.edu

The Department of Art History offers a wide range of courses in European, American, Latin American, Middle Eastern/Islamic, and Asian art history. The major in art history is structured to expose students to the chronological, geographical, and methodological breadth of the field of scholarship.

### Bachelor’s Program

- Bachelor of Arts (BA) Degree with a Major in Art History (p. 140)

### Master’s Program

- Master of Arts (MA) Degree in the field of Art History*

### Doctoral Program

- Doctor of Philosophy (PhD) Degree in the field of Art History (p. 147)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.
Program Learning Outcomes for the BA Degree with a Major in Art History

Upon completing the BA degree with a major in Art History, students will be able to:

1. Understand the historical, social, cultural and political contexts and traditions of art. Students will develop an understanding of the multiple contexts of art, including its relationship to religion, politics, gender and sexuality, urbanism, history, culture, and other domains of human social experience.

2. Demonstrate effective use of specialized disciplinary vocabulary and appropriate methodologies to analyze works of art and communicate their form, function, and meaning orally and in writing.

3. Demonstrate ability to perform comparative analyses of art works based on differences or similarities in cultural context, form, content, artist, materials, and time and place of production.

4. Demonstrate specialized knowledge about, and be able to identify, art from specific geographical locations, periods, artists, and/or artistic movements.

5. Evaluate and use primary and secondary sources to generate and answer original research questions and produce independent research.

6. Understand major artistic movements, common themes, trends, and the styles of major artists. They will demonstrate generalized knowledge of major figures in art history, major art movements and traditions, and major artistic styles.

Requirements for the BA Degree with a Major in Art History

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Art History must complete:

- A minimum of 10 courses (30 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 5 courses (15 credit hours) taken at the 300-level or above.
- A maximum of 4 courses (12 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.
- The requirements for one area of specialization (see list below). The Art History major offers two areas of specialization:
  - Art History (p. ), or
  - History of Architecture (p. )

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Additionally, undergraduates may not take graduate-level HART courses (500-level or above) without the permission of the instructor.
### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Total Credit Hours Required for the Major in Art History: 30

Total Credit Hours Required for the BA Degree with a Major in Art History: 120

### Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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</tbody>
</table>

#### Areas of Specialization

Select 1 from the following:

- **Art History**: 30
- **History of Architecture**: 30

**Total Credit Hours Required for the Major in Art History**: 30

**Additional Credit Hours to Complete BA Degree Requirements**: 30

**University Graduation Requirements (p. 25)**: 60

**Total Credit Hours**: 120

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

---

### Areas of Specialization

Students must complete a total of 10 courses (30 credit hours) as listed in the requirements for one of the Art History areas of specialization. Note that the course lists to satisfy each requirement can be found below the specializations.

---

### Area of Specialization: Art History

To satisfy the requirements for the Art History Specialization, Art History majors must complete 10 courses (30 credit hours) as listed below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

A minimum of 1 course at the 200-level or above from the Ancient–Medieval (Pre-Modern) category (see below for course list): 3

A minimum of 1 course at the 200-level or above from the Renaissance–18th century (Early Modern) category (see below for course list): 3

A minimum of 1 course at the 200-level or above from the 19th century–Present (Modern through Contemporary) category (see below for course list): 3

A minimum of 2 courses from the Seminar Courses category (see below for course list): 6

A minimum of 1 course from the Outside the European and American Traditions category (see below for course list): 3

A minimum of 4 additional courses as Electives from departmental course offerings (HART): 12

**Total Credit Hours**: 30

### Footnotes and Additional Information

1 Transfer credit for HART 100 received via the articulation of advanced placement credit (AP) credit, international baccalaureate (IB) credit, or A-level credit will not count toward any major requirements, including elective requirements.

### Area of Specialization: History of Architecture

To satisfy the requirements for the History of Architecture Specialization, Art History majors must complete 10 courses (30 credit hours) as listed below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
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</table>

A minimum of 6 courses from the History of Architecture category (see below for course list): 18

A minimum of 2 courses from the Seminar Courses category (see below for course list): 6

A minimum of 1 course from the Outside the European and American Traditions category (see below for course list): 3

A minimum of 2 courses that together cover two of the three chronological categories Ancient-Medieval; Renaissance-18th Century; 19th century-Present: 6

**Total Credit Hours**: 30

### Footnotes and Additional Information

1 Transfer credit for HART 100 received via the articulation of advanced placement credit (AP) credit, international baccalaureate (IB) credit, or A-level credit will not count toward any major requirements, including elective requirements.

2 Courses listed in the Seminar Courses list can also satisfy a requirement in the History of Architecture, Outside European and American Traditions, or the three chronological categories requirements.

---

### Course Lists to Satisfy Requirements

#### Ancient-Medieval (Pre-Modern) Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>HART 201</td>
<td>ART OF ANCIENT ROME</td>
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</tr>
<tr>
<td>HART 214 / CLAS 236</td>
<td>ART AND POLITICS IN ANCIENT ROME</td>
<td>3</td>
</tr>
<tr>
<td>HART 240 / HUMA 108 / MDEM 108</td>
<td>ART IN CONTEXT: LATE MEDIEVAL AND RENAISSANCE CULTURE</td>
<td>3</td>
</tr>
<tr>
<td>HART 309 / CLAS 309</td>
<td>THE DAWN OF ROME: GENERATING THE URBAN, SOCIAL AND POLITICAL LIFE OF THE ETERNAL CITY</td>
<td>3</td>
</tr>
<tr>
<td>HART 311 / ANTH 331</td>
<td>ART AND ARCHAEOLOGY OF THE ANCIENT NEAR EAST</td>
<td>3</td>
</tr>
<tr>
<td>HART 316 / ANTH 346 / ARCH 310 / COMP 316</td>
<td>VIRTUAL RECONSTRUCTION OF HISTORICAL CITIES</td>
<td>3</td>
</tr>
<tr>
<td>HART 318 / CLAS 321</td>
<td>SPECIAL TOPICS IN ANCIENT ART</td>
<td>3</td>
</tr>
<tr>
<td>HART 326 / ARCH 326 / CLAS 326</td>
<td>MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN ANCIENT ROME</td>
<td>3</td>
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<td>HART 327</td>
<td>THE GENESIS OF ROMAN ART</td>
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<tr>
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<td>HART 331 / MDEM 331</td>
<td>GOTHIC ART</td>
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</tr>
<tr>
<td>HART 332 / MDEM 332</td>
<td>ART OF THE COURTS</td>
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<td>HART 345 / ARCH 345</td>
<td>HISTORY AND THEORY II - PRE 1890</td>
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<td>SCIENCE AND MEDICINE IN MEDIEVAL VISUAL CULTURE</td>
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<td>HART 369 / CLAS 323</td>
<td>(RE)DEFINING (CLASSICAL) ART HISTORY: DIVISION, CONNECTIVITY AND SHIFT IN THE ANCIENT MEDITERRANEAN</td>
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<td>EAST &amp; WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND NORTHERN EUROPE</td>
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<td>MEDIEVAL MANUSCRIPTS</td>
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<td>THE SACRED ARTS OF SECULAR MODERNISM</td>
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<td>VISUAL CULTURE OF MEDIEVAL 437 / MDEM 437 PILGRIMAGE</td>
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<td>CAESAR'S PALACE: AUTHOR(ITY) AND MEANING IN THE ROMAN IMPERIAL RESIDENCE</td>
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**Renaissance–18th century (Early Modern) Courses**

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<td>ART IN CONTEXT: LATE MEDIEVAL AND RENAISSANCE CULTURE</td>
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<td>LIVING IN THE CITY IN THE OTTOMAN EMPIRE</td>
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<td>EIGHTEENTH CENTURY EUROPEAN ART</td>
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<td>IMPERIAL CITY: ISTANBUL 1453-1922</td>
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<td>JERUSALEM TO ISFAHAN</td>
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<td>STREETS AND URBAN LIFE: PARIS TO ISTANBUL</td>
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<td>LOOKING AT EUROPEAN PRINTS 1400-1700</td>
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<td>AMERICAN ART AND ARCHITECTURE I: 1620-1800</td>
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<td>NORTHERN RENAISSANCE ART</td>
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<td>EARLY RENAISSANCE ART IN ITALY</td>
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<td>THE HIGH RENAISSANCE AND MANNERISM IN ITALY</td>
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<td>MASTERS OF THE BAROQUE ERA</td>
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<td>HISTORY AND THEORY II - PRE 1890</td>
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<td>SEMINAR ON LOVE: MAKING LOVE IN MODERN ART AND THOUGHT</td>
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<td>AGE OF ROMANTICISM IN EUROPE</td>
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<td>JACQUES-LOUIS DAVID: REVOLUTION</td>
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<td>CONSTABLE AND TURNER</td>
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<td>IMPRESSIONISM AND POST-IMPRESSIONISM</td>
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<td>BAYOU BEND UNDERGRADUATE INTERNSHIP I</td>
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<td>ICONOCLASMS: THE DESTRUCTION OF IMAGES</td>
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<td>MULTICULTURAL EUROPE, 1400-1700</td>
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<td>HART 440</td>
<td>ISSUES IN THE HISTORY OF PRINTS, MODERN TO PRESENT</td>
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<td>EARLY MODERN ART</td>
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<td>MANET(S) AND MODERNISM(S)</td>
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<td>HART 487 / FREN 487</td>
<td>LITERATURE, ART AND COLONIALITY</td>
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**19th century–Present (Modern through Contemporary) Courses**

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<td>AVANT-GARDE AND AFTER: MODERN ART IN EUROPE, 1900-1945</td>
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<td>ART SINCE 1945</td>
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<td>FOURTEEN ARTWORKS AT THE MFAH</td>
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<td>THE BEGINNINGS OF CINEMA</td>
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<td>AUTEUR FILM: CASE STUDIES OF THREE AUTEURS</td>
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<td>NONFICTION FILM</td>
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<td>FILM CRITICISM</td>
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<td>CLASSICAL AND CONTEMPORARY FILM AND THEORY</td>
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<td>SPECIAL TOPICS IN FILM AND MEDIA STUDIES</td>
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<td>FROM THE SUBLIME TO THE SUSTAINABLE: ART, ARCHITECTURE AND NATURE</td>
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<td>PICASSO, POLLOCK, WARHOL</td>
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<td>TRENDS IN CONTEMPORARY ART</td>
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<td>ART, REVOLUTION, WAR: MODERN ART IN VIOLENT TIMES</td>
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<td>AGE OF ROMANTICISM IN EUROPE</td>
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<td>ART BETWEEN THE WARS: EUROPEAN MODERNISM, 1918-1940</td>
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<td>MODERN AND CONTEMPORARY ART: FROM POLLOK TO THE PRESENT</td>
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<td>SURVEY OF AMERICAN FILM AND CULTURE</td>
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<td>COLLAGE AND ITS HISTORIES</td>
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<td>MODALITIES OF CINEMA</td>
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<td>GLOBAL CINEMA</td>
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<td>EUROPEAN WOMEN FILMMAKERS</td>
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<td>HOLOCAUST MEMORY IN MODERN GERMANY</td>
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<td>FILM MELODRAMA</td>
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<td>THE SACRED ARTS OF SECULAR MODERNISM</td>
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<td>FROM EXPRESSIONISM TO FASCISM: ART AND FILM IN GERMANY</td>
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<td>ICONOCLASMS: THE DESTRUCTION OF IMAGES</td>
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<td>MURDER AND MODERNISM</td>
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<td>MANET(S) AND MODERNISM(S)</td>
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<td>HART 457 / FILM 455</td>
<td>VIDEO AND EXPANDED CINEMA</td>
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<td>MASS CULTURE &amp; THE AVANT-GARDE</td>
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<td>ART OF THE 60s AND 70s</td>
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<td>PRACTICING UTOPIA: ARCHITECTURE, EUGENICS AND THE MODERN LATIN CITY</td>
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<td>LATIN AMERICAN BODIES: ON MODERNISM</td>
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<td>NATURE IN-VITRO: BODIES, GARDENS AND BUILT FORMS</td>
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<td>SEMINAR ON FILM AUTHORSHIP: THE NEW HOLLYWOOD</td>
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<td>AUTEUR FILM: CASE STUDIES OF THREE AUTEURS</td>
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### Seminar Courses

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<td>CINEMA AND MODERNITY</td>
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<td>FSEM 181</td>
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<td>ROMAN VS GREEK: QUESTIONING THE DEFINITION OF ART IN THE ANCIENT</td>
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<td>MEDITERRANEAN WORLD</td>
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<td>HART 180 /</td>
<td>14 FILMS YOU SHOULD SEE BEFORE YOU GRADUATE FROM RICE UNIVERSITY</td>
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<td>INTRODUCTION TO ASIAN CIVILIZATIONS</td>
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<td>FILM CRITICISM</td>
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<td>SPECIAL TOPICS IN FILM AND MEDIA STUDIES</td>
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<td>SPECIAL TOPICS IN MUSEUM CURATORIAL STUDIES</td>
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<td>SPECIAL TOPICS IN ART THEORY AND CRITICISM</td>
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<td>FROM THE SUBLIME TO THE SUSTAINABLE: ART, ARCHITECTURE AND NATURE</td>
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<td>A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE</td>
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<td>LIVING IN THE CITY IN THE OTTOMAN EMPIRE</td>
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<td>THE DAWN OF ROME: GENERATING THE URBAN, SOCIAL AND POLITICAL LIFE OF</td>
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<td>3</td>
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<td>ARCH 326 /</td>
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<td>HART 328 /</td>
<td>EPIPHANIES: SEEING IN A NEW LIGHT AND RECOGNIZING THE RADIANCE</td>
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<tr>
<td>RELI 375</td>
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<td>HART 333 /</td>
<td>LOOKING AT EUROPEAN PRINTS</td>
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<td>1400-1700</td>
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<td>HART 334 /</td>
<td>PICASSO, POLLOCK, WARHOL</td>
<td>3</td>
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<td>HART 336 /</td>
<td>CINEMA AND THE CITY</td>
<td>3</td>
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<td>ASIA 355 /</td>
<td></td>
<td></td>
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<tr>
<td>FILM 336</td>
<td></td>
<td></td>
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<td>HART 346 /</td>
<td>SEMINAR ON LOVE: MAKING LOVE IN MODERN ART AND THOUGHT</td>
<td>3</td>
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<td>SWGS 346</td>
<td></td>
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<td>HART 347 /</td>
<td>SEMINAR ON LOVE</td>
<td>3</td>
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<td>TRENDS IN CONTEMPORARY ART</td>
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<td>HART 351 /</td>
<td>ART, REVOLUTION, WAR: MODERN ART IN VIOLENT TIMES</td>
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<tr>
<td>HART 354 /</td>
<td>AGE OF ROMANTICISM IN EUROPE</td>
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<td>HART 355 /</td>
<td>JACQUES-LOUIS DAVID: REVOLUTION</td>
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<tr>
<td>HART 357 /</td>
<td>CONSTABLE AND TURNER</td>
<td>3</td>
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<td>HART 365 /</td>
<td>ART BETWEEN THE WARS: EUROPEAN MODERNISM, 1918-1940</td>
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<td>(RE)DEFINING (CLASSICAL) ART HISTORY: DIVISION, CONNECTIVITY AND</td>
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<td>CLAS 323</td>
<td>SHIFT IN THE ANCIENT MEDITERRANEAN</td>
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<td>HART 371 /</td>
<td>CHINESE PAINTING</td>
<td>3</td>
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<td>HART 373</td>
<td>METHODOLOGY SEMINAR: WORD AND IMAGE</td>
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<td>HART 375 /</td>
<td>LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN</td>
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<td>EAST &amp; WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND NORTHERN EUROPE</td>
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<tr>
<td>ASIA 376 /</td>
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<td></td>
</tr>
<tr>
<td>MDEM 376</td>
<td></td>
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<tr>
<td>HART 377 /</td>
<td>MEDIEVAL MANUSCRIPTS</td>
<td>3</td>
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<td></td>
<td></td>
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<tr>
<td>HART 380 /</td>
<td>SURVEY OF AMERICAN FILM AND CULTURE</td>
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<td>ENGL 373 /</td>
<td></td>
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<td>FILM 373</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HART 381 /</td>
<td>COLLAGE AND ITS HISTORIES</td>
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</tr>
<tr>
<td>HART 382 /</td>
<td>MODALITIES OF CINEMA</td>
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**2017-2018 General Announcements**
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<th>Title</th>
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<td>GLOBAL CINEMA</td>
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<td>HART 386</td>
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<td>HART 387</td>
<td>HOLOCAUST MEMORY IN MODERN GERMANY</td>
<td>3-4</td>
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<td>HART 389 / FILM 389</td>
<td>FILM MELODRAMA</td>
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<td>LATIN AMERICAN ART AND CINEMA SINCE 1960</td>
<td>4</td>
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<tr>
<td>HART 394 / RELI 394</td>
<td>THE SACRED ARTS OF SECULAR MODERNISM</td>
<td>3</td>
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<td>HART 396</td>
<td>MEDICAL HUMANITIES VISUAL CULTURE</td>
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<td>HART 397</td>
<td>SPECIAL TOPICS: HART IN THE WORLD</td>
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<td>HART 398 / GERM 339</td>
<td>FROM EXPRESSIONISM TO FASCISM: ART AND FILM IN GERMANY</td>
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<td>HART 399 / SWGS 321</td>
<td>EXHIBITING SEXUALITIES</td>
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<td>HART 406</td>
<td>ICONOCLASMS: THE DESTRUCTION OF IMAGES</td>
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<tr>
<td>HART 410 / CLAS 417</td>
<td>ARCHITECTURE AND DYNASTIC ASPIRATION IN THE EARLY ROMAN EMPIRE</td>
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<td>HART 412 / ARCH 412</td>
<td>ADVANCED SEMINAR IN ARCHITECTURE</td>
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<td>HART 413</td>
<td>MURDER AND MODERNISM</td>
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<tr>
<td>HART 420</td>
<td>ARTISTIC ENCOUNTERS: EUROPE AND THE ISLAMIC WORLD IN THE EARLY MODERN AND MODERN PERIODS</td>
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<tr>
<td>HART 430 / ENGL 438</td>
<td>THE GROTESQUE</td>
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<tr>
<td>HART 431 / MDEM 431</td>
<td>ARCHITECTURE OF THE GOTHIC CATHEDRAL FROM THE MIDDLE AGES TO THE TWENTIETH CENTURY</td>
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<td>HART 435 / HIST 443 / MDEM 435</td>
<td>MULTICULTURAL EUROPE, 1400-1700</td>
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<tr>
<td>HART 437 / FREN 437 / MDEM 437</td>
<td>VISUAL CULTURE OF MEDIEVAL PILGRIMAGE</td>
<td>3-4</td>
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<td>HART 451</td>
<td>MODELS OF ABSTRACTION</td>
<td>3</td>
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<td>HART 452</td>
<td>MANET(S) AND MODERNISM(S)</td>
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<td>HART 454 / ANTH 454</td>
<td>THE ARTIST AS ETHNOGRAPHER - THE ETHNOGRAPHER AS ARTIST</td>
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<td>HART 457 / FILM 455</td>
<td>VIDEO AND EXPANDED CINEMA</td>
<td>3</td>
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<tr>
<td>HART 460</td>
<td>MASS CULTURE &amp; THE AVANT-GARDE</td>
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<td>HART 461</td>
<td>ART OF THE 60s AND 70s</td>
<td>3</td>
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<tr>
<td>HART 463 / ARCH 452</td>
<td>PRACTICING UTOPIA: ARCHITECTURE, EUGENICS AND THE MODERN LATIN CITY</td>
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<tr>
<td>HART 465</td>
<td>LATIN AMERICAN BODIES: ON MODERNISM</td>
<td>3</td>
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<tr>
<td>HART 467 / ARCH 462</td>
<td>NATURE IN-VITRO: BODIES, GARDENS AND BUILT FORMS</td>
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<tr>
<td>HART 480 / ARTS 435 / FILM 435</td>
<td>SEMINAR ON FILM AUTHORSHIP: THE NEW HOLLYWOOD</td>
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**Outside European and American Traditions Courses**

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<tr>
<td>HART 487 / FREN 487</td>
<td>LITERATURE, ART AND COLONIALITY</td>
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<tr>
<td>HART 493</td>
<td>WALTER BENJAMIN, MEDIA &amp; MODERNITY</td>
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**Outside European and American Traditions Courses**

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<td>HART 103</td>
<td>INTRODUCTION TO THE HISTORY OF ASIAN ART</td>
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<tr>
<td>HART 211 / ASIA 211 / HIST 206</td>
<td>INTRODUCTION TO ASIAN CIVILIZATIONS</td>
<td>3</td>
</tr>
<tr>
<td>HART 265</td>
<td>A VISUAL CULTURE TRAVELOGUE: ART AND POLITICS IN MODERN LATIN AMERICA</td>
<td>3</td>
</tr>
<tr>
<td>HART 304 / FILM 339 / SPPO 375</td>
<td>A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE</td>
<td>3</td>
</tr>
<tr>
<td>HART 308 / ARCH 318</td>
<td>LIVING IN THE CITY IN THE OTTOMAN EMPIRE</td>
<td>3</td>
</tr>
<tr>
<td>HART 322 / ARCH 332</td>
<td>JERUSALEM TO ISFAHAN</td>
<td>3</td>
</tr>
<tr>
<td>HART 329 / ARCH 329 / HIST 329</td>
<td>STREETS AND URBAN LIFE: PARIS TO ISTANBUL</td>
<td>3</td>
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<tr>
<td>HART 348</td>
<td>A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE</td>
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<tr>
<td>HART 359 / ARCH 359 / FILM 359</td>
<td>CINEMAS OF URBAN ALIENATION</td>
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<tr>
<td>HART 360 / ARCH 360</td>
<td>AMERICAN ARCHITECTURE AND DECORATIVE ARTS BEFORE 1900</td>
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<td>HART 371 / ASIA 371</td>
<td>CHINESE PAINTING</td>
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<td>HART 372 / ASIA 372 / MDEM 373</td>
<td>CHINESE ART AND VISUAL CULTURE</td>
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<tr>
<td>HART 375</td>
<td>LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN CITIES</td>
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<td>HART 376 / ASIA 376 / MDEM 376</td>
<td>EAST &amp; WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND NORTHERN EUROPE</td>
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<td>HART 392</td>
<td>LATIN AMERICAN ART AND CINEMA SINCE 1960</td>
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<td>HART 420</td>
<td>ARTISTIC ENCOUNTERS: EUROPE AND THE ISLAMIC WORLD IN THE EARLY MODERN AND MODERN PERIODS</td>
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<tr>
<td>HART 463 / ARCH 452</td>
<td>PRACTICING UTOPIA: ARCHITECTURE, EUGENICS AND THE MODERN LATIN CITY</td>
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<tr>
<td>HART 465</td>
<td>LATIN AMERICAN BODIES: ON MODERNISM</td>
<td>3</td>
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<tr>
<td>HART 467 / ARCH 462</td>
<td>NATURE IN-VITRO: BODIES, GARDENS AND BUILT FORMS</td>
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History of Architecture Courses

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<tr>
<td>HART 101 / CLAS 102 / MDEM 111</td>
<td>INTRODUCTION TO THE HISTORY OF WESTERN ART I: ANTIQUITY TO GOTHIC</td>
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<tr>
<td>HART 110 / ARCH 110 / CLAS 103 / FSEM 113</td>
<td>THE PARTHENON AND PERIKLEAN ATHENS</td>
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<td>HART 117 / FSEM 117</td>
<td>FROM FREUD TO LE CORBUSIER: PSYCHOANALYSIS, ART AND ARCHITECTURE</td>
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<tr>
<td>HART 201</td>
<td>ART OF ANCIENT ROME</td>
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<td>HART 214 / CLAS 236</td>
<td>ART AND POLITICS IN ANCIENT ROME</td>
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<tr>
<td>HART 225 / ARCH 225</td>
<td>HISTORY &amp; THEORY I (INTRO)</td>
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<tr>
<td>HART 265</td>
<td>A VISUAL CULTURE TRAVELOGUE: ART AND POLITICS IN MODERN LATIN AMERICA</td>
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<tr>
<td>HART 302</td>
<td>FROM THE SUBLIME TO THE SUSTAINABLE: ART, ARCHITECTURE AND NATURE</td>
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<tr>
<td>HART 304 / FILM 339 / SPPO 375</td>
<td>A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE</td>
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<td>HART 308 / ARCH 318</td>
<td>LIVING IN THE CITY IN THE OTTOMAN EMPIRE</td>
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<td>ART AND ARCHAEOLOGY OF THE ANCIENT NEAR EAST</td>
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<td>HART 316 / ANTH 346 / ARCH 310 / COMP 316</td>
<td>VIRTUAL RECONSTRUCTION OF HISTORICAL CITIES</td>
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<td>SPECIAL TOPICS IN ANCIENT ART</td>
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<td>HART 321</td>
<td>IMPERIAL CITY: ISTANBUL 1453-1922</td>
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<td>JERUSALEM TO ISFAHAN</td>
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<td>HART 326 / ARCH 326 / CLAS 326</td>
<td>MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN ANCIENT ROME</td>
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<td>STREETS AND URBAN LIFE: PARIS TO ISTANBUL</td>
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<td>EARLY MEDIEVAL ART</td>
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<td>GOTHIC ART</td>
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<td>HART 332 / MDEM 332</td>
<td>ART OF THE COURTS</td>
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<td>HART 339</td>
<td>AMERICAN ART AND ARCHITECTURE I: 1620-1800</td>
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</table>

Policies for the BA Degree with a Major in Art History

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Art History should be aware of the following departmental transfer credit guidelines:

- No more than 4 courses (12 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
- Transfer credit received via the articulation of advanced placement (AP) credit, international baccalaureate (IB) credit, or A-level credit will not be considered towards major requirements.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Art History website: http://arthistory.rice.edu/
Opportunities for the BA Degree with a Major in Art History

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honors Program in Art History
The departmental honors designation is reserved for those accepted into the Art History Honors Program. Students apply (via the departmental Director of Undergraduate Studies) no earlier than spring of the sophomore year and no later than spring of the junior year, and once accepted, they will be assigned to a faculty mentor. Financial assistance is available for honors students to conduct research between their junior and senior years.

To remain in the Honors Program, students must maintain an overall grade point average of 3.3 or higher and receive an A or A- in both semesters of the Senior Thesis. Students who maintain a grade point average of 3.7 or higher and who receive an A in both semesters of the Senior Thesis may be awarded high honors by vote of the department. If students are not able to maintain the requirements of the honors program, they can still graduate with the Art History major.

Requirements for the Honors Program in Art History
Students are required to complete at least 12 courses (36 credit hours) as listed below.

- at least 2 courses (200–400 level) Ancient-Medieval (Pre-Modern)
- at least 2 courses (200–400 level) Renaissance–18th century (Early Modern)
- at least 2 courses (200–400 level) 19th century–Present (Modern to Contemporary)
- at least 6 courses must be at the 300–400 level
- of the 12 courses, at least 3 courses must be seminars
- the two-semester senior thesis (6 credits total)
- of the courses listed above, at least 2 must be outside the European and American traditions

It is strongly recommended that majors in Art History acquire proficiency in at least one foreign language.

In addition, Art History majors are encouraged to take advantage of the opportunities provided by museum internships, study abroad programs, and travel fellowships.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Doctor of Philosophy (PhD) Degree in the field of Art History

Program Learning Outcomes for the PhD Degree in the field of Art History
Upon completing the PhD degree program in the field of Art History, students will be able to:

1. Apply disciplinary methods for the visual interpretation and critique of art to produce scholarship and communicate about art using appropriate disciplinary vocabularies and primary and secondary texts where appropriate.
2. Understand art not as an isolated incident but in relation to the contexts which not only shape art, but are shaped by art, including: history, society, culture, geography, and politics.
3. Understand art as a multicultural issue.
4. Develop and apply understanding of major artistic movements, artists, and art pieces by identifying and situating individual artists and works of art within major movements.

Requirements for the MA and PhD Degrees in the field of Art History
For general university requirements, please see Doctoral Degrees (p. 64). The PhD in Art History program at Rice University trains students for academic research and teaching, curatorial positions, and other careers in the visual arts. Program requirements include two years of coursework and the demonstration of two language proficiencies in addition to English, as well as the successful completion of a graduate research paper, oral and written qualifying exams, a dissertation prospectus, and a doctoral dissertation. All students entering the PhD program must complete the full curriculum, regardless of the degrees and coursework completed prior to the student's admission to Rice's doctoral program.

The MA degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 49). Although all students are admitted into the doctoral program, and no MA program is available, an MA degree may be conferred upon the successful completion of the first two years of course work, the passing of at least one language exam, and the completion of the graduate research paper.

In addition to the traditional degree timeline, the department also offers a Museum Professionals track, which is designed for students who currently hold professional appointments at local museums. All requirements for the program remain the same; however, graduate students who continue to hold their position at museums have a longer timetable for completing requirements.

The program is overseen by the Graduate Committee in Art History. The committee is comprised of department faculty and supervised by a Director of Graduate Studies (DGS). The DGS is responsible for advising students on coursework and degree requirements, and the department's Graduate Program Administrator oversees completion and documentation of program requirements, as well as financial matters concerning graduate students.

All incoming students will be assigned to the DGS for the first semester. The DGS will assist in explaining departmental guidelines, choosing courses, and beginning to strategize about major and minor fields. After this point, a student may change his or her advisor at any time, with the agreement of the new advisor. Primary and secondary fields are chosen by the student in consultation with his or her advisor and with a view
towards the requirements of the job market. Students should identify their primary and secondary fields by the end of the second year.

Summary

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<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Minimum Credit Hours Required for the PhD Degree in Art History</td>
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</table>

Courses

Satisfactory completion of at least 36 hours (12 courses) of graduate coursework (500-level or 600-level) is required. One of the required courses, HART 590 Methods in Art History must be taken in the Fall term of the first year. At least three (3) of the courses taken must be in an area judged by the faculty advisor to be outside the student's main field of interest and will constitute a secondary field. At least half of the classes taken must be seminars. Because jobs in the field often call for teaching expertise in more than one area, students are encouraged to acquire breadth of knowledge in both their coursework and the topics covered in the qualifying exams. Furthermore, because the dissertation committee requires the inclusion of one member from a department at Rice outside of art history, students are also encouraged to take at least one course in an outside department during the first two years. Up to three graduate courses may be taken outside the department, as approved by the student's advisor. Independent Study courses should have their format and expectations discussed between student and course supervisor and established by the second week of the term.

<table>
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<tr>
<th>Code</th>
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<td>Additional Requirements as Defined by Department</td>
<td>87</td>
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</table>

Foreign Languages

Reading knowledge of at least two languages other than English is required. These languages must be relevant to research in the student's field of study and must be approved by the student's advisor. A third language may also be strongly recommended by the student's advisor. The first language proficiency exam must be taken by December 15 of the first semester of the first year, and the second exam taken by May 1 of the second semester of the second year. If the student fails either exam, s/he may retake them no more than two additional times. The first exam must be passed within a year of the original exam. The second exam must be passed for the student to enter into candidacy, and no later than September 15th of the fourth year. If necessary, students are strongly encouraged to begin study of their second language at the start of their first year.

Graduate Research Paper

In the Spring term of their second year, students are required to complete a substantial research paper, as part of the HART 503 course. In preparation for this paper, the student should submit a topic and preliminary bibliography for the graduate research paper to his or her advisor by the end of Fall term of the second year. The purpose of the paper is to demonstrate research skills in art history including the ability to develop a convincing argument, to use visual evidence, to undertake research in foreign languages where applicable, and to develop an original thesis. The paper topic should be the result of careful thought and planning between student and advisor. It should not be thought of as a preliminary version of a dissertation, but rather an opportunity to explore in depth a topic of interest, perhaps related to course work. It need not, however, be outside of the student's primary field of study and may end up being related to an eventual dissertation topic. The topic of the paper, and a preliminary bibliography, should be discussed with the advisor before the end of the Fall semester of the second year.

Teaching Assistantships

All students in their third year will serve as Teaching Assistants (TAs). TAs will be assigned to courses based on course enrollments and numbers of TAs available, but in each semester some TAs will be assigned to HART 101 or HART 102. In some semesters, a TA may be assigned to a different course, based on interest/experience, combined with course size and professors’ needs. In both cases, the focus will be on a collaborative process in which TAs are an integral part of the department’s teaching, and will be supervised and trained in ways which will help in the development of their pedagogical skills. Students will gain experience by either leading discussion sections or taking over class sessions during the semester and the TA will be observed and given feedback.

Qualifying Exams

The doctoral qualifying exams (HART 600) consist of two written exams, followed by an oral exam. Preparation of the qualifying exams will begin during the summer term between the second and third years, and continue throughout the third year. The written and oral exams must be completed in the Spring semester of the third year. The exams will cover topics in the student’s major field of study and secondary field, as agreed upon with the student’s advisor and based on the student’s interests and intended area of study for the doctoral dissertation. Passing the qualifying exams is necessary for continuation in the program into the dissertation phase.

Dissertation Prospectus

In the Spring semester of the third year, students will enroll in HART 601 and prepare a prospectus of 10-12 pages plus bibliography on their dissertation topic to be presented to their advisor and dissertation committee. Students are encouraged to think of the dissertation prospectus as a base document for their dissertation research and writing phases. It should clearly present the dissertation’s topic, significance and contribution to the field(s), historical context, methodology and archival sources, and preliminary structure. Format details should be agreed upon with the dissertation advisor, and the dissertation committee should be approved by the department’s graduate committee. Once the student has passed the doctoral exams and had the prospectus approved by the dissertation committee, the student will file a petition for approval of candidacy for the Ph.D. with the Office of Graduate Studies.

Dissertation

A dissertation represents independent and original research, equivalent to a publishable book, which makes a significant contribution to the current body of knowledge in the field. It must show a mastery of the literature in the subject, be written in acceptable literary style, and conform to the standards outlined on the Rice University Office of Graduate Studies website. Dissertations may be written on any subject that falls within the supervisory competence of a permanent member of the department.
Mentored Teaching

A mentored teaching program will be available to in-residence students beginning in their sixth year, with applications due in by January 15 of the preceding year. This will represent an opportunity to build on the teaching assistant experience of the third year, while giving students a means to build their teaching resume during the last year of the dissertation and as they begin to go onto the job market, or prepare to go on it the next year.

Students will work with the professor, sharing equal responsibility for every aspect of the course, including syllabus development, teaching and grading evaluation. This would build on the TA experience by offering mentoring and feedback within the context of a peer relationship. The mentored teaching program is not open to students in the Museum Professionals track.

For current information on the Art History department and its programs, please go to arthistory.rice.edu.

Policies for the PhD Degree in the field of Art History

Department of Art History Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, including more detailed information regarding the PhD degree program policies and requirements, evaluation of student progress, and recommended timetable for degree completion for traditional students and those in the Museum Professionals Track, please see the Department of Art History Graduate Program Handbook, which can be found here:

For additional information, please see the Art History website: http://arthistory.rice.edu/

Opportunities for the PhD Degree in the field of Art History

Exhibitions, Lectures, and Arts Programs at Rice and in Houston

Houston is fortunate to have some of the best art collections in the United States. The department enjoys a strong and ongoing relationship with the local museums, in particular the Menil Collection and the Museum of Fine Arts, Houston. The department offers opportunities for students to study with local museums, galleries, and alternative art spaces by way of internship courses, summer internship working opportunities, fellowships, or collaborative events. The collections and special exhibitions of local museums are often the focus of class lectures and research papers in art history.

The department sponsors the Katherine Brown Distinguished Lectures in Art History, which bring leading scholars to Rice to speak on a wide variety of topics. The department also hosts occasional symposia and lectures in collaboration with other departments, presenting the ideas of top scholars, critics, and artists.

The Department of Art History houses the Visual Resources Center, which currently offers a broad and extensive collection of digital images related to the arts for teaching and research, serving both the department and the university at large. Additionally, exhibitions and related activities organized by the Rice University Moody Center for the Arts enrich the university and the Houston community. The Department of Visual and Dramatic Arts mounts several art and photography exhibitions each year and sponsors Rice Cinema, a public alternative film program.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this degree.

Asian Studies

Contact Information

Asian Studies
https://chaocenter.rice.edu/
205 Mechanical Laboratory
713-348-5843

Sonia Ryang
Director, Chao Center
sonia.ryang@rice.edu

The undergraduate Asian Studies program offers a comprehensive overview of the geography, history, people and their movements, and cultures of Asia. At the same time, the program is structured to train its students as strong researchers.

Bachelor's Program
- Bachelor of Arts (BA) Degree with a Major in Asian Studies (p. 150)

Asian Studies does not currently offer an academic program at the graduate level.

Director
Sonia Ryang

Associate Directors and Advisors
Haejin E. Koh
Steven W. Lewis

Professors
Tani E. Barlow
Shih-hui Chen
Krista Comer
Anne C. Klein
Jeffrey Kripal
William Parsons
Nanxiu Qian
Sayuri Guthrie Shimizu

Associate Professors
Lisa Balabanlilar
David Cook
Shih-Shan Susan Huang
Betty Joseph
Elora Shehabuddin
Kerry Ward

Professors Emeriti
Richard J. Smith
Stephen A. Tyler
Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject: ASIA

Program Description and Code
• Asian Studies: ASIA

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in Asian Studies: ASIA

Bachelor of Arts (BA) Degree with a Major in Asian Studies

Program Learning Outcomes for the BA Degree with a Major in Asian Studies

Upon completing the BA degree with a major in Asian Studies, students will be able to:

1. Develop a broad historical and geographic knowledge about Asia as a transnational region.
2. Design and execute independent research on Asia by using either social scientific or humanistic methods.
3. Demonstrate the ability to incorporate Asian-language sources into academic research.

Requirements for the BA Degree with a Major in Asian Studies

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Asian Studies must complete:

• A minimum of 10 courses (30 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 4 courses (12 credit hours) taken at the 300-level or above.
• Demonstration of advanced language proficiency in a single Asian language.

All (ASIA) program course offerings, many of which are cross-listed, may be used to satisfy the major requirements. Additionally, any other course that has high Asian content can be applied toward the major, with the director’s or major advisor’s approval.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

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<td>INTRODUCTION TO TRANSNATIONAL ASIAN STUDIES</td>
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<td>Elective Requirements</td>
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<td>Select 8 additional courses from course offerings with predominantly Asian content (see below for course list)</td>
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</table>

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Students must demonstrate advanced language proficiency in a single Asian language, and this proficiency requirement may be fulfilled by courses taken at Rice University, through AP credit received, or other means. Up to 4 of the 8 required elective courses may be language courses in a single Asian language (Arabic, Chinese, Hindi, Japanese, Korean, or Russian). Students are encouraged to consult with a major advisor regarding this point.

Elective Requirements

Students must complete a total of 8 courses (24 credit hours) from course offerings with predominantly Asian content, which can be found below. Of these 8 courses, up to 4 may be language courses in a single Asian language (Arabic, Chinese, Hindi, Japanese, Korean, or Russian).
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<td>HISTORY THROUGH FILM IN EAST AND NORTHEAST ASIA</td>
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HIST 493  EARLY MODERN EMPIRES  3
HIST 494  MUGHAL HISTORY  3
HIST 495  COMPARATIVE MODERNIZATION OF CHINA AND JAPAN  3

Political Science
POLI 460  SEMINAR IN COMPARATIVE GOVERNMENT  3
POLI 478  US - CHINA: CONFLICT AND COOPERATION  3

Religion
RELI 223  QUR'AN AND COMMENTARY  3
RELI 333  KNOWING BODY/GLOWING MIND: BUDDHIST ARTS OF CONTEMPLATION AND ANALYSIS  3
RELI 356  MAJOR ISSUES IN CONTEMPORARY ISLAM  3
RELI 433  TIBETAN LANGUAGE AND CULTURE  3
RELI 440  ISLAM'S MYSTICAL AND ESOTERIC TRADITION  3
RELI 442  CLASSICAL AND CONTEMPORARY ARABIC TEXTS  3
RELI 470  BUDDHIST WISDOM TEXTS  3

Footnotes and Additional Information
1 ENGL 397 is a variable topics course. Dependent on the topic any given semester, the course may or may not fulfill an Asian Studies elective. See a major advisor for more information.

Policies for the BA Degree with a Major in Asian Studies

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guideline
Students pursuing the major in Asian Studies should be aware of the following program-specific transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Asian Studies website: http://chaocenter.rice.edu/.

Opportunities for the BA Degree with a Major in Asian Studies

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Bioengineering

Contact Information
Bioengineering
http://bioe.rice.edu/
BioScience Research Collaborative
713-348-5869
K. Jane Grande-Allen
Department Chair
grande@rice.edu
Robert Raphael
Director of Graduate Studies
rraphael@rice.edu
Renata Ramos
Director of Undergraduate Studies
renata.ramos@rice.edu

To train the next generation of leaders in bioengineering, Rice's Bioengineering department has created an innovative teaching program that transcends boundaries between bioengineering, basic science, and clinical medicine, integrating the academic, industrial, and societal perspectives. Our hands-on approach to education is supported by a long standing tradition of cross-disciplinary research and education.

The Rice Bioengineering program is a comprehensive training program that provides student with:

- A fundamental understanding of the life and medical sciences.
- Advanced analytical and engineering capabilities.
- Translational research capability for transferring biotechnical advances from bench to bedside.

With this educational background, graduates will be well prepared to participate in independent or collaborative research and development endeavors in industry or academia.

Graduate programs in bioengineering offer concentrations in areas such as biomedical imaging and diagnostics, cellular and biomolecular engineering, computational and theoretical bioengineering, biomaterials and drug delivery and biomaterials, systems and synthetic biology, and tissue engineering and biomechanics. Research areas include biomechanical engineering, biological systems modeling, bioinformatics, cellular and molecular engineering, controlled release technologies, metabolic engineering, spectroscopy, statistical mechanics, systems engineering and instrumentation, thrombosis, tissue engineering, and transport processes.

Bachelor's Program

- Bachelor of Science in Bioengineering (BSBE) Degree (p. 154)
Master’s Programs
• Master of Bioengineering (MBE) Degree (p. 159)
• Master of Science (MS) Degree in the field of Bioengineering*

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Bioengineering (p. 157)

Coordinated Programs
• Master of Business Administration (MBA) Degree / Master of Bioengineering (MBE) Degree (p. 161)
• Doctor of Philosophy (PhD) Degree in the field of Bioengineering / Doctor of Medicine (MD) Degree with Baylor College of Medicine (p. 158)

* Although students are not normally admitted to a Master of Science (MS) degree program, graduate students may earn the MS as they work towards the PhD.

Chair
K. Jane Grande-Allen

Professors
Gang Bao
Michael Deem
Rebekah Drezek
Jane Grande-Allen
Herbert Levine
Jianpeng Ma
Antonios Mikos
Rebecca Richards-Kortum
Ka-Yiu San

Associate Professors
Michael Diehl
Oleg Igoshin
Robert Raphael
Junghae Suh
Jeffrey Tabor
Tomasz Tkaczyk

Assistant Professors
Jordan Miller
Omid Veiseh
David W. Zhang

Professors in the Practice
Z. Maria Oden

Lecturers
Bilal Ghosn
Renata Ramos
Eric Richardson

Professors, Joint Appointments
Ramon Gonzalez
Naomi Halas
Jeffrey Hartgerink
Lydia Kavaraki
Marek Kimmel
Marie Lynn Miranda
Frank Tittel
Kyriacos Zygourakis

Associate Professors, Joint Appointments
Matthew Bennett
Ching-Hwa Kiang
Angel A. Marti
Laura Segatori
Jonathan Silberg

Assistant Professors, Joint Appointments
Caleb Kemere
Jacob Robinson
Aryeh Warmflash

Adjunct Professors
Maria Elena Bottazzi
William Brownell
Ill-Min Chung
William Cohn
Mary Dickinson
Rena D’Souza
Charles Fraser
Ann M. Gillenwater
Peter J. Hotez
Ragha Kalluri
Anirbam Maitra
John McDevitt
David R. Piwnica-Worms
Eric Richardson
Robert C. Robbins
Rodigo Ruano
Jacqueline Shanks
Andrew Sikkora
Karen Storthz
Mark Wong
Samuel Miao-Sin Wu

Adjunct Associate Professors
Catherine Ambrose
Sharmila Anandasabapathy
Elizabeth Cosgriff-Hernandez
Miguel Cruz
M. Waleed Gaber
Stephen H. Little
Joseph Ludwig
Andrew Sikora
Konstantin Sokolov

Adjunct Assistant Professors
Aviva Presser Aiden
Aaron Foster
Michael J. Heffernan
Kurt Kasper
Steven Millward
Medhi Razavi
Niki Zacharias Millward

Description and Code Legend

Note: Internally the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject: BIOE

Department Description and Code
• Bioengineering: BIOE

Undergraduate Degree Description and Code
• Bachelor of Science in Bioengineering degree: BSBE

Undergraduate Major Description and Code
• Major in Bioengineering: BIOE

Graduate Degree Descriptions and Codes
• Master of Bioengineering degree: MBE
• Master of Science degree: MS
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Bioengineering: BIOE

Bachelor of Science in Bioengineering (BSBE) Degree

The program leading to the BSBE degree is accredited by the Engineering Accreditation Commission (EAC) of ABET, http://www.abet.org.

Program Learning Outcomes (Student Outcomes) for the BSBE Degree

Upon completing the BSBE degree, students will be able to demonstrate:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for and the ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Program Educational Objectives for the BSBE Degree

The overall goal of the Bachelor of Science in Bioengineering (BSBE) degree is to prepare graduates to succeed in professional careers by equipping them with the conceptual and technical expertise sought after by top graduate and medical schools, as well as by companies seeking technical skills in bioengineering. Recognizing that graduates may embark on a number of different educational and career paths, the Program Educational Objectives (PEOs) that graduates are expected to exhibit or achieve with the BSBE degree from Rice University are:

1. Graduates demonstrate technical and/or professional skills, which may include engineering problem-solving, scientific inquiry, and/or engineering design, to solve challenging problems in bioengineering and related fields.
2. Graduates are accomplished at communicating and working collaboratively in diverse work environments.
3. Graduates seeking further education at graduate, medical or other professional schools find appropriate levels of success in admission to and progression through these programs. Graduates entering professional careers find appropriate career progression and success.

Requirements for the BSBE Degree

For general university requirements, see Graduation Requirements (p. 25).

Students pursuing the BSBE degree must complete:

• A minimum of 34 course sequences (95 credit hours) to satisfy major requirements.
• A minimum of 134 credit hours to satisfy degree requirements.
• A minimum of 20 courses (48 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Bioengineering</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BSBE Degree</td>
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</tr>
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</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOE 252</td>
<td>BIOENGINEERING FUNDAMENTALS</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 320</td>
<td>SYSTEMS PHYSIOLOGY LAB MODULE</td>
<td>1</td>
</tr>
<tr>
<td>BIOE 322</td>
<td>FUNDAMENTALS OF SYSTEMS PHYSIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 330</td>
<td>BIOREACTION ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 332</td>
<td>BIOENGINEERING THERMODYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>BIOE 342 / BIOC 320</td>
<td>LABORATORY IN TISSUE CULTURE</td>
<td>1</td>
</tr>
<tr>
<td>BIOE 370</td>
<td>BIOMATERIALS</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 372</td>
<td>BIOMECHANICS</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 383</td>
<td>BIOMEDICAL ENGINEERING INSTRUMENTATION</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 385</td>
<td>BIOMEDICAL INSTRUMENTATION LAB</td>
<td>1</td>
</tr>
<tr>
<td>BIOE 391</td>
<td>NUMERICAL METHODS</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 420 / CHBE 420</td>
<td>TRANSPORT PHENOMENA IN BIOENGINEERING</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 1 from the following:

- BIOE 439 | APPLIED STATISTICS FOR BIOENGINEERING AND BIOTECHNOLOGY
- BIOE 440 | STATISTICS FOR BIOENGINEERING
- STAT 440 | STATISTICS FOR BIOENGINEERING
- BIOE 451 | BIOENGINEERING DESIGN I
- BIOE 452 | BIOENGINEERING DESIGN II

Bioengineering Laboratory Courses

Select 2 from the following (different laboratory modules may be offered each year):

- BIOE 442 | TISSUE ENGINEERING LAB MODULE
- BIOE 443 | BIOPROCESSING LAB MODULE
- BIOE 444 | MECHANICAL TESTING LAB MODULE
- BIOE 445 | ADVANCED INSTRUMENTATION LAB MODULE
- BIOE 446 | COMPUTATIONAL MODELING LAB
- BIOE 447 | DIGITAL DESIGN & VISUALIZATION
- BIOE 449 / GLHT 449 | TROUBLESHOOTING WORKSHOP FOR CLINICALLY-RELEVANT BIOMEDICAL EQUIPMENT

Biosciences

- BIOC 201 | INTRODUCTORY BIOLOGY
- BIOC 341 | CELL BIOLOGY

Chemistry

- CHEM 121 & CHEM 123 | GENERAL CHEMISTRY I and GENERAL CHEMISTRY LABORATORY I
- CHEM 122 & CHEM 124 | GENERAL CHEMISTRY II and GENERAL CHEMISTRY LABORATORY II
- CHEM 211 & CHEM 213 | ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY DISCUSSION

Computational and Applied Mathematics

- CAAM 210 | INTRODUCTION TO ENGINEERING COMPUTATION

Electrical Engineering

- ELEC 243 | ELECTRONIC MEASUREMENT SYSTEMS

Mathematics

- MATH 101 | SINGLE VARIABLE CALCULUS I
- MATH 102 | SINGLE VARIABLE CALCULUS II
- MATH 211 | ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA
- MATH 212 | MULTIVARIABLE CALCULUS

Mechanical Engineering

- MECH 211 / CEVE 211 | ENGINEERING MECHANICS

Physics

Select 1 from the following:

- PHYS 101 & PHYS 103 | MECHANICS (WITH LAB) and MECHANICS DISCUSSION
- PHYS 111 | HONORS MECHANICS (WITH LAB)
- PHYS 125 | GENERAL PHYSICS (WITH LAB)

Select 1 from the following:

- PHYS 102 & PHYS 104 | ELECTRICITY & MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION
- PHYS 112 | HONORS ELECTRICITY & MAGNETISM (WITH LAB)
- PHYS 126 | GENERAL PHYSICS II (WITH LAB)

Technical Electives

Select a minimum of 3 courses and 6 Engineering Points from the Technical Elective course offerings. A combination of technical electives must be selected that meets this minimum of 3 courses (9 credit hours) and 6 engineering points.

Total Credit Hours Required for the Major in Bioengineering

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 201 INTRODUCTORY BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 341 CELL BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 121 &amp; CHEM 123</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 122 &amp; CHEM 124</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 211 &amp; CHEM 213</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 210</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 243</td>
<td>4</td>
</tr>
<tr>
<td>MATH 101 &amp; MATH 102</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211 &amp; MATH 212</td>
<td>3</td>
</tr>
<tr>
<td>MECH 211 / CEVE 211</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 101 &amp; PHYS 103</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 111 &amp; PHYS 125</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 102 &amp; PHYS 104</td>
<td>4</td>
</tr>
<tr>
<td>TOTAL</td>
<td>95</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1. Students should complete these courses during their freshman year.
2. If BIOE 447 is taken as a Bioengineering Laboratory Course, the student should note that MECH 403, listed in the Technical Electives section, will not count as a course that satisfies the Technical Elective requirement.
3. Students should complete these courses during their sophomore year.

Total Credit Hours

134

Technical Electives

To fulfill the remaining BIOE major requirements, students must complete a minimum of 3 courses (9 credit hours) and 6 engineering points from the Technical Elective course offerings. A combination of technical electives must be selected that meets this minimum of 3 courses (9 credit hours) and 6 engineering points.

Please Note: The following list of courses are those that satisfy the approved Technical Electives requirement. In certain instances, courses not on this official list may be substituted upon approval of the department’s Director of Undergraduate Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Engineering Points

Courses listed below may count toward the Technical Elective requirement (minimum of 3 courses (9 credit hours) and 6 engineering points), and will carry the following Engineering Point values.

Please Note: the list of courses and their associated engineering point values may change. Students should check with their academic advisor before registering for technical elective courses.
### Bachelor of Science in Bioengineering (BSBE) Degree

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Zero (0) Engineering Points</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOE 401</td>
<td>UNDERGRADUATE RESEARCH</td>
<td>1-4</td>
</tr>
<tr>
<td><strong>One (1) Engineering Point</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOE 392 / GLHT 392</td>
<td>NEEDS FINDING AND DEVELOPMENT IN BIOENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 400</td>
<td>ENGINEERING UNDERGRADUATE RESEARCH ¹</td>
<td>1-4</td>
</tr>
<tr>
<td>BIOE 403</td>
<td>ADVANCES IN BIONANOTECHNOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 408</td>
<td>SYNTHETIC BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 422</td>
<td>GENE THERAPY</td>
<td>3</td>
</tr>
<tr>
<td><strong>Select 1 from the following:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOE 464 / BIOC 464</td>
<td>EXTRACELLULAR MATRIX</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 524 / BIOC 523</td>
<td>EXTRACELLULAR MATRIX</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 485 / COMP 485 / ELEC 485</td>
<td>FUNDAMENTALS OF MEDICAL IMAGING I</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 486 / COMP 486 / ELEC 486</td>
<td>FUNDAMENTALS OF MEDICAL IMAGING II</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 492</td>
<td>SENSORY NEUROENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 523 / CHBE 523</td>
<td>BIOENGINEERING SYSTEMS AND CONTROL</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 580 / CHBE 580</td>
<td>PROTEIN ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 587</td>
<td>OPTICAL IMAGING AND NANOBIOPHOTONICS</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 589 / BIOC 589</td>
<td>COMPUTATIONAL MOLECULAR BIOENGINEERING/BIOPHYSICS</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 620 / CHBE 620</td>
<td>TISSUE ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>CHBE 310</td>
<td>FUNDAMENTALS OF BIOMOLECULAR ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 300</td>
<td>ENGINEERING DESIGN WORKSHOP ²</td>
<td>2-3</td>
</tr>
<tr>
<td>ELEC 220</td>
<td>FUNDAMENTALS OF COMPUTER ENGINEERING</td>
<td>4</td>
</tr>
<tr>
<td>MECH 311 / CEVE 311</td>
<td>MECHANICS OF SOLIDS AND STRUCTURES</td>
<td>3</td>
</tr>
<tr>
<td><strong>Two (2) Engineering Points</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOE 307</td>
<td>SYSTEMS BIOLOGY OF BLOOD VESSELS</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 321</td>
<td>CELLULAR ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 381 / ELEC 381</td>
<td>FUNDAMENTALS OF NERVE AND MUSCLE / ELECTROPHYSIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 431</td>
<td>BIOMATERIALS APPLICATIONS</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 481 / ELEC 481 / NEUR 481</td>
<td>COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 482 / ELEC 482</td>
<td>PHYSIOLOGICAL CONTROL SYSTEMS</td>
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<tr>
<td>BIOE 643 / BIOC 643 / PHYS 643</td>
<td>CELL MECHANICS, MECHANOTRANSDUCTION AND THE CELL MICROENVIRONMENT</td>
<td>3</td>
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<tr>
<td><strong>CHBE 640 / BIOC 540</strong></td>
<td>METABOLIC ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td><strong>COMP 571 / BIOC 571</strong></td>
<td>BIOINFORMATICS: SEQUENCE ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td><strong>ELEC 327</strong></td>
<td>IMPLEMENTATION OF DIGITAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td><strong>ELEC 432</strong></td>
<td>MOBILE BIO-BEHAVIORAL SENSING</td>
<td>3</td>
</tr>
<tr>
<td><strong>Three (3) Engineering Points</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOE 360 / GLHT 360</td>
<td>APPROPRIATE DESIGN FOR GLOBAL HEALTH ³</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 421</td>
<td>MICROCONTROLLER APPLICATIONS</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 454 / MECH 454 / CEVE 454</td>
<td>COMPUTATIONAL FLUID MECHANICS</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 484</td>
<td>BIOPHOTONICS INSTRUMENTATION AND APPLICATIONS</td>
<td>3</td>
</tr>
<tr>
<td>or BIOE 512</td>
<td>BIOPHOTONICS INSTRUMENTATION AND APPLICATIONS</td>
<td>3</td>
</tr>
<tr>
<td><strong>Four (4) Engineering Points</strong></td>
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<tr>
<td>BIOE 360 / GLHT 360</td>
<td>APPROPRIATE DESIGN FOR GLOBAL HEALTH ³</td>
<td>3</td>
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<tr>
<td>BIOE 421</td>
<td>MICROCONTROLLER APPLICATIONS</td>
<td>3</td>
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<tr>
<td>BIOE 454 / MECH 454 / CEVE 454</td>
<td>COMPUTATIONAL FLUID MECHANICS</td>
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<tr>
<td>BIOE 484</td>
<td>BIOPHOTONICS INSTRUMENTATION AND APPLICATIONS</td>
<td>3</td>
</tr>
</tbody>
</table>

### Footnotes and Additional Information

¹ BIOE 400: Students may earn 1 engineering point for every 3 credit hours completed. A maximum of 2 engineering points can be applied towards the 6 points requirement by completing BIOE 400 courses.

² ENGI 300: Students may earn 1 engineering point for every credit hour completed. A maximum of 4 engineering points, and 6 credit hours, may be applied towards the Technical Elective requirement from ENGI 300 or from a combination of independent research and/or design courses (i.e. ENGI 300, BIOE 400, BIOE 401, BIOE 360/GLHT 360).
BIOE 360: This course is a design course. See ENGI 300 Note. A maximum of 4 engineering points, and 6 credit hours, may be applied towards the Technical Elective requirement from independent research and/or design courses.

MECH 403 can be applied toward the Technical Elective requirement only in the event that BIOE 447 is not completed as a Senior Lab requirement.

Policies for the BSBE Degree

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the BSBE degree should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Bioengineering website: http://bioengineering.rice.edu/

Opportunities for the BSBE Degree

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Bioengineering website: http://bioengineering.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Bioengineering

Program Learning Outcomes for the PhD Degree in the field of Bioengineering
Upon completing the PhD degree in the field of Bioengineering, students will be able to:

1. Work as independent researchers.
2. Acquire a graduate-level understanding of foundations in Bioengineering and apply this material across a variety of sub-disciplines.
3. Integrate knowledge from different sources to solve a defined Bioengineering problem.
4. Acquire deep knowledge in a sub-discipline in which they will pursue their dissertation.
5. Demonstrate professional skills in both oral and written communication.

Requirements for the MS Degree in the field of Bioengineering
The MS degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 67). Students pursuing the MS degree in the field of Bioengineering must complete:

• A minimum of 30 credit hours to satisfy degree requirements. MS students must earn additional credits they need for graduation by registering for the research course BIOE 500 during the terms they are engaged in research.
• A minimum of 18 credit hours from foundation, supporting, and advanced courses.
• A minimum GPA of 3.0.

In addition, students must:

• Show evidence on their undergraduate transcript of completion of fundamentals of systems physiology, physical biology, and statistics. (If courses were not taken for an undergraduate degree, they must be completed at the beginning of the MS program. Only one of these courses may be used as credit toward the 30 hours of required courses and only if it is at the 500-level or above.)
• Fulfill a teaching requirement
• Submit an original research thesis
• Defend the thesis in a public oral examination

Requirements for the PhD Degree in the field of Bioengineering
For general university requirements, please see Doctoral Degrees (p. 64). Students pursuing the PhD degree in the field of Bioengineering must complete:

• A minimum of 90 credit hours to satisfy degree requirements. In addition to foundation, PhD students must earn additional credits they need for graduation by registering for the PhD research course, BIOE 500, during the terms they are engaged in research.
• A minimum of 30 credit hours from foundation, supporting, and advanced courses with high standing.
• A minimum GPA of 3.2.

In addition, students must:

• Show evidence on their undergraduate transcript of completion of fundamentals of systems physiology, physical biology, and statistics. (If courses were not taken for an undergraduate degree, they must be completed at the beginning of the PhD program. Only one of these courses may be used as credit for the 30 required courses and only if it is at the 500-level or above.)
• Fulfill a teaching requirement. After their first semester in residence, students may be asked to spend the equivalent of six to 10 hours per week for a total of three semesters on teaching assignments.

• Submit a thesis proposal. PhD students must submit and successfully defend their thesis proposals by the end of their fourth semester in residence.

• Submit a thesis that provides evidence of their ability to carry out original research in a specialized area of bioengineering.

• Defend the thesis in a public oral examination.

Graduate students take required courses and electives in the following areas:

- Systems and Synthetic Biology
- Biomaterials and Drug Delivery
- Tissue Engineering and Biomechanics
- Computational and Theoretical Bioengineering
- Biomedical Imaging and Diagnostics
- Cellular and Biomolecular Engineering

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>90</td>
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</tbody>
</table>

**Total Credit Hours Required for the PhD Degree in the field of Bioengineering**

90

### Policies for the PhD Degree in the field of Bioengineering

**Department of Bioengineering Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Bioengineering publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Bioengineering_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Bioengineering_Graduate_Handbook.pdf)

**Admissions**

To make sure scores are available when admission decisions are made, applicants need to register to take the GRE and, if an international student, the TOEFL at least three months before the application deadline. Applicants should also request transcripts at least two months in advance to give senders time to get the material to Rice University by the deadline. The application deadline for MBE students for spring admission the following year is October 30th. The application deadline for PhD students for spring admission the following year is December 20th. PhD students are not admitted in the spring semester. Application materials received after the deadline will not be considered. Once admitted, departmental policy requires full-time PhD students to be registered for at least 12 credit hours each semester. MBE students in the Applied Bioengineering track students may register part-time with the permission of the department. MBE students in the Global Medical Innovation track are expected to attend full time.

For additional information, please see the Bioengineering website: [http://bioengineering.rice.edu/](http://bioengineering.rice.edu/)

### Opportunities for the PhD Degree in the field of Bioengineering

For additional information, please see the Bioengineering website: [http://bioengineering.rice.edu/](http://bioengineering.rice.edu/)

### Doctor of Philosophy (PhD) Degree in the field of Bioengineering / Doctor of Medicine (MD) Degree with Baylor College of Medicine

**Program Learning Outcomes for the PhD/MD Coordinated Degree Program**

Upon completing the PhD degree in the field of Bioengineering, students will be able to:

1. Work as independent researchers.
2. Acquire a graduate-level understanding of foundations in Bioengineering and apply this material across a variety of sub-disciplines.
3. Integrate knowledge from different sources to solve a defined Bioengineering problem.
4. Acquire deep knowledge in a sub-discipline in which they will pursue their dissertation.
5. Demonstrate professional skills in both oral and written communication.

**Requirements for the PhD/MD Coordinated Degree Program**

For general university requirements, see Graduate Degrees (p. 49). This PhD/MD dual degree program is offered by the Rice University Bioengineering Department and Baylor College of Medicine. This coordinated degree program prepares students for research careers in medicine. Students must initially be accepted into the program through the Baylor College of Medicine.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
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<tr>
<td></td>
<td></td>
<td>90</td>
</tr>
</tbody>
</table>

**Total Credit Hours Required for the PhD Degree in the field of Bioengineering at Rice University**

90

### Policies for the PhD/MD Coordinated Degree Program

For additional information, please see the Bioengineering website: [http://bioengineering.rice.edu/](http://bioengineering.rice.edu/)

### Opportunities for the PhD/MD Coordinated Degree Program

For additional information, please see the Bioengineering website: [http://bioengineering.rice.edu/](http://bioengineering.rice.edu/)
Master of Bioengineering (MBE) Degree

Program Learning Outcomes for the MBE Degree

Program Learning Outcomes for the Applied Bioengineering Track

Upon completing the MBE degree, students pursuing the Applied Bioengineering track requirements will be able to:

1. Apply and integrate advanced knowledge of Bioengineering topics in at least one of the following areas: Biomaterials and Drug Delivery, Biomedical Imaging and Diagnostics, Computational and Theoretical Bioengineering, Tissue Engineering and Biomechanics, or Systems and Synthetic Biology.
2. Apply knowledge from engineering and other disciplines to identify, formulate, and solve novel and complex problems that require advanced knowledge in bioengineering.
3. Select and apply quantitative analytic techniques to analyze bioengineering data.
4. Gain admission to a graduate or professional program, if students want to pursue further education.

Program Learning Outcomes for the Global Medical Innovation Track

Upon completing the MBE degree, students pursuing the Global Medical Innovation track requirements will be able to:

1. Apply knowledge of Bioengineering topics in at least one of the following areas: Biomaterials and Drug Delivery, Biomedical Imaging and Diagnostics, Computational and Theoretical Bioengineering, Tissue Engineering and Biomechanics, or Systems and Synthetic Biology.
2. Develop effective medical products, from concept to commercialization, within a team environment.
3. Comprehend and navigate the global medical technology industry by leveraging an internship experience.
4. Gain employment or advance professionally in a technical field related to bioengineering.

Requirements for the MBE Degree

The MBE degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66).

- A minimum of 30 credit hours to satisfy major requirements.
- A minimum grade of a B- (2.67 grade points) for all required courses applied toward the MBE degree requirements.
- One track as listed below.

The Master of Bioengineering degree is intended for those having a BA or BS degree in an engineering or science discipline.

There are two Areas of Specialization, or tracks, in the Master of Bioengineering program:

- Applied Bioengineering: designed as a flexible degree for students who will pursue careers in research, medicine, or related fields.
- Global Medical Innovation: designed specifically for students who will pursue a career in the global medical technology industry. As the medical technology industry becomes increasingly global with an emphasis in cost-effective health care solutions and clinical outcomes, Rice University seeks to prepare engineers for careers in medical technology through education in innovation, emerging-market design projects and internships. The Rice MBE track in Global Medical Innovation program specifically targets students who have an undergraduate degree in engineering (mechanical, electrical, chemical, or bioengineering/medical) or a related field, and who are interested in pursuing a career in the private, public, or non-profit sectors of medical technology.

Both tracks have the same prerequisites, though applicants will be evaluated considering the different purposes of each track. More information about each of these tracks can be found below. Curriculum must be approved by the Graduate Academic Affairs Committee and the Bioengineering Department. This is done on a case-by-case basis.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Credit Hours Required for the Master of Bioengineering (MBE) Degree</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

Requirements for the Applied Bioengineering Track

Students pursuing the Applied Bioengineering track must complete:

- A minimum of 18 credit hours from departmental course offerings (BIOE) at the 500-level or above.
- A minimum of 3 credit hours of graduate level professional development electives chosen from a specific list of approved courses (see below for list).
- A minimum of 3 credit hours courses taken as electives at the 500-level or above.
- BIOE 539 or an alternative quantitative-based BIOE course at the 400-level or above may count toward this requirement.
- BIOE 627 Medical Technology Design Seminar I and BIOE 628 Medical Technology Design Seminar II.
- A minimum overall GPA of 3.0 in required coursework.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOE 627</td>
<td>MEDICAL TECHNOLOGY DESIGN SEMINAR 1</td>
<td>1.5</td>
</tr>
<tr>
<td>BIOE 628</td>
<td>MEDICAL TECHNOLOGY DESIGN SEMINAR 2</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Students must complete 6 courses from departmental course offerings (BIOE) at the 500-level or above.

Elective Requirements

Professional Development Electives

Select a minimum of 3 credit hours from the following: 1

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOE 633</td>
<td>LIFE SCIENCE ENTREPRENEURSHIP AND THE ROLES OF FOUNDERS AND VENTURE CAPITAL ON HIGH TECH STARTUP</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOE 627</td>
<td>MEDICAL TECHNOLOGY DESIGN SEMINAR 1</td>
<td>1.5</td>
</tr>
<tr>
<td>BIOE 628</td>
<td>MEDICAL TECHNOLOGY DESIGN SEMINAR 2</td>
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</tr>
</tbody>
</table>

Students must complete 6 courses from departmental course offerings (BIOE) at the 500-level or above.

Elective Requirements

Professional Development Electives

Select a minimum of 3 credit hours from the following: 1

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOE 633</td>
<td>LIFE SCIENCE ENTREPRENEURSHIP AND THE ROLES OF FOUNDERS AND VENTURE CAPITAL ON HIGH TECH STARTUP</td>
<td>3</td>
</tr>
</tbody>
</table>
Master of Bioengineering (MBE) Degree

ENGI 510 TECHNICAL AND MANAGERIAL COMMUNICATIONS
ENGI 515 LEADING TEAMS AND INNOVATION
ENGI 529 ETHICS AND ENGINEERING LEADERSHIP
ENGI 542 COMMUNICATION FOR ENGINEERS: BUILDING A PRACTICAL TOOLBOX
ENGI 610 MANAGEMENT FOR SCIENCE AND ENGINEERING
ENGI 615 LEADERSHIP COACHING FOR ENGINEERS
ENGI 545 / CEVE 529 ETHICS AND ENGINEERING LEADERSHIP
ENGI 542 COMMUNICATION FOR ENGINEERS: BUILDING A PRACTICAL TOOLBOX
ENGI 610 MANAGEMENT FOR SCIENCE AND ENGINEERING
ENGI 615 LEADERSHIP COACHING FOR ENGINEERS
ENGI 545 / LEAD 545 STRATEGIC THINKING FOR COMPLEX PROBLEM SOLVING
ENGI 529 TECHNOLOGY ENTREPRENEURSHIP

MATH Elective Requirement
BIOE 539 APPLIED STATISTICS FOR BIOENGINEERING AND BIOTECHNOLOGY

BIOE Elective
Select one course from departmental course offerings (BIOE) at the 500-level or above.

Total Credit Hours
30

Footnotes and Additional Information
1 Additional course offerings may be completed with advisor approval.
2 BIOE 539 or an alternative quantitative-based BIOE course, taken at the 400-level or above.
3 Students may complete a course offered by another department, but it must be relevant to the MBE degree.

Requirements for the Global Medical Innovation Track
Students pursuing the Global Medical Innovation track must complete:

• A minimum of 30 credit hours as listed below.
• A minimum overall GPA of 3.2 in required coursework.

<table>
<thead>
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</tr>
<tr>
<td>BIOE 529</td>
<td>MEDICAL TECHNOLOGY DESIGN II</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 528</td>
<td>MEDICAL TECHNOLOGY IMPLEMENTATION 1</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 530</td>
<td>MEDICAL TECHNOLOGY IMPLEMENTATION 2</td>
<td>3</td>
</tr>
<tr>
<td>BIOE 627</td>
<td>MEDICAL TECHNOLOGY DESIGN SEMINAR 1</td>
<td>1.5</td>
</tr>
<tr>
<td>BIOE 628</td>
<td>MEDICAL TECHNOLOGY DESIGN SEMINAR 2</td>
<td>1.5</td>
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</tbody>
</table>

Internship or Independent Study
Select 1 of the following:

BIOE 600 GRADUATE BIOENGINEERING INDUSTRY INTERNSHIP (completed during the summer)

Elective Requirements
Select 3 courses as electives as listed below:

Professional Development Electives
Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>BIOE 633 / MGMT 633</td>
<td>LIFE SCIENCE ENTREPRENEURSHIP AND THE ROLES OF FOUNDERS AND VENTURE CAPITAL ON HIGH TECH STARTUP</td>
</tr>
<tr>
<td>ENGI 510</td>
<td>TECHNICAL AND MANAGERIAL COMMUNICATIONS</td>
</tr>
<tr>
<td>ENGI 515</td>
<td>LEADING TEAMS AND INNOVATION</td>
</tr>
<tr>
<td>ENGI 529 / CEVE 529</td>
<td>ETHICS AND ENGINEERING LEADERSHIP</td>
</tr>
<tr>
<td>ENGI 542</td>
<td>COMMUNICATION FOR ENGINEERS: BUILDING A PRACTICAL TOOLBOX</td>
</tr>
<tr>
<td>ENGI 610</td>
<td>MANAGEMENT FOR SCIENCE AND ENGINEERING</td>
</tr>
<tr>
<td>ENGI 615</td>
<td>LEADERSHIP COACHING FOR ENGINEERS</td>
</tr>
<tr>
<td>ENGI 545 / LEAD 545</td>
<td>STRATEGIC THINKING FOR COMPLEX PROBLEM SOLVING</td>
</tr>
<tr>
<td>MGMT 734</td>
<td>TECHNOLOGY ENTREPRENEURSHIP</td>
</tr>
</tbody>
</table>

MATH Elective
BIOE 539 APPLIED STATISTICS FOR BIOENGINEERING AND BIOTECHNOLOGY

BIOE Elective
Select 1 course from departmental course offering (BIOE) at the 500-level or above.

Total Credit Hours
30

Footnotes and Additional Information
1 This will be considered on a case-by-case basis, and the student is responsible for obtaining and selecting an internship that best aligns with their career goals.
2 BIOE 539 or an alternative quantitative-based BIOE course, taken at the 400-level or above, with the advisor’s approval.

Policies for the MBE Degree

Department of Bioengineering Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Bioengineering publishes a graduate program handbook, which can be found here:

Enrollment Status Requirements
Students may enroll for the Applied Bioengineering track on a full-time or part-time basis. Students may only enroll on a full-time basis for the Global Medical Innovation track. University graduation requirements (including the minimum residency requirement for students in graduate degree programs) still apply.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions
on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

For additional information, please see the Bioengineering website: http://bioengineering.rice.edu/

Opportunities for the MBE Degree
For additional information, please see the Bioengineering website: http://bioengineering.rice.edu/

Master of Business Administration (MBA) Degree / Master of Bioengineering (MBE) Degree

Program Learning Outcomes for the MBE Degree

Program Learning Outcomes for the Applied Bioengineering Track

Upon completing the MBE degree, students pursuing the Applied Bioengineering track requirements will be able to:

1. Apply and integrate advanced knowledge of Bioengineering topics in at least one of the following areas: Biomaterials and Drug Delivery, Biomedical Imaging and Diagnostics, Computational and Theoretical Bioengineering, Tissue Engineering and Biomechanics, or Systems and Synthetic Biology.
2. Apply knowledge from engineering and other disciplines to identify, formulate, and solve novel and complex problems that require advanced knowledge in bioengineering.
3. Select and apply quantitative analytic techniques to analyze bioengineering data.
4. Gain admission to a graduate or professional program, if students want to pursue further education.

Program Learning Outcomes for the Global Medical Innovation Track

Upon completing the MBE degree, students pursuing the Global Medical Innovation track requirements will be able to:

1. Apply knowledge of Bioengineering topics in at least one of the following areas: Biomaterials and Drug Delivery, Biomedical Imaging and Diagnostics, Computational and Theoretical Bioengineering, Tissue Engineering and Biomechanics, or Systems and Synthetic Biology.
2. Develop effective medical products, from concept to commercialization, within a team environment.
3. Comprehend and navigate the global medical technology industry by leveraging an internship experience.
4. Gain employment or advance professionally in a technical field related to bioengineering.

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA/MBE Coordinated Degree Program

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

Policies for the MBA/MBE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Bioengineering website: http://bioengineering.rice.edu/

Opportunities for the MBA/MBE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Bioengineering website: http://bioengineering.rice.edu/
The BioSciences department unites faculty engaged in research and teaching in a wide range of disciplines within the life sciences, creating a vibrant and diverse community of scholars. The department offers a broad range of introductory and advanced courses that lead to undergraduate degrees in Biochemistry and Cell Biology (BA, BS), Ecology and Evolutionary Biology (BA, BS), and Biological Sciences (BA). In addition, a Minor in Biochemistry and Cell Biology and a Minor in Ecology and Evolutionary Biology are offered. The BA degrees offer a rigorous biological curriculum suitable for many career paths while allowing the flexibility for extended academic exploration other areas. The BS degrees offer greater depth in upper-level coursework and are often chosen by students who will pursue advanced degrees in the future. Most BioSciences students, regardless of major, participate in undergraduate research, availing themselves of the numerous research opportunities at Rice and in the Houston community.

All five major degree paths will prepare students for graduate, medical, or other professional schools and a wide range of careers in the life sciences. In addition, qualified students may apply to the Biochemistry and Cell Biology BA-MA-PhD program track. Additional information on departmental programs, courses and advising is available at the BioSciences website (http://biosciences.rice.edu).

The BioSciences department administers graduate programs in Biochemistry and Cell Biology (PhD, MA) and in Ecology and Evolutionary Biology (PhD, MA, MS), described in the degree requirements section. In addition, some BioSciences faculty members participate in the Systems, Synthetic, and Physical Biology (SSPB) PhD program administered by the Institute of Biosciences and Bioengineering (ibb.rice.edu). Graduate studies include a combination of advanced coursework and individual research with faculty mentors.

For additional information regarding BioSciences and its associated academic programs, please see the department's website: http://biosciences.rice.edu/.

**Bachelor's Programs**

- Bachelor of Science (BS) Degree with a Major in Biochemistry and Cell Biology (p. 174)
- Bachelor of Science (BS) Degree with a Major in Ecology and Evolutionary Biology (p. 176)

**Minors**

- Minor in Biochemistry and Cell Biology (p. 185)
- Minor in Ecology and Evolutionary Biology (p. 186)

**Accelerated Program**

- Bachelor of Arts (BA) Degree / Master of Arts (MA) Degree / Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology (p. 164)

**Master's Programs**

- Master of Arts (MA) Degree in the field of Biochemistry and Cell Biology (p. 182)
- Master of Arts (MA) Degree in the field of Ecology and Evolutionary Biology (p. 183)
- Master of Science (MS) Degree in the field of Ecology and Evolutionary Biology*

**Doctoral Programs**

- Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology (p. 179)
- Doctor of Philosophy (PhD) Degree in the field of Ecology and Evolutionary Biology (p. 180)
  * Although students are not normally admitted to a Master of Science (MS) degree program, graduate students may earn the MS as they work towards the PhD.

**Chair**

Janet Braam

**Professors**

Bonnie Bartel
Kathleen Beckingham
George M. Bennett
Daniel D. Carson
Michael C. Gustin
Herbert Levine
Carrie A. Masiello
Seiichi P. T. Matsuda
Kathleen S. Matthews
Luay Nakhleh
Edward P. Nikonowicz
John S. Olson
Jose Onuchic
George N. Phillips
Yousif Shamoo
Evan Siemann
Michael Stern
Charles R. Stewart
Peter Wolynes

**Associate Professors**

Matthew Bennett
Adjunct Faculty
Richard Behringer
Sarah Bondos
Andrea Burns
Nikki Delk
J. David Dickman
Cindy Farach-Carson
Robert D. Fox
Haichun Gao
Jeff Glassberg
Richard H. Gomer
Nancy Greig
Daniel Harrington
Maria Hartley
Kendal Hirschi
Kresimir Josic
Olivier Lichtarge
Jianpeng Ma
Kevin MacKenzie
Paolo Moretti
Jordan Orange
Timothy Palzkill
Dabananda Pati
Neal Pellis
Florante A. Quiocho
Susan Rosenberg
Clarence Sams
Yigong Shi
Doris Taylor
Ah-Lim Tsai
Theodore G. Wensel
Peggy Whitson
Zheng Zhou
Huda Y. Zoghbi

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code for Biochemistry and Cell Biology: BIOC
• Course offerings/subject code for Ecology and Evolutionary Biology: EBIO

Department Description and Code
• BioSciences: BIOS

Undergraduate Degree Descriptions and Codes
• Bachelor of Arts degree: BA
• Bachelor of Science degree: BS

Undergraduate Major Descriptions and Codes
• Major in Biochemistry and Cell Biology (for both the BA and BS degrees): BIOC
• Major in Ecology and Evolutionary Biology (for both the BA and BS degrees): EBIO
• Major in Biological Sciences (BA degree only): BIOS

Assistant Professors
James Chappell
Adrienne M.S. Correa
Amy Dunham
Scott Egan
Natalia Kirienko
Tom Miller
Julia Saltz
Jeffrey J. Tabor
Aryeh Warmflash
Weiwei Zhong

Professors Emeriti
Frank Fisher, Jr.
Raymon M. Glantz
Paul Harcombe
Jordan Konisky
Graham Palmer
David Queller
Ronald Sass
Stephen Subtelny
Joan Strassman
Calvin Ward

Teaching Faculty
Beth Beason Abmayr
David R. Caprette
Daniel J. Catanese
Elizabeth Eich
Cassidy Johnson
Kristin Matthews
Joseph R. Novak
Alma Novotny
Dereth Phillips
Scott Solomon
Collin Thomas

Assistant Research Professors
Meenakshi Bhattacharjie
Pamela Constantinou

Huxley Fellows
Sarah Bengston
Benedicte Bachelot

Rice Academy Fellows
Glen Hood
Nick Keiser
Undergraduate Minor Descriptions and Codes
- Minor in Biochemistry and Cell Biology: BCBM
- Minor in Ecology and Evolutionary Biology: EEBM

Graduate Degree Descriptions and Codes
- Master of Arts degree: MA
- Master of Science degree: MS
- Doctor of Philosophy degree: PhD

Graduate Degree Program Descriptions and Codes
- Degree Program in Biochemistry and Cell Biology: BIOC
- Degree Program in Ecology and Evolutionary Biology: EBIO

Bachelor of Arts (BA) Degree / Master of Arts (MA) Degree / Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology

Program Learning Outcomes for the BA/MA/PhD Accelerated Degree Program in the field of Biochemistry and Cell Biology

Upon completing the Bachelor’s degree requirements for this program, students majoring in Biochemistry and Cell Biology will be able to:

1. Demonstrate a comprehensive knowledge of biology with particular emphasis on biochemistry, genetics, and cell biology.
2. Demonstrate the ability to apply the modern scientific method, including designing experiments and/or building mathematical models, and collecting, analyzing, and interpreting data using common statistical methods and software programs.
3. Demonstrate effective oral and written communication skills, including an ability to communicate effectively and work with diverse groups, and the ability to interpret and communicate the results of original research.
4. Locate primary scientific literature and demonstrate the ability to use critical thinking and problem solving skills to evaluate published and proposed research in the biological sciences and to apply these skills.
5. Demonstrate understanding of the practice and culture of science, scientific ethics, and the relationship between science and society.
6. Develop quantitative reasoning via the construction of models and/or the analysis of data.

Students completing the MA degree requirements will:

1. Develop a knowledge of past and current research accomplishments and techniques in biochemistry and cell biology.
2. Demonstrate problem solving and critical thinking skills.
3. Demonstrate the effective written communication skills required for a thesis describing independent research and contributions to publishable research.
4. Demonstrate the effective oral and visual communication skills necessary for articulating scientific findings and significance to diverse audiences.

Requirements for the BA-MA-PhD Accelerated Degree Program in the field of Biochemistry and Cell Biology

BA in Biochemistry and Cell Biology Requirements
All of the requirements for a BA in Biochemistry and Cell Biology are required for the BA-MA-PhD track.

MA in Biochemistry and Cell Biology Requirements
The BA-MA-PhD Track Committee will advise students pursuing the BA-MA completion and will approve their formal course program during their final two years in the BA-MA program. Students who wish to pursue the BA-MA track must select the MA thesis advisor by the end of their second year, when they declare their major, to provide the opportunity to begin a project that will form the basis of the MA thesis.

Course requirements for the MA degree include:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOC 581</td>
<td>GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY (4 semesters attendance, 1 presentation)</td>
<td>1 credit hour per semester</td>
</tr>
<tr>
<td>or BIOC 582</td>
<td>GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY</td>
<td>1 credit hour per semester</td>
</tr>
<tr>
<td>BIOC 583</td>
<td>MOLECULAR INTERACTIONS</td>
<td>4</td>
</tr>
<tr>
<td>BIOC 587</td>
<td>RESEARCH DESIGN, PROPOSAL WRITING, AND PROFESSIONAL DEVELOPMENT</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 588</td>
<td>CELLULAR INTERACTIONS</td>
<td>4</td>
</tr>
<tr>
<td>UNIV 594</td>
<td>RESPONSIBLE CONDUCT OF RESEARCH</td>
<td>1</td>
</tr>
<tr>
<td>BIOC 800</td>
<td>BIOCHEMISTRY &amp; CELL BIOLOGY GRADUATE RESEARCH</td>
<td>Variable credit hours</td>
</tr>
</tbody>
</table>

Elective Requirements
Select at least 6 credit hours from the set of 500-level advanced BIOC electives.

Additional Coursework as Approved by Department

Total Credit Hours
Minimum of 40
Footnotes and Additional Information

Safety training in Environmental Health and Safety is required before entry into the laboratory, and training in responsible conduct of research (UNIV 594) is taken during the freshmen or sophomore year. The courses listed must be completed or evidence provided of successful completion of courses that covered the same material with a B- grade average (GPA ≥ 2.67). Students in the BA-MA track are required to register for and participate in BIOC 581 or BIOC 582 both semesters during their junior and senior years and to present their research at least once. Students generally enroll in at least 9 credit hours of BIOC 800 during the summer between the sophomore and junior year, BIOC 587 and up to 6 credit hours of BIOC 800 during the summer between the junior and senior years. Students take BIOC 583 and BIOC 588 in their senior year. Registration for at least 9 credit hours of BIOC 800 is required during the summer following the senior year for MA thesis defense.

Students will be responsible for the content of these courses in their MA defense (which also serves as the Admission to PhD Candidacy examination).

Progress reviews with the MA thesis committee occur at the end of the junior year and the early spring of the senior year. The MA thesis will be submitted and public oral defense will occur in the summer following graduation at the end of the senior year with completion of the BA requirements. MA candidates continuing to the PhD must maintain a GPA ≥ 3.0, complete a thesis, and make a public oral defense that includes a private examination by their MA thesis committee. Students who complete the MA requirements with a GPA ≥ 2.67 but less than 3.0 must defend their thesis to complete the MA degree, but will not be admitted to the PhD program.

PhD in Biochemistry and Cell Biology Requirements

The following are required for admission to the PhD portion of the BA-MA-PhD track: Successful completion of the MA thesis and oral defense, which will serve as the admission to candidacy examination for all PhD candidates in this program, a cumulative GPA ≥ 3.0 for the BA-MA degree courses, and a GRE Quantitative test score ≥ 80th percentile. Students who are in good academic standing in the BA-MA track and have passed their MA final oral examination may begin their doctoral studies the summer following graduation with the approval of their PhD mentor and the Department Chair.

Course requirements for the completion of the PhD studies within the accelerated BA-MA-PhD program include all of the required courses taken during the MA studies and the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOC 581</td>
<td>GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY (required in all semesters of residency) ¹</td>
<td>Minimum of 6 credit hours</td>
</tr>
<tr>
<td>or BIOC 582</td>
<td>GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 599</td>
<td>GRADUATE TEACHING IN BIOCHEMISTRY AND CELL BIOLOGY ²</td>
<td>Minimum of 2 credit hours</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

¹ Safety training in Environmental Health and Safety is required before entry into the laboratory, and training in responsible conduct of research (UNIV 594) is taken during the freshmen or sophomore year. The courses listed must be completed or evidence provided of successful completion of courses that covered the same material with a B- grade average (GPA ≥ 2.67). Students in the BA-MA track are required to register for and participate in BIOC 581 or BIOC 582 both semesters during their junior and senior years and to present their research at least once. Students generally enroll in at least 9 credit hours of BIOC 800 during the summer between the sophomore and junior year, BIOC 587 and up to 6 credit hours of BIOC 800 during the summer between the junior and senior years. Students take BIOC 583 and BIOC 588 in their senior year. Registration for at least 9 credit hours of BIOC 800 is required during the summer following the senior year for MA thesis defense.

Evaluation of Progress in the PhD Phase of the BA-MA-PhD Program

The Graduate Advisory Committee evaluates each student’s record and recommends any further course work based on the requirements and on the interests of the student. Thesis advisors may require additional courses. At the end of each semester, the department chair, in consultation with the faculty, reviews student performance in the formal course work. Students must maintain at least a B grade average (GPA ≥ 3.0), perform satisfactorily in their research efforts, and demonstrate outstanding motivation and potential for research.

Evaluation during the PhD phase of the program includes:

- The MA thesis and its oral defense constitute the admission to candidacy examination
- Ongoing review of research progress by the thesis advisor; satisfactory research progress will be indicated by a grade of "S" in BIOC 800 each semester
- A yearly research progress assessment by the student’s Research Progress Review Committee
- Presentation of research progress at least once a year in seminar format (BIOC 581 or BIOC 582) starting in the first year of PhD study and continuing until submission of the doctoral thesis
- Defense of the PhD thesis research and text in a final public seminar presentation and oral examination attended by the student’s Thesis Committee

Policies for the BA/MA/PhD Accelerated Degree Program in the field of Biochemistry and Cell Biology

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Biochemistry and Cell Biology publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Biochemistry_Cell%20Biology_Graduate_Handbook.pdf
Admission

Qualified Rice University undergraduates can apply to enroll in the Biochemistry and Cell Biology BA-MA-PhD program track in the spring of their sophomore year. Students who are strong candidates for this program typically join a Rice research lab to start research on a project related to biochemistry or cell biology prior to applying. Upon acceptance, depending on course load, financial aid status, and other variables, program participants may then start taking required graduate course requirements at the same time as their upper-level undergraduate degree requirements. Students pursuing this track should be aware that there could be financial aid implications, should the conversion of undergraduate coursework to that of graduate level reduce their earned undergraduate credit for any semester below that of full-time undergraduate status (12 hours). Advisors for the program can assist in this determination.

Laboratory research performed in undergraduate and graduate research courses is presented as the MA thesis in the summer following graduation and provides the basis for the PhD thesis work. As a result, the graduate careers of these students will be accelerated by an anticipated 1-2 years, and such students may be able to obtain their PhD degrees approximately 3 years after obtaining their BA-MA degree. If circumstances require, students may stop at the BA or MA level if they meet all the requirements for the respective degrees.

Criteria for selection include academic performance (GPA ≥ 3.5), motivation, previous research experience, and personal qualities. Enrollment is limited, and the Biochemistry and Cell Biology BA-MA-PhD Track Committee will select applicants for admission.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Opportunities for the BA/MA/PhD Accelerated Degree Program in the field of Biochemistry and Cell Biology

Information about Student Resources, Attendance at Scientific Conferences, Internships, Graduate Student Awards, the Graduate Student Association, etc. can be found in the Biochemistry and Cell Biology Graduate Program Handbook: http://gradhandbooks.rice.edu/2017_18/Biochemistry_Cell_Biology_Graduate_Handbook.pdf.

For additional information, please see BioSciences website: http://biosciences.rice.edu/.

Bachelor of Arts (BA) Degree with a Major in Biochemistry and Cell Biology

Program Learning Outcomes for the BA Degree with a Major in Biochemistry and Cell Biology

Upon completing the BA degree with a major in Biochemistry and Cell Biology, students will be able to:

1. Demonstrate a comprehensive knowledge of biology with particular emphasis on biochemistry, genetics, and cell biology.

2. Demonstrate the ability to apply the modern scientific method, including designing experiments and/or building mathematical models, and collecting, analyzing, and interpreting data using common statistical methods and software programs.

3. Demonstrate effective oral and written communication skills, including an ability to communicate effectively and work with diverse groups and the ability to interpret and communicate the results of original research.

4. Locate primary scientific literature and demonstrate the ability to use critical thinking and problem solving skills to evaluate published and proposed research in the biological sciences and to apply these skills.

5. Demonstrate understanding of the practice and culture of science, scientific ethics, and the relationship between science and society.

6. Develop quantitative reasoning via the construction of models and/or the analysis of data.

Requirements for the BA Degree with a Major in Biochemistry and Cell Biology

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Biochemistry and Cell Biology must complete:

- A minimum of 26 courses (63 credit hours) to satisfy major requirements. Additional credit hours may be required depending on course selection.
- A minimum of 123 credit hours to satisfy degree requirements. Additional credit hours may be required depending on course selection.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 10 courses (25 credit hours) taken at the 300-level or above.

The BA degree emphasizes a broad understanding of biochemistry and cell biology, providing room for exploration anywhere in the Natural Sciences or Engineering, and culminates in one required 400-level capstone course from an approved list of advanced courses. Students in Biochemistry and Cell Biology are strongly encouraged to pursue their research interests through independent research experiences. The BA degree program offers greater flexibility than the BS due to fewer required courses as detailed below.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Biochemistry and Cell Biology</td>
<td>Minimum of 63</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BA with a Major in Biochemistry and Cell Biology</td>
<td>Minimum of 123</td>
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### Degree Requirements

<table>
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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td></td>
<td><strong>Core Requirements</strong></td>
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<td></td>
<td><strong>Non-Biology Courses</strong></td>
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<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
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</tr>
<tr>
<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
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<td>PHYS 126</td>
<td>GENERAL PHYSICS II (WITH LAB)</td>
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<tr>
<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
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<td>&amp; CHEM 123</td>
<td>and GENERAL CHEMISTRY LABORATORY I</td>
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<td>CHEM 122</td>
<td>GENERAL CHEMISTRY II</td>
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<tr>
<td>&amp; CHEM 124</td>
<td>and GENERAL CHEMISTRY LABORATORY II</td>
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</tr>
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<td>CHEM 211</td>
<td>ORGANIC CHEMISTRY I</td>
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<td>&amp; CHEM 213</td>
<td>and ORGANIC CHEMISTRY DISCUSSION</td>
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</tr>
<tr>
<td>CHEM 212</td>
<td>ORGANIC CHEMISTRY II</td>
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</tr>
<tr>
<td>&amp; CHEM 214</td>
<td>and ORGANIC CHEM DISCUSSION</td>
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<td>CHEM 215</td>
<td>ORGANIC CHEMISTRY LAB</td>
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<td></td>
<td><strong>Core Lecture Courses</strong></td>
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<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY</td>
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<td>BIOC 301</td>
<td>BIOCHEMISTRY I</td>
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<td>BIOC 341</td>
<td>CELL BIOLOGY</td>
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<td><strong>Select 2 from the following:</strong></td>
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<td>BIOC 302</td>
<td>BIOCHEMISTRY II</td>
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<td>BIOC 344</td>
<td>MOLECULAR BIOLOGY AND GENETICS</td>
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<tr>
<td>BIOC 352</td>
<td>PHYSICAL CHEMISTRY FOR THE BIOSCIENCES</td>
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<td></td>
<td><strong>Core Laboratory Courses</strong></td>
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<td>BIOC 211</td>
<td>INTERMEDIATE EXPERIMENTAL BIOSCIENCES</td>
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<td>BIOC 311</td>
<td>ADVANCED EXPERIMENTAL BIOSCIENCES</td>
<td>2</td>
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<td></td>
<td><strong>Advanced Laboratory Courses</strong></td>
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<td><strong>Select 2 from the following:</strong></td>
<td>2-4</td>
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<tr>
<td>BIOC 313</td>
<td>INTRODUCTORY SYNTHETIC BIOLOGY</td>
<td></td>
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<td>BIOC 318</td>
<td>MICROBIOLOGY LABORATORY</td>
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<td>BIOC 320</td>
<td>LABORATORY IN TISSUE CULTURE</td>
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<tr>
<td>&amp; BIOC 342</td>
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<td></td>
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<tr>
<td>BIOC 413</td>
<td>EXPERIMENTAL MOLECULAR BIOLOGY</td>
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<td>BIOC 415</td>
<td>EXPERIMENTAL PHYSIOLOGY</td>
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<td>BIOC 530</td>
<td>LAB MODULE IN NMR SPECTROSCOPY AND MOLECULAR MODELING</td>
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<tr>
<td>BIOC 535</td>
<td>PRACTICAL X-RAY CRYSTALLOGraphy</td>
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<td><strong>Elective Lecture Courses</strong></td>
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<td>Select 2 courses from courses offered by Natural Sciences/Engineering.</td>
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<tr>
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<td><strong>Capstone Requirement</strong></td>
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<td><strong>Select 1 additional course from the following:</strong></td>
<td>Minimum of 3</td>
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<tr>
<td>BIOC 401</td>
<td>UNDERGRADUATE HONORS RESEARCH</td>
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<tr>
<td>BIOC 402</td>
<td>UNDERGRADUATE HONORS RESEARCH</td>
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<tr>
<td>BIOC 412</td>
<td>UNDERGRADUATE RESEARCH SEMINAR</td>
<td></td>
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<tr>
<td>BIOC 424</td>
<td>MICROBIOLOGY AND BIOTECHNOLOGY</td>
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<tr>
<td>BIOC 425</td>
<td>PLANT MOLECULAR BIOLOGY AND DEVELOPMENT</td>
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<tr>
<td>BIOC 443</td>
<td>ADVANCED CONCEPTS AND CRITICAL ANALYSIS IN MODERN DEVELOPMENTAL BIOLOGY</td>
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<tr>
<td>BIOC 445</td>
<td>ADVANCED MOLECULAR BIOLOGY AND GENETICS</td>
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<tr>
<td>BIOC 447</td>
<td>EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE</td>
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<tr>
<td>BIOC 450</td>
<td>VIRUSES AND INFECTIOUS DISEASES</td>
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<td>BIOC 455</td>
<td>COMPUTATIONAL SYNTHETIC BIOLOGY</td>
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<td>BIOC 460</td>
<td>CANCER BIOLOGY</td>
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<td>BIOC 464</td>
<td>EXTRACELLULAR MATRIX</td>
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<td>BIOC 470</td>
<td>COMPUTATION WITH BIOLOGICAL DATA</td>
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<td>BIOC 481</td>
<td>MOLECULAR BIOPHYSICS I</td>
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<tr>
<td>BIOC 482</td>
<td>STRUCTURAL BIOLOGY</td>
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</table>

### Footnotes and Additional Information

- Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include any of the above university requirements.
- **Permissible Substitutions:** MATH 111 and MATH 112 may be substituted for MATH 101; CHEM 151 and CHEM 153 may be substituted for CHEM 121 and CHEM 123; CHEM 152 and CHEM 154 may be substituted for CHEM 122 and CHEM 124; CHEM 320 may be substituted for CHEM 212; CHEM 365 may be substituted for CHEM 215; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125; PHYS 102 and PHYS 104 or PHYS 112 may be substituted for PHYS 126.
- **CHEM 311 and CHEM 312 may substitute for** BIOC 352.
- **These advanced labs must be taken concurrently with or after completion** of BIOC 482.
- **All Biochemistry and Cell Biology majors must take at least 1 of the** listed additional advanced laboratory courses. If desired, the second advanced laboratory requirement may be satisfied by completing:
  1. BIOC 310 if taken for at least 3 credits; or
  2. HONS 470 and HONS 471, if the research supervisor is from one of the biosciences departments or if the research is biological in nature and pre-approved by the student’s major advisor; or
  3. honors research (BIOC 401 and BIOC 402 and BIOC 412).

This substitution may be used only once regardless of the number of semesters of independent research taken

The combined courses BIOC 401 and BIOC 402 and BIOC 412 are considered a single BIOC 400-level course and can be counted as one capstone course together as a series and/or as the independent research experience, provided that this substitution has not been used previously; this 3-course series can count as a single lab at 300-level or higher. **To be applied toward the major all 3 courses must be completed.**
Students must complete a total of 2 courses (6 credit hours) from courses offered by the School of Natural Sciences or the School of Engineering. Courses in Natural Sciences/Engineering include any course taken at the 300-level or higher, for at least 3 credit hours from any department in the Wiess School of Natural Sciences (including BioSciences) or George R. Brown School of Engineering, except independent research courses such as BIOC 310, BIOC 401 and BIOC 402, BIOC 400 and BIOE 401, or EBIO 306, EBIO 403, and EBIO 404, which cannot be used to fulfill this requirement. A maximum of 3 credit hours from BIOC 390 (transfer credit in Biochemistry and Cell Biology) may be applied to this requirement. Courses offered by the School of Natural Science and the School of Engineering include the following subject codes: ASTR, BIOE, CAAM, CEVE, CHBE, CHEM, COMP, ELEC, ENGI, ENST, ESCI, GLHT, HEAL, KINE, MATH, MECH, MSNE, PHYS, and STAT. BIOC 300 is only allowed to fulfill this elective requirement when it is taken prior to BIOC 301 and BIOC 341, or their equivalent transfer course.

To fulfill the remaining BIOC major requirements, students pursuing the BA degree must complete 1 additional course (3 credit hours) as a capstone. Only BIOC 400-level lecture courses from the list above which are explicitly designed for the BIOC major, can be used to satisfy this requirement.

Policies for the BA Degree with a Major in Biochemistry and Cell Biology

Advising

Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of BioSciences can be found at the department website by clicking on the link for Undergraduate Studies: http://biosciences.rice.edu/.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Biochemistry and Cell Biology should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Opportunities for the BA Degree with a Major in Biochemistry and Cell Biology

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honors

Instructions on applying for the Distinction in Research and Creative Work award from the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: http://biosciences.rice.edu/.

Research in the BioSciences

Research is highly encouraged for all biosciences majors, and there are many opportunities for independent research at Rice. Information about research for credit and research internships specific to the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: http://biosciences.rice.edu/.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Bachelor of Arts (BA) Degree with a Major in Biological Sciences

Program Learning Outcomes for the BA Degree with a Major in Biological Sciences

Upon completing the BA degree with a major in Biological Sciences, students will be able to:

1. Demonstrate a comprehensive knowledge of the field of biology, illustrated by the ability to describe the breadth of the discipline and to synthesize a range of biological concepts and ideas.
2. Demonstrate an understanding of the modern scientific method, including a familiarity with current methods for designing experiments and/or mathematical models, and the ability to analyze and interpret data.
3. Demonstrate effective oral and written communication skills, including an ability to communicate effectively and work with diverse groups.
4. Locate primary scientific literature and demonstrate the ability to apply critical thinking and problem solving skills to evaluate published and proposed research in the biological sciences.
5. Demonstrate understanding of the practice and culture of science, scientific ethics, and the relationship between science and society.
6. Develop quantitative reasoning via the construction of models and/or the analysis of data.

Requirements for the BA Degree with a Major in Biological Sciences

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Biological Sciences must complete:

• A minimum of 28 courses (67 credit hours) to satisfy major requirements. Additional credit hours may be required depending on course selection.
• A minimum of 127 credit hours to satisfy degree requirements. Additional credit hours may be required depending on course selection.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 10 courses (24 credit hours) taken at the 300-level or above.

The BA degree with a major in Biological Sciences incorporates elements from both the Biochemistry and Cell Biology and the Ecology and Evolutionary Biology programs.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
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<td></td>
<td><strong>Total Credit Hours Required for the Major in Biological Sciences</strong></td>
<td>Minimum of 67</td>
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<tr>
<td></td>
<td><strong>Total Credit Hours Required for the BA Degree with a Major in Biological Sciences</strong></td>
<td>Minimum of 127</td>
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</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td></td>
<td><strong>Core Requirements</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Non-Biology Courses</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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<tr>
<td>EBIO 338</td>
<td>DESIGN AND ANALYSIS OF BIOLOGICAL EXPERIMENTS</td>
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<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
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<tr>
<td>STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
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<td>CHEM 121</td>
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<td>&amp; CHEM 213</td>
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<td>&amp; CHEM 214</td>
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<tr>
<td>CHEM 215</td>
<td>ORGANIC CHEMISTRY LAB</td>
<td>2</td>
</tr>
<tr>
<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 126</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Introductory Biology</strong></td>
<td></td>
</tr>
<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>EBIO 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Introductory Biology Labs</strong></td>
<td></td>
</tr>
<tr>
<td>BIOC 211</td>
<td>INTERMEDIATE EXPERIMENTAL BIOSCIENCES</td>
<td>2</td>
</tr>
<tr>
<td>EBIO 213</td>
<td>Intro Experimental Ecology and Evolutionary Biology</td>
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<tr>
<td></td>
<td><strong>Advanced Biology Labs</strong></td>
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<tr>
<td></td>
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<tr>
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<td>BIOC 311</td>
<td>ADVANCED EXPERIMENTAL BIOSCIENCES</td>
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<td></td>
<td>BIOC 313</td>
<td>INTRODUCTORY SYNTHETIC BIOLOGY</td>
</tr>
<tr>
<td></td>
<td>BIOC 318</td>
<td>MICROBIOLOGY LABORATORY</td>
</tr>
<tr>
<td></td>
<td>BIOC 320</td>
<td>LABORATORY IN TISSUE CULTURE</td>
</tr>
<tr>
<td>BIOE 342</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOC 413</td>
<td>EXPERIMENTAL MOLECULAR BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 415</td>
<td>EXPERIMENTAL PHYSIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 530</td>
<td>LAB MODULE IN NMR SPECTROSCOPY AND MOLECULAR MODELING</td>
<td>2</td>
</tr>
<tr>
<td>BIOC 535</td>
<td>PRACTICAL X-RAY CRYSTALLOGRAPHY</td>
<td>2</td>
</tr>
<tr>
<td>EBIO 316</td>
<td>LAB MODULE IN ECOLOGY</td>
<td></td>
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<tr>
<td>EBIO 317</td>
<td>LAB MODULE IN BEHAVIOR</td>
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</tr>
<tr>
<td>EBIO 319</td>
<td>TROPICAL FIELD BIOLOGY</td>
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<tr>
<td>EBIO 320</td>
<td>ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY</td>
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<tr>
<td>EBIO 324</td>
<td>CONSERVATION BIOLOGY LAB</td>
<td></td>
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<tr>
<td>EBIO 327</td>
<td>BIOLOGICAL DIVERSITY</td>
<td></td>
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<tr>
<td>EBIO 330</td>
<td>INSECT BIOLOGY LAB</td>
<td></td>
</tr>
<tr>
<td>EBIO 332</td>
<td>EVOLUTION OF GENES &amp; GENOMES LAB</td>
<td></td>
</tr>
<tr>
<td>EBIO 335</td>
<td>EVOLUTIONARY BIOINFORMATICS LAB</td>
<td></td>
</tr>
<tr>
<td>EBIO 337</td>
<td>FIELD BIRD BIOLOGY LAB</td>
<td></td>
</tr>
<tr>
<td>EBIO 367</td>
<td>INTRODUCTION PHYCOLOGY LAB</td>
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<tr>
<td>EBIO 368</td>
<td>APPLIED PHYCOLOGY LAB</td>
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<tr>
<td>EBIO 379</td>
<td>LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA</td>
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<td></td>
<td><strong>1 independent research experience</strong> 3</td>
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<tr>
<td></td>
<td><strong>Upper-Level Biology Course</strong></td>
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<tr>
<td>BIOC 301</td>
<td>BIOCHEMISTRY I</td>
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<tr>
<td></td>
<td><strong>Elective Requirements</strong></td>
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<td></td>
<td><strong>Upper-Level Biology Courses</strong></td>
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<td><strong>Select 1 from the following:</strong> 3</td>
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<tr>
<td>BIOC 302</td>
<td>BIOCHEMISTRY II</td>
<td></td>
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<tr>
<td>BIOC 341</td>
<td>CELL BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 344</td>
<td>MOLECULAR BIOLOGY AND GENETICS</td>
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<tr>
<td>BIOC 352</td>
<td>PHYSICAL CHEMISTRY FOR THE BIOSCIENCES</td>
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<tr>
<td></td>
<td><strong>Lecture Courses</strong></td>
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<tr>
<td></td>
<td><strong>Students must complete 5 courses as listed in the EBIO and BIOC Lecture Course Requirements below:</strong> 15</td>
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<tr>
<td></td>
<td><strong>EBIO Lecture Courses</strong></td>
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<td><strong>Select 3-4 courses from the following:</strong> 5</td>
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<td>EBIO 321</td>
<td>ANIMAL BEHAVIOR</td>
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<tr>
<td>EBIO 323</td>
<td>CONSERVATION BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>ENST 323</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBIO 325</td>
<td>ECOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 326</td>
<td>INSECT BIOLOGY</td>
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</tr>
<tr>
<td>EBIO 328</td>
<td>EVOLUTION OF GENES &amp; GENOMES</td>
<td></td>
</tr>
<tr>
<td>EBIO 329</td>
<td>ANIMAL BIOLOGY AND PHYSIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 331</td>
<td>BIOLOGY OF INFECTIOUS DISEASES</td>
<td></td>
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<tr>
<td>BIOC 331</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBIO 333</td>
<td>EVOLUTIONARY BIOINFORMATICS</td>
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<tr>
<td>COMP 370</td>
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<td></td>
</tr>
<tr>
<td>EBIO 334</td>
<td>EVOLUTION</td>
<td></td>
</tr>
<tr>
<td>BIOC 334</td>
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<tr>
<td>EBIO 336</td>
<td>PLANT DIVERSITY</td>
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</tr>
<tr>
<td>EBIO 340 / ENST 340 / ESCI 340</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
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</tr>
<tr>
<td>EBIO 365</td>
<td>INTRODUCTORY PHYCOLOGY</td>
<td></td>
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<tr>
<td>EBIO 366</td>
<td>APPLIED PHYCOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 372</td>
<td>CORAL REEF ECOSYSTEMS</td>
<td></td>
</tr>
<tr>
<td>EBIO 391</td>
<td>TRANSFER CREDIT IN ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 433</td>
<td>ADVANCED ECOLOGY</td>
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</table>

**BIOC Lecture Courses**

Select 1-2 courses from the following:

<table>
<thead>
<tr>
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<th>Course Title</th>
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<tbody>
<tr>
<td>BIOC 300</td>
<td>PARADIGMS IN BIOCHEMISTRY AND CELL BIOLOGY</td>
</tr>
<tr>
<td>BIOC 301</td>
<td>BIOCHEMISTRY I</td>
</tr>
<tr>
<td>BIOC 302</td>
<td>BIOCHEMISTRY II</td>
</tr>
<tr>
<td>BIOC 331 / EBIO 331</td>
<td>BIOLOGY OF INFECTIOUS DISEASE</td>
</tr>
<tr>
<td>BIOC 332 / BIE 302</td>
<td>SYSTEMS PHYSIOLOGY</td>
</tr>
<tr>
<td>BIOC 335</td>
<td>CELLULAR AND MOLECULAR ANIMAL PHYSIOLOGY</td>
</tr>
<tr>
<td>BIOC 341</td>
<td>CELL BIOLOGY</td>
</tr>
<tr>
<td>BIOC 344</td>
<td>MOLECULAR BIOLOGY AND GENETICS</td>
</tr>
<tr>
<td>BIOC 352</td>
<td>PHYSICAL CHEMISTRY FOR THE BIOSCIENCES</td>
</tr>
<tr>
<td>BIOC 361 / BIE 361 / GLHT 361</td>
<td>METABOLIC ENGINEERING FOR GLOBAL HEALTH ENVIRONMENTS</td>
</tr>
<tr>
<td>BIOC 368 / HUMA 368</td>
<td>CONCEIVING AND MISCONCEIVING THE MONSTROUS IN FICTION AND IN ART, IN MEDICINE AND IN BIOSCIENCE</td>
</tr>
<tr>
<td>BIOC 371</td>
<td>SEMINAR IN CONTEMPORARY BIOLOGICAL AND BIOMEDICAL RESEARCH</td>
</tr>
<tr>
<td>BIOC 372</td>
<td>IMMUNOLOGY</td>
</tr>
<tr>
<td>BIOC 380 / NEUR 380 / PSYC 380</td>
<td>FUNDAMENTAL NEUROSCIENCE SYSTEMS</td>
</tr>
<tr>
<td>BIOC 385 / NEUR 385</td>
<td>FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE</td>
</tr>
<tr>
<td>BIOC 390</td>
<td>TRANSFER CREDIT IN BIOCHEMISTRY AND CELL BIOLOGY</td>
</tr>
<tr>
<td>BIOC 424</td>
<td>MICROBIOLOGY AND BIOTECHNOLOGY</td>
</tr>
<tr>
<td>BIOC 425</td>
<td>PLANT MOLECULAR GENETICS AND DEVELOPMENT</td>
</tr>
<tr>
<td>BIOC 443</td>
<td>ADVANCED CONCEPTS AND CRITICAL ANALYSIS IN MODERN DEVELOPMENTAL BIOLOGY</td>
</tr>
<tr>
<td>BIOC 445</td>
<td>ADVANCED MOLECULAR BIOLOGY AND GENETICS</td>
</tr>
<tr>
<td>BIOC 447</td>
<td>EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE</td>
</tr>
<tr>
<td>BIOC 450</td>
<td>VIRUSES AND INFECTIOUS DISEASES</td>
</tr>
<tr>
<td>BIOC 455</td>
<td>COMPUTATIONAL SYNTHETIC BIOLOGY</td>
</tr>
<tr>
<td>BIOC 460</td>
<td>CANCER BIOLOGY</td>
</tr>
<tr>
<td>BIOC 470</td>
<td>COMPUTATION WITH BIOLOGICAL DATA</td>
</tr>
<tr>
<td>BIOC 481</td>
<td>MOLECULAR BIOPHYSICS I</td>
</tr>
<tr>
<td>BIOC 482</td>
<td>STRUCTURAL BIOLOGY</td>
</tr>
</tbody>
</table>

**Total Credit Hours Required for the Major in Biological Sciences**

University Graduation Requirements (p. 25)  
Minimum of 60

**Footnotes and Additional Information**

1. Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

2. Permissible substitutions: MATH 111 and MATH 112 may be substituted for MATH 101; CHEM 151 and CHEM 153 may be substituted for CHEM 121 and CHEM 123; CHEM 152 and CHEM 154 may be substituted for CHEM 122 and CHEM 124; CHEM 320 may be substituted for CHEM 212; CHEM 365 may be substituted for CHEM 215; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125; PHYS 102 and PHYS 104 or PHYS 112 may be substituted for PHYS 126.

3. These advanced labs must be taken concurrently with or after BIOC 482.

4. Only one of the advanced laboratory course requirements can be satisfied by taking any of the following:
   1. BIOC 310 if taken for at least 3 credit hours or EBIO 306 if taken for at least 2 credit hours
   2. HONS 470 and HONS 471, if the research supervisor is from the BioSciences department or if the research is biological in nature and pre-approved by the student’s major advisor
   3. BIOC 401 and BIOC 402 and BIOC 412 or EBIO 403 and EBIO 404
   4. BIOC 393/EBIO 393

   This substitution may be used only once regardless of the number of semesters of independent research or transfer credit.

5. A maximum of 3 credits of BIOC 390 and 3 credits of EBIO 391 can apply to this major. CHEM 311 and CHEM 312 may substitute for BIOC 352.

6. If students choose to complete 3 courses (9 credit hours) from the EBIO Lecture Courses requirement, students will be required to complete 2 courses (6 credit hours) from the BIOC Lecture Courses requirement. BIOC 300 is only allowed to fulfill this elective requirement when it is taken prior to BIOC 301 and BIOC 341, or their equivalent transfer course.

7. If students choose to complete 1 course (3 credit hours) from the BIOC Lecture Courses requirement, students will be required to complete 4 courses (12 credit hours) from the EBIO Lecture Courses requirement. BIOC 300 is only allowed to fulfill this elective requirement when it is taken prior to BIOC 301 and BIOC 341, or their equivalent transfer course.

**Policies for the BA Degree with a Major in Biological Sciences**

**Advising**

Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of
BioSciences can be found at the department website by clicking on the tab for Undergraduate Studies: http://biosciences.rice.edu/.

Program Restrictions and Exclusions
Students pursuing the major in Biological Sciences should be aware of the following program restriction:

- Students pursuing the major in Biological Sciences may not additionally pursue the minor in Biochemistry and Cell Biology.
- Students pursuing the major in Biological Sciences may not additionally pursue the minor in Ecology and Evolutionary Biology.

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Biological Sciences should be aware of the following transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Opportunities for the BA Degree with a Major in Biological Sciences

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honors
Instructions on applying for the Distinction in Research and Creative Work award from the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: http://biosciences.rice.edu/

Research in the BioSciences
Research is highly encouraged for all biosciences majors, and there are many opportunities for independent research at Rice. Information about research for credit and research internships specific to the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: http://biosciences.rice.edu/

For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Bachelor of Arts (BA) Degree with a Major in Ecology and Evolutionary Biology

Program Learning Outcomes for the BA Degree with a Major in Ecology and Evolutionary Biology
Upon completing the BA degree with a major in Ecology and Evolutionary Biology, students will be able to:

1. Locate primary scientific literature and demonstrate the ability to apply critical thinking and problem solving skills to evaluate published and proposed research in the biological sciences.
2. Demonstrate an understanding of the modern scientific method, including a familiarity with current methods for designing experiments and/or mathematical models, and the ability to analyze and interpret data.
3. Demonstrate effective oral and written communication skills, including an ability to communicate effectively and work with diverse groups.
4. Demonstrate familiarity with the diversity of life.
5. Demonstrate a comprehensive knowledge of biology and an in-depth understanding of ecology and evolutionary biology.
6. Demonstrate understanding of the practice and culture of science, scientific ethics, and the relationship between science and society.

Requirements for the BA Degree with a Major in Ecology and Evolutionary Biology
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Ecology and Evolutionary Biology must complete:

- A minimum of 11 courses (33 credit hours) at the 300-level or above.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 20 courses (49 credit hours) to satisfy major requirements. Additional credit hours may be required depending on course selection.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 11 courses (33 credit hours) at the 300-level or above.

The Ecology and Evolutionary Biology major is intended for students pursuing a wide range of careers in the life sciences. Coursework emphasizes a broad understanding of basic biology, together with in-depth knowledge of ecology and evolutionary biology that culminates in a required 400-level capstone course incorporating primary scientific literature, presentations, and writing in an advanced topic. The BA program is well suited for students with an additional major outside of the sciences, and students are strongly encouraged to take advantage of study abroad opportunities.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.
## Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Ecology and Evolutionary Biology</td>
<td>Minimum of 49</td>
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<td>Total Credit Hours Required for the BA Degree with a Major in Ecology and Evolutionary Biology</td>
<td>Minimum of 120</td>
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## Degree Requirements

### Core Requirements

#### Non-Biology Courses

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<tbody>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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<td>EBIO 338</td>
<td>DESIGN AND ANALYSIS OF BIOLOGICAL EXPERIMENTS</td>
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</tr>
<tr>
<td></td>
<td>1 course from Statistics (STAT) departmental course offerings.</td>
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#### Biology Lecture Courses

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<tr>
<td>BIOC 201</td>
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<td>EBIO 202</td>
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</tr>
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<td>EBIO 325</td>
<td>ECOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>EBIO 324 / BIOC 334</td>
<td>EVOLUTION</td>
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#### Biology Laboratory Courses

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<tbody>
<tr>
<td>BIOC 211</td>
<td>INTERMEDIATE EXPERIMENTAL BIOSCIENCES</td>
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<tr>
<td>EBIO 213</td>
<td>INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
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#### Scientific Communication Course

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<tbody>
<tr>
<td>EBIO 412</td>
<td>ADVANCED COMMUNICATION IN THE BIOLOGICAL SCIENCES</td>
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### Elective Requirements

#### Lecture in Ecology and Evolutionary Biology

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<tr>
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<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 321</td>
<td>ANIMAL BEHAVIOR</td>
<td>3</td>
</tr>
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<td>EBIO 323 / ENST 323</td>
<td>CONSERVATION BIOLOGY</td>
<td>3</td>
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<tr>
<td>EBIO 326</td>
<td>INSECT BIOLOGY</td>
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<td>EBIO 328</td>
<td>EVOLUTION OF GENES &amp; GENOMES</td>
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<td>EBIO 331 / BIOC 329</td>
<td>ANIMAL BIOLOGY AND PHYSIOLOGY</td>
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<td>EBIO 331 / BIOC 331</td>
<td>BIOLOGY OF INFECTIOUS DISEASES</td>
<td>3</td>
</tr>
<tr>
<td>EBIO 333 / COMP 370</td>
<td>EVOLUTIONARY BIOINFORMATICS</td>
<td>3</td>
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<tr>
<td>EBIO 336</td>
<td>PLANT DIVERSITY</td>
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<tr>
<td>EBIO 340 / ENST 340 / ESCI 340</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
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<td>EBIO 365</td>
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<td>APPLIED PHYCOLOGY</td>
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<td>TRANSFER CREDIT IN ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
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<td>EBIO 433</td>
<td>ADVANCED ECOLOGY</td>
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### Lecture in Biochemistry and Cell Biology

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<td>BIOC 302</td>
<td>BIOCHEMISTRY II</td>
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<tr>
<td>BIOC 332 / BIOE 302</td>
<td>SYSTEMS PHYSIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 335</td>
<td>CELLULAR AND MOLECULAR ANIMAL PHYSIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 341</td>
<td>CELL BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 344</td>
<td>MOLECULAR BIOLOGY AND GENETICS</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 352</td>
<td>PHYSICAL CHEMISTRY FOR THE BIOSCIENCES</td>
<td>3</td>
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<tr>
<td>BIOC 361 / BIOE 361 / GLHT 361</td>
<td>METABOLIC ENGINEERING FOR GLOBAL HEALTH ENVIRONMENTS</td>
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<tr>
<td>BIOC 368 / HUMA 368 / NEUR 368</td>
<td>CONCEIVING AND MISCONCEIVING THE MONSTROUS IN FICTION AND IN ART, IN MEDICINE AND IN BIOSCIENCE</td>
<td>3</td>
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<tr>
<td>BIOC 371</td>
<td>SEMINAR IN CONTEMPORARY BIOLOGICAL AND BIOMEDICAL RESEARCH</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 372</td>
<td>IMMUNOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 380 / NEUR 380 / PSYC 380</td>
<td>FUNDAMENTAL NEUROSCIENCE SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 385 / NEUR 385</td>
<td>FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE</td>
<td>3</td>
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<tr>
<td>BIOC 390</td>
<td>TRANSFER CREDIT IN BIOCHEMISTRY AND CELL BIOLOGY</td>
<td>3</td>
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<tr>
<td>BIOC 424</td>
<td>MICROBIOLOGY AND BIOTECHNOLOGY</td>
<td>3</td>
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<tr>
<td>BIOC 425</td>
<td>PLANT MOLECULAR GENETICS AND DEVELOPMENT</td>
<td>3</td>
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<td>BIOC 443</td>
<td>ADVANCED CONCEPTS AND CRITICAL ANALYSIS IN MODERN DEVELOPMENTAL BIOLOGY</td>
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<td>BIOC 445</td>
<td>ADVANCED MOLECULAR BIOLOGY AND GENETICS</td>
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<tr>
<td>BIOC 447</td>
<td>EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 450</td>
<td>VIRUSES AND INFECTIOUS DISEASES</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 460</td>
<td>CANCER BIOLOGY</td>
<td>3</td>
</tr>
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<td>BIOC 470</td>
<td>COMPUTATION WITH BIOLOGICAL DATA</td>
<td>3</td>
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<tr>
<td>BIOC 481</td>
<td>MOLECULAR BIOPHYSICS I</td>
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<td>BIOC 482</td>
<td>STRUCTURAL BIOLOGY</td>
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### EBIO Laboratory Course Requirement

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>EBIO 316</td>
<td>LAB MODULE IN ECOLOGY</td>
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<tr>
<td>EBIO 317</td>
<td>LAB MODULE IN BEHAVIOR</td>
<td>3</td>
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</table>
Policies for the BA Degree with a Major in Ecology and Evolutionary Biology

Advising
Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of BioSciences can be found at the department website by clicking on the tab for Undergraduate Studies: http://biosciences.rice.edu/.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Ecology and Evolutionary Biology should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Opportunities for the BA Degree with a Major in Ecology and Evolutionary Biology

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honors
Instructions on applying for the Distinction in Research and Creative Work award from the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: http://biosciences.rice.edu/.

Research in the BioSciences
Research is highly encouraged for all biosciences majors, and there are many opportunities for independent research at Rice. Information about research for credit and research internships specific to the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: http://biosciences.rice.edu/.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Permissible substitutions: MATH 111 and MATH 112 may be substituted for MATH 101; CHEM 151 and CHEM 153 may be substituted for CHEM 121 and CHEM 123; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125.

2 One of the advanced laboratory course requirements may be satisfied by taking EBIO 306, if taken for at least 2 credit hours.

3 The elective course in Natural Science or Engineering must be taken for at least 3 credit hours. Courses offered by the School of Natural Sciences and the School of Engineering include the following subject codes: ASTR, BIOE, CAAM, CEVE, CHBE, CHEM, COMP, ELEC, ENGR, ENST, ESCI, GLHT, HEAL, KINE, MATH, MECH, MSNE, NSCI, PHYS, and STAT.
Bachelor of Science (BS) Degree with a Major in Biochemistry and Cell Biology

Program Learning Outcomes for the BS Degree with a Major in Biochemistry and Cell Biology

Upon completing the BS degree with a major in Biochemistry and Cell Biology, students will be able to:

1. Demonstrate a comprehensive knowledge of biology with particular emphasis on biochemistry, genetics, and cell biology.
2. Demonstrate the ability to apply the modern scientific method, including designing experiments and/or building mathematical models, and collecting, analyzing, and interpreting data using common statistical methods and software programs.
3. Demonstrate effective oral and written communication skills, including an ability to communicate effectively and work with diverse groups and the ability to interpret and communicate the results of original research.
4. Locate primary scientific literature and demonstrate the ability to use critical thinking and problem solving skills to evaluate published and proposed research in the biological sciences and to apply these skills.
5. Demonstrate understanding of the practice and culture of science, scientific ethics, and the relationship between science and society.
6. Develop quantitative reasoning via the construction of models and/or the analysis of data.

Requirements for the BS Degree with a Major in Biochemistry and Cell Biology

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BS degree with a major in Biochemistry and Cell Biology must complete:

- A minimum of 28 courses (69 credit hours) to satisfy major requirements. Additional credit hours may be required depending on course selection.
- A minimum of 129 credit hours to satisfy degree requirements. Additional credit hours may be required depending on course selection.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 12 courses (31 credit hours) taken at the 300-level or above.

The BS degree path emphasizes a broad understanding of biochemistry and cell biology, provides room for exploration anywhere in the Natural Sciences or Engineering, and culminates in two required 400-level capstone courses from an approved list of courses. Students in Biochemistry and Cell Biology are strongly encouraged to pursue their research interests through independent research experiences. The BS degree program offers greater coverage and depth as compared to the BA.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier).

Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Biochemistry and Cell Biology</td>
<td>Minimum of 69</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BS Degree with a Major in Biochemistry and Cell Biology</td>
<td>Minimum of 129</td>
</tr>
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</table>

Degree Requirements

Core Requirements

Non-Biology Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>AND LINEAR ALGEBRA</td>
<td></td>
</tr>
<tr>
<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 126</td>
<td>GENERAL PHYSICS II (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>&amp; CHEM 123</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GENERAL CHEMISTRY LABORATORY I</td>
<td></td>
</tr>
<tr>
<td>CHEM 122</td>
<td>GENERAL CHEMISTRY II</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>&amp; CHEM 124</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GENERAL CHEMISTRY LABORATORY II</td>
<td></td>
</tr>
<tr>
<td>CHEM 211</td>
<td>ORGANIC CHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 213</td>
<td>ORGANIC CHEMISTRY II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 212</td>
<td>ORGANIC CHEMISTRY II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 214</td>
<td>ORGANIC CHEMISTRY II</td>
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<tr>
<td>CHEM 215</td>
<td>ORGANIC CHEMISTRY LAB</td>
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Core Lecture Courses

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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 301</td>
<td>BIOCHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 302</td>
<td>BIOCHEMISTRY II</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 341</td>
<td>CELL BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 344</td>
<td>MOLECULAR BIOLOGY AND GENETICS</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 352</td>
<td>PHYSICAL CHEMISTRY FOR THE BIOSCIENCES</td>
<td>3</td>
</tr>
</tbody>
</table>

Core Laboratory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 211</td>
<td>INTERMEDIATE EXPERIMENTAL BIOSCIENCES</td>
<td>2</td>
</tr>
<tr>
<td>BIOC 311</td>
<td>ADVANCED EXPERIMENTAL BIOSCIENCES</td>
<td>2</td>
</tr>
</tbody>
</table>

Advanced Laboratory Courses

Select 2 additional courses from advanced labs at the 300-level or higher from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 313</td>
<td>INTRODUCTORY SYNTHETIC BIOLOGY</td>
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</tr>
<tr>
<td>BIOC 318</td>
<td>MICROBIOLOGY LABORATORY</td>
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</tr>
<tr>
<td>BIOC 320</td>
<td>LABORATORY IN TISSUE CULTURE</td>
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</tr>
<tr>
<td>BIOC 342</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOC 413</td>
<td>EXPERIMENTAL MOLECULAR BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 415</td>
<td>EXPERIMENTAL PHYSIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 530</td>
<td>LAB MODULE IN NMR SPECTROSCOPY</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AND MOLECULAR MODELING</td>
<td></td>
</tr>
<tr>
<td>BIOC 535</td>
<td>PRACTICAL X-RAY CRYSTALLOGRAPHY</td>
<td></td>
</tr>
</tbody>
</table>

2017-2018 General Announcements
1 independent research experience.  

Elective Lecture Courses
Select 2 courses offered by the School of Natural Sciences and/or the School of Engineering. Minimum of 6

Capstone Requirement
Select 2 additional courses from the following: Minimum of 6

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>BIOC 401</td>
<td>UNDERGRADUATE HONORS RESEARCH</td>
</tr>
<tr>
<td>BIOC 402</td>
<td>UNDERGRADUATE HONORS RESEARCH</td>
</tr>
<tr>
<td>BIOC 412</td>
<td>UNDERGRADUATE RESEARCH SEMINAR</td>
</tr>
<tr>
<td>BIOC 424</td>
<td>MICROBIOLOGY AND BIOTECHNOLOGY</td>
</tr>
<tr>
<td>BIOC 425</td>
<td>PLANT MOLECULAR GENETICS AND DEVELOPMENT</td>
</tr>
<tr>
<td>BIOC 443</td>
<td>ADVANCED CONCEPTS AND CRITICAL ANALYSIS IN MODERN DEVELOPMENTAL BIOLOGY</td>
</tr>
<tr>
<td>BIOC 445</td>
<td>ADVANCED MOLECULAR BIOLOGY AND GENETICS</td>
</tr>
<tr>
<td>BIOC 447</td>
<td>EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE</td>
</tr>
<tr>
<td>BIOC 450</td>
<td>VIRUSES AND INFECTIOUS DISEASES</td>
</tr>
<tr>
<td>BIOC 455</td>
<td>COMPUTATIONAL SYNTHETIC BIOLOGY</td>
</tr>
<tr>
<td>BIOC 460</td>
<td>CANCER BIOLOGY</td>
</tr>
<tr>
<td>BIOC 464</td>
<td>EXTRACELLULAR MATRIX</td>
</tr>
<tr>
<td>BIOC 470</td>
<td>COMPUTATION WITH BIOLOGICAL DATA</td>
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<tr>
<td>BIOC 481</td>
<td>MOLECULAR BIOPHYSICS I</td>
</tr>
<tr>
<td>BIOC 482</td>
<td>STRUCTURAL BIOLOGY</td>
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</table>

Total Credit Hours Required for the Major in Biochemistry and Cell Biology Minimum of 69

University Graduation Requirements (p. 25) * 60

Total Credit Hours Minimum of 129

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Permissible Substitutions: MATH 111 and MATH 112 may be substituted for MATH 101; CHEM 151 and CHEM 153 may be substituted for CHEM 121 and CHEM 123; CHEM 152 and CHEM 154 may be substituted for CHEM 122 and CHEM 124; CHEM 320 may be substituted for CHEM 212; CHEM 365 may be substituted for CHEM 215; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125; PHYS 102 and PHYS 104 or and PHYS 112 may be substituted for PHYS 126.

2 CHEM 311 and CHEM 312 may substitute for BIOC 352.

3 These advanced labs must be taken with or after completion of BIOC 482.

4 All Biochemistry and Cell Biology majors must take at least one of the listed additional advanced laboratory courses. If desired, the second advanced laboratory requirement may be satisfied by completing:
1. BIOC 310 if taken for at least 3 credits; or
2. HONS 470 and HONS 471, if the research supervisor is from one of the biosciences departments or if the research is biological in nature and pre-approved by the student’s major advisor; or
3. honors research (BIOC 401 and BIOC 402 and BIOC 412).

This substitution may be used only once regardless of the number of semesters of independent research taken.

5 The combined courses BIOC 401 and BIOC 402 and BIOC 412 are considered a single BIOC 400-level course and can be counted as one capstone course together as a series and/or as an independent research experience, provided that this substitution has not been used previously, this 3-course series can count as a single lab at 300-level or higher. To be applied toward the major all three courses must be completed.

6 Students must complete a total of 2 courses (6 credit hours) from courses offered by the School of Natural Sciences or the School of Engineering. Courses in Natural Sciences/Engineering include any 300-level or greater course of at least 3 credit hours from any department in the Wiess School of Natural Sciences (including BioSciences) or George R. Brown School of Engineering, except independent research courses such as BIOC 310, BIOC 401/BIOC 402, BIOE 400/BIOE 401, or EBIO 306/EBIO 403/EBIO 404, which cannot be used to fulfill this requirement. A maximum of 3 credit hours from BIOC 390 (transfer credit in Biochemistry and Cell Biology) may be applied to this requirement. Courses offered by the School of Natural Sciences and the School of Engineering include the following subject codes: ASTR, BIOC, BIOE, CAAM, CEVE, CHBE, CHEM, COMP, EBIO, ELEC, ENGI, ENST, ESCI, GLHT, KINE, MATH, MECH, MSNE, NSCI, PHYS, STAT, BIOC 300 is only allowed to fulfill this elective requirement when it is taken prior to BIOC 301 and BIOC 341, or their equivalent transfer course.

7 To fulfill the remaining BIOC major requirements, students pursuing the BS degree must complete a total of 2 additional courses (6 credit hours) as capstones. Only BIOC 400-level lecture courses from the list above which are explicitly designed for the BIOC major, can be used to satisfy this requirement.

Policies for the BS Degree with a Major in Biochemistry and Cell Biology

Advising
Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of BioSciences can be found at the department website by clicking on the tab for Undergraduate Studies: http://biosciences.rice.edu.

Transfer Credit
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Students pursuing the major in Biochemistry and Cell Biology should be aware of the following departmental transfer credit guidelines:

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For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Opportunities for the BS Degree with a Major in Biochemistry and Cell Biology

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honors
Instructions on applying for the Distinction in Research and Creative Work award from the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: http://biosciences.rice.edu/.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Research in the BioSciences
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For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Bachelor of Science (BS) Degree with a Major in Ecology and Evolutionary Biology

Program Learning Outcomes for the BS Degree with a Major in Ecology and Evolutionary Biology

Upon completing the BS degree with a major in Ecology and Evolutionary Biology, students will be able to:

1. Locate primary scientific literature and demonstrate the ability to apply critical thinking and problem solving skills to evaluate published and proposed research in the biological sciences and to apply these skills to develop an independent research project.
2. Demonstrate the ability to apply the modern scientific method, including designing experiments and/or building mathematical models, collecting, analyzing, and interpreting data using common statistical methods and software programs.
3. Demonstrate effective oral and written communication skills, including an ability to communicate effectively and work with diverse groups and the ability to interpret and communicate the results of original research.
4. Demonstrate familiarity with the diversity of life and an in-depth understanding of at least one level or biological organization (i.e. genetic, genomic, cellular, organismal, population, community, or ecosystem).
5. Demonstrate a comprehensive knowledge of biology and an in-depth understanding of ecology and evolutionary biology.
6. Demonstrate understanding of the practice and culture of science, scientific ethics, and the relationship between science and society.

Requirements for the BS Degree with a Major in Ecology and Evolutionary Biology

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BS degree with a major in Ecology and Evolutionary Biology must complete:

- A minimum of 22 courses (61 credit hours) to satisfy major requirements. Additional credit hours may be required depending on course selection.
- A minimum of 121 credit hours to satisfy degree requirements. Additional credit hours may be required depending on course selection.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 13 courses (43 credit hours) at the 300-level or above.

The Ecology and Evolutionary Biology major is intended for students pursuing a wide range of careers in the life sciences. Course work emphasizes a broad understanding of basic biology together with in-depth knowledge of ecology and evolutionary biology that culminates in a required capstone 400-level course incorporating primary scientific literature, presentations, and writing in an advanced topic. The BS program is well suited for students planning to go on to graduate or professional school, or who will enter the workforce with the BS as their terminal degree. Students pursuing the BS degree are also required to conduct independent research under the supervision or co-supervision of an Ecology and Evolutionary Biology faculty member (though the research can take place in other locations or institutions such as the Texas Medical Center or at field sites throughout the world). Students are strongly encouraged to take advantage of study abroad opportunities.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Ecology and Evolutionary Biology</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BS Degree with Major in Ecology and Evolutionary Biology</td>
<td>Minimum of 121</td>
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# Degree Requirements

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td><strong>Core Requirements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Non-Biology Courses</strong></td>
<td></td>
<td></td>
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<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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<td><strong>Select 1 from the following:</strong></td>
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<tr>
<td>EBIO 338</td>
<td>DESIGN AND ANALYSIS OF BIOLOGICAL EXPERIMENTS</td>
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<td>1 course from Statistics (STAT) departmental course offerings</td>
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<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
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<td>&amp; CHEM 123</td>
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<tr>
<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
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<td><strong>Biology Lecture Courses</strong></td>
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<tr>
<td>BIOC 201</td>
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<td>EBIO 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
<td>3</td>
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<td>EBIO 325</td>
<td>ECOLOGY</td>
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<td>EBIO 334</td>
<td>EVOLUTION</td>
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<td>BIOC 334</td>
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<td><strong>Biology Laboratory Courses</strong></td>
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<td>BIOC 211</td>
<td>INTERMEDIATE EXPERIMENTAL BIOSCIENCES</td>
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<td>EBIO 213</td>
<td>INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
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<td><strong>Scientific Communication Course</strong></td>
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<tr>
<td>EBIO 412</td>
<td>ADVANCED COMMUNICATION IN THE BIOLOGICAL SCIENCES</td>
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<td><strong>Independent Research Courses</strong></td>
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<tr>
<td>EBIO 306</td>
<td>INDEPENDENT RESEARCH FOR ECOLOGY &amp; EVOLUTIONARY BIOLOGY UNDERGRADUATES (at least 2 credit hours)</td>
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<td>EBIO 403</td>
<td>UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
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<tr>
<td>EBIO 404</td>
<td>UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
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<td><strong>Elective Requirements</strong></td>
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<tr>
<td><strong>Lecture in Ecology and Evolutionary Biology</strong></td>
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<tr>
<td>EBIO 321</td>
<td>ANIMAL BEHAVIOR</td>
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<td>EBIO 323</td>
<td>CONSERVATION BIOLOGY</td>
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<td>ENST 323</td>
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<td>EBIO 326</td>
<td>INSECT BIOLOGY</td>
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<td>EBIO 328</td>
<td>EVOLUTION OF GENES &amp; GENOMES</td>
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<td>EBIO 329</td>
<td>ANIMAL BIOLOGY AND PHYSIOLOGY</td>
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<td>BIOC 329</td>
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<td>EBIO 331</td>
<td>BIOLOGY OF INFECTIOUS DISEASES</td>
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<td>BIOC 331</td>
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<tr>
<td>EBIO 333</td>
<td>EVOLUTIONARY BIOINFORMATICS</td>
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<td>COMP 370</td>
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<td>EBIO 336</td>
<td>PLANT DIVERSITY</td>
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<td>EBIO 340</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
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<td>ENST 340</td>
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<td>ESCI 340</td>
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<td>EBIO 365</td>
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<tr>
<td>EBIO 366</td>
<td>APPLIED PHYCOLOGY</td>
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<tr>
<td>EBIO 372</td>
<td>CORAL REEF ECOSYSTEMS</td>
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<tr>
<td>EBIO 391</td>
<td>TRANSFER CREDIT IN ECOLGY AND EVOLUTIONARY BIOLOGY</td>
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<td>EBIO 433</td>
<td>ADVANCED ECOLOGY</td>
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<tr>
<td><strong>Lecture in Biochemistry and Cell Biology</strong></td>
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<td><strong>Select 1 from the following:</strong></td>
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<td>BIOC 300</td>
<td>PARADIGMS IN BIOCHEMISTRY AND CELL BIOLOGY</td>
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<td>BIOC 301</td>
<td>BIOCHEMISTRY I</td>
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<td>BIOC 302</td>
<td>BIOCHEMISTRY II</td>
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<td>BIOC 332</td>
<td>SYSTEMS PHYSIOLOGY</td>
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<td>BIOC 302</td>
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<td>BIOC 335</td>
<td>CELLULAR AND MOLECULAR ANIMAL PHYSIOLOGY</td>
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<td>BIOC 341</td>
<td>CELL BIOLOGY</td>
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<td>BIOC 344</td>
<td>MOLECULAR BIOLOGY AND GENETICS</td>
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<td>BIOC 352</td>
<td>PHYSICAL CHEMISTRY FOR THE BIOSCIENCES</td>
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<td>BIOC 361</td>
<td>METABOLIC ENGINEERING FOR GLOBAL HEALTH ENVIRONMENTS</td>
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<td>BIOC 361</td>
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<td>BIOE 361</td>
<td>HEALTH ENVIRONMENTS</td>
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<td>GLHT 361</td>
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<td>BIOC 368</td>
<td>CONCEIVING AND MISCONCEIVING THE MONSTROUS IN FICTION AND IN ART, IN MEDICINE AND IN BIOSCIENCE</td>
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<td>HUMA 368</td>
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<td>BIOC 371</td>
<td>SEMINAR IN CONTEMPORARY BIOLOGICAL AND BIOMEDICAL RESEARCH</td>
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<td>BIOC 372</td>
<td>IMMUNOLOGY</td>
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<td>BIOC 380</td>
<td>FUNDAMENTAL NEUROSCIENCE SYSTEMS</td>
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<td>NEUR 380</td>
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<td>PSYC 380</td>
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<td>BIOC 385</td>
<td>FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE</td>
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<td>NEUR 385</td>
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<td>TRANSFER CREDIT IN BIOCHEMISTRY AND CELL BIOLOGY</td>
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<td>BIOC 424</td>
<td>MICROBIOLOGY AND BIOTECHNOLOGY</td>
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<td>BIOC 425</td>
<td>PLANT MOLECULAR GENETICS AND DEVELOPMENT</td>
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<td>BIOC 443</td>
<td>ADVANCED CONCEPTS AND CRITICAL ANALYSIS IN MODERN DEVELOPMENTAL BIOLOGY</td>
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<td>BIOC 445</td>
<td>ADVANCED MOLECULAR BIOLOGY AND GENETICS</td>
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<td>BIOC 447</td>
<td>EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE</td>
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<td>BIOC 450</td>
<td>VIRUSES AND INFECTIOUS DISEASES</td>
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<td>BIOC 460</td>
<td>CANCER BIOLOGY</td>
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<td>BIOC 470</td>
<td>COMPUTATION WITH BIOLOGICAL DATA</td>
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<td>BIOC 481</td>
<td>MOLECULAR BIOPHYSICS I</td>
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<td>BIOC 482</td>
<td>STRUCTURAL BIOLOGY</td>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>EBIO Laboratory Course Requirement</td>
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Select 1 from the following: 1-2

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EBIO 316</td>
<td>LAB MODULE IN ECOLOGY</td>
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<td>EBIO 317</td>
<td>LAB MODULE IN BEHAVIOR</td>
</tr>
<tr>
<td>EBIO 319</td>
<td>TROPICAL FIELD BIOLOGY</td>
</tr>
<tr>
<td>EBIO 320</td>
<td>ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LAB</td>
</tr>
<tr>
<td>EBIO 324</td>
<td>CONSERVATION BIOLOGY LAB</td>
</tr>
<tr>
<td>EBIO 327</td>
<td>BIOLOGICAL DIVERSITY</td>
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<td>EBIO 330</td>
<td>INSECT BIOLOGY LAB</td>
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<tr>
<td>EBIO 332</td>
<td>EVOLUTION OF GENES &amp; GENOMES LAB</td>
</tr>
<tr>
<td>EBIO 335</td>
<td>EVOLUTIONARY BIOINFORMATICS LAB</td>
</tr>
<tr>
<td>EBIO 337</td>
<td>FIELD BIRD BIOLOGY LAB</td>
</tr>
<tr>
<td>EBIO 367</td>
<td>INTRODUCTION PHYCOLOGY LAB</td>
</tr>
<tr>
<td>EBIO 368</td>
<td>APPLIED PHYCOLOGY LAB</td>
</tr>
<tr>
<td>EBIO 379 /</td>
<td>LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA</td>
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<td>ENST 379</td>
<td></td>
</tr>
<tr>
<td>EBIO 393</td>
<td>LABORATORY TRANSFER CREDIT IN BIOSCIENCES</td>
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<td>BIOC 213</td>
<td>ADVANCED EXPERIMENTAL BIOSCIENCES</td>
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<td>BIOC 311</td>
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<td>BIOC 313</td>
<td>INTRODUCTORY SYNTHETIC BIOLOGY</td>
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<tr>
<td>BIOC 318</td>
<td>MICROBIOLOGY LABARY</td>
</tr>
<tr>
<td>BIOC 320 /</td>
<td>LABORATORY IN TISSUE CULTURE</td>
</tr>
<tr>
<td>BIOE 342</td>
<td></td>
</tr>
<tr>
<td>BIOC 413</td>
<td>EXPERIMENTAL MOLECULAR BIOLOGY</td>
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<tr>
<td>BIOC 415</td>
<td>EXPERIMENTAL PHYSIOLOGY</td>
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BIOC Laboratory Course Requirement
Select 1 from the following or complete an additional laboratory course from the BIOC Laboratory requirement: 1-2

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>BIOC 311</td>
<td>ADVANCED EXPERIMENTAL BIOSCIENCES</td>
</tr>
<tr>
<td>BIOC 313</td>
<td>INTRODUCTORY SYNTHETIC BIOLOGY</td>
</tr>
<tr>
<td>BIOC 318</td>
<td>MICROBIOLOGY LABARY</td>
</tr>
<tr>
<td>BIOC 320 /</td>
<td>LABORATORY IN TISSUE CULTURE</td>
</tr>
<tr>
<td>BIOE 342</td>
<td></td>
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<tr>
<td>BIOC 413</td>
<td>EXPERIMENTAL MOLECULAR BIOLOGY</td>
</tr>
<tr>
<td>BIOC 415</td>
<td>EXPERIMENTAL PHYSIOLOGY</td>
</tr>
</tbody>
</table>

Natural Sciences or Engineering
Select 1 course offered by the School of Natural Sciences or the School of Engineering at the 300-level or above. 2 3

Total Credit Hours Required for the Major in Ecology and Evolutionary Biology Minimum of 61

University Graduation Requirements (p. 25) * 60

Total Credit Hours Minimum of 121

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Permissible substitutions: MATH 111 and MATH 112 may be substituted for MATH 101; CHEM 151 and CHEM 153 may be substituted for CHEM 121 and CHEM 123; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125.

2 The elective course in Natural Sciences or Engineering must be taken for at least 3 credit hours. Courses offered by the School of Natural Sciences and the School of Engineering include the following subject codes: ASTR, BIOE, CAAM, CEVE, CHBE, CHEM, COMP, ELEC, ENGI, ENST, ESCI, GLHT, HEAL, KINE, MATH, MECH, MSNE, NSCI, PHYS, and STAT.

Policies for the BS Degree with a Major in Ecology and Evolutionary Biology

Advising
Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of BioSciences can be found at the department website by clicking on the tab for Undergraduate Studies: http://biosciences.rice.edu/.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Ecology and Evolutionary Biology should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Opportunities for the BS Degree with a Major in Ecology and Evolutionary Biology

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honors
Instructions on applying for the Distinction in Research and Creative Work award from the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: http://biosciences.rice.edu/.

Research in the BioSciences
Research is highly encouraged for all biosciences majors, and there are many opportunities for independent research at Rice. Information about research for credit and research internships specific to the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: http://biosciences.rice.edu/.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/.
Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology

Program Learning Outcomes for the PhD Degree in the field of Biochemistry and Cell Biology

Upon completing the PhD degree in the field of Biochemistry and Cell Biology, students will be able to:

1. Develop a comprehensive knowledge of current and past research accomplishments and techniques in biochemistry and cell biology.
2. Demonstrate independent problem solving and critical thinking skills.
3. Demonstrate the effective written communication skills required for a thesis describing independent research and contributions to successful funding proposals and published research.
4. Demonstrate the effective oral and visual communication skills necessary for articulating scientific findings and significance to diverse audiences.

Requirements for the PhD Degree in the field of Biochemistry and Cell Biology

For general university requirements, please see Doctoral Degrees (p. 64). Students pursuing the PhD Degree in the field of Biochemistry and Cell Biology must complete the requirements as listed below.

Course Requirements

Most of the formal course studies will be completed in the first year of residence to allow the students to commence thesis research at the end of their second semester at Rice. During the first year, the BCB Graduate Advisory Committee will advise all graduate students. This committee will determine the formal course program to be taken during the first year in residence. Students are required to have training in biochemistry and cell biology; training in genetics and physical chemistry or biophysics is also beneficial. Students lacking formal training in biochemistry or cell biology are required to take the equivalent background courses during their first year.

The following Rice courses must be taken if students lack these prerequisites in their final undergraduate transcript:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BIOC 301</td>
<td>BIOCHEMISTRY I</td>
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<tr>
<td>BIOC 341</td>
<td>CELL BIOLOGY</td>
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Summary

Total Credit Hours Required for the PhD Degree in the field of Biochemistry and Cell Biology 90

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tr>
<td>BIOC 575</td>
<td>INTRODUCTION TO RESEARCH</td>
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<tr>
<td>BIOC 581</td>
<td>GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY (required in all fall semesters of residency)</td>
<td>1 credit hour per year</td>
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<tr>
<td>BIOC 582</td>
<td>GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY (required in all spring semesters of residency)</td>
<td>1 credit hour per year</td>
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<tr>
<td>BIOC 583</td>
<td>MOLECULAR INTERACTIONS ¹</td>
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<tr>
<td>BIOC 587</td>
<td>RESEARCH DESIGN, PROPOSAL WRITING, AND PROFESSIONAL DEVELOPMENT ¹</td>
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</tr>
<tr>
<td>BIOC 588</td>
<td>CELLULAR INTERACTIONS ¹</td>
<td>4</td>
</tr>
<tr>
<td>BIOC 599</td>
<td>GRADUATE TEACHING IN BIOCHEMISTRY AND CELL BIOLOGY (first semester, second year) ²</td>
<td>Minimum of 1 credit hour</td>
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<tr>
<td>BIOC 599</td>
<td>GRADUATE TEACHING IN BIOCHEMISTRY AND CELL BIOLOGY (second semester, second year) ²</td>
<td>Minimum of 1 credit hour</td>
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<tr>
<td>BIOC 701</td>
<td>GRADUATE LAB RESEARCH I (first year research course, fall semester)</td>
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<tr>
<td>BIOC 701</td>
<td>GRADUATE LAB RESEARCH I (first year research course, spring semester)</td>
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<tr>
<td>BIOC 702</td>
<td>GRADUATE LAB RESEARCH II (first year research course, fall semester)</td>
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<td>BIOC 702</td>
<td>GRADUATE LAB RESEARCH II (first year research course, spring semester)</td>
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<tr>
<td>BIOC 800</td>
<td>BIOCHEMISTRY &amp; CELL BIOLOGY GRADUATE RESEARCH (second year research and beyond) ³</td>
<td>1-15</td>
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<tr>
<td>UNIV 594</td>
<td>RESPONSIBLE CONDUCT OF RESEARCH</td>
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Elective Requirements

Select at least 6 credit hours from the set of 500-level advanced BIOC electives listed below:

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<tr>
<td>BIOC 523</td>
<td>EXTRACELLULAR MATRIX</td>
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<td>BIOC 524</td>
<td>MICROBIOLOGY &amp; BIOTECHNOLOGY</td>
</tr>
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<td>BIOC 525</td>
<td>PLANT MOLECULAR GENETICS AND DEVELOPMENT</td>
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<td>BIOC 530</td>
<td>LAB MODULE IN NMR SPECTROSCOPY AND MOLECULAR MODELING</td>
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<tr>
<td>BIOC 535</td>
<td>PRACTICAL X-RAY CRYSTALLOGRAPHY</td>
</tr>
<tr>
<td>BIOC 540</td>
<td>METABOLIC ENGINEERING</td>
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<tr>
<td>BIOC 544</td>
<td>ADVANCED CONCEPTS AND CRITICAL ANALYSIS IN MODERN DEVELOPMENTAL BIOLOGY</td>
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<tr>
<td>BIOC 545</td>
<td>ADVANCED MOLECULAR BIOLOGY AND GENETICS</td>
</tr>
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<td>BIOC 547</td>
<td>EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE</td>
</tr>
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<td>BIOC 550</td>
<td>VIRUSES AND INFECTIOUS DISEASES</td>
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<td>BIOC 551</td>
<td>MOLECULAR BIOPHYSICS</td>
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<tr>
<td>BIOC 552</td>
<td>STRUCTURAL BIOLOGY</td>
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<td>BIOC 555</td>
<td>COMPUTATIONAL SYNTHETIC BIOLOGY</td>
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<tr>
<td>BIOC 560</td>
<td>CANCER BIOLOGY</td>
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</table>

2017-2018 General Announcements
BIOC 570  COMPUTATION WITH BIOLOGICAL DATA
BIOC 571  BIOINFORMATICS: SEQUENCE ANALYSIS
BIOC 572  BIOINFORMATICS: NETWORK ANALYSIS
BIOC 580  PROTEIN ENGINEERING

Additional Coursework as Approved by Department

| Minimum of 90 |

Footnotes and Additional Information

1. Students generally complete BIOC 583, BIOC 587, and BIOC 588 in their first year, and will be responsible for the content of these courses in their admission to candidacy examination.

2. Students gain teaching experience by serving as discussion leaders and graders in two undergraduate courses during their second year (BIOC 599); additional teaching experiences are available on an individual basis.

3. Students are required to enroll in at least 9 hours of BIOC 800 during all semesters of residency after the first 2 semesters.

Evaluation of Progress in Graduate Study

The BCB Graduate Advising Committee evaluates each student’s undergraduate record and recommends course work based on the requirements. Thesis advisors may require additional courses.

At the end of each semester, the department chair, in consultation with the faculty, reviews student performance in the formal course work. Students must maintain at least a B average (GPA ≥ 3.0), perform satisfactorily in BIOC 701/BIOC 702, and demonstrate outstanding motivation and potential for research. Thesis lab assignments are made based on student and faculty preferences following research rotations.

Evaluation after the first year includes:

- Ongoing review of research progress by the thesis advisor; satisfactory research progress will be indicated by a grade of "S" in BIOC 800 each semester.
- A yearly research progress assessment by the student’s Research Progress Review Committee.
- Presentation of research progress at least once a year in seminar format (BIOC 581/BIOC 582) starting in the fourth semester and continuing until submission of the MA thesis.
- Completion of a written and oral admission to candidacy examination before the start of the fifth semester.
- Defense of the PhD thesis research and text in a final public seminar presentation and oral examination attended by the student’s Thesis Committee.

Policies for the PhD Degree in the field of Biochemistry and Cell Biology

Biochemistry and Cell Biology Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Biochemistry and Cell Biology publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Biochemistry_Cell_Biology_Graduate_Handbook.pdf.

Admission

Applicants for graduate study in the Biochemistry and Cell Biology must have:

- BA or BS degree in biochemistry, biology, chemistry, chemical engineering, physics, or some equivalent
- High levels of intellectual strength and motivation, as indicated by academic record, Graduate Record Examination (GRE) scores, and recommendations

Although the department offers an MA degree in Biochemistry and Cell Biology, the department admits students who intend to pursue the PhD program. For general university requirements, see Graduate Degrees (p. 49).

For additional information, please see the BioSciences website: http://biosciences.rice.edu/

Opportunities for the PhD Degree in the field of Biochemistry and Cell Biology

All full-time Biochemistry and Cell Biology graduate students receive funding and full tuition waivers as specified in their offer letters. Information about Student Resources, Attendance at Scientific Conferences, Internships, Graduate Students Awards, the Graduate Student Association, etc. can be found in the Biochemistry and Cell Biology Graduate Program Handbook online at the department website: http://gradhandbooks.rice.edu/2017_18/Biochemistry_Cell_Biology_Graduate_Handbook.pdf

For additional information, please see the BioSciences website: http://biosciences.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Ecology and Evolutionary Biology

Program Learning Outcomes for the PhD Degree in the field of Ecology and Evolutionary Biology

Upon completing the PhD degree in the field of Ecology and Evolutionary Biology, students will be able to:

1. Demonstrate comprehensive knowledge of current and past research accomplishments and techniques in ecology and evolutionary biology.
2. Synthesize and critically evaluate scientific literature and concepts in ecology and evolutionary biology.
3. Identify novel and potentially transformative research questions in ecology and evolutionary biology and synthesize credible paths towards answering them.
4. Demonstrate technical proficiency in a range of ecology and evolutionary biology research methods.
5. Demonstrate the effective written communication skills required for scientific publications, grant proposal submissions, and a thesis describing independent research.
6. Demonstrate the effective oral and visual communication skills necessary for articulating scientific findings and significance to diverse audiences.

7. Understand pedagogical methods appropriate for teaching undergraduate students in biology.

Requirements for the PhD Degree in the field of Ecology and Evolutionary Biology

For general university requirements, please see Doctoral Degrees (p. 64). Students pursuing the PhD Degree in the field of Ecology and Evolutionary Biology must complete the requirements as listed below.

Course Requirements

Most of the formal course studies will be completed in the first year of residence to allow the students to begin thesis research at the end of their second semester at Rice. Entering students will meet with their faculty advisor to form a course of study of the first year. Students should have completed coursework in ecology, evolution (or equivalent), mathematics (including calculus), and statistics prior to admission. Deficiencies in these subject areas should be made up during the first year of residence; some may be waived at the discretion of the EEB Graduate Advising Committee and the EEB Graduate Program Director.

The following Rice courses must be taken if students lack course work in ecology or evolution in their final undergraduate transcript:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 325</td>
<td>ECOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>EBIO 334 / BIOC 334</td>
<td>EVOLUTION</td>
<td>3</td>
</tr>
</tbody>
</table>

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Ecology and Evolutionary Biology</td>
<td>90</td>
</tr>
</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Required Graduate-Level Courses</td>
<td></td>
</tr>
<tr>
<td>EBIO 569</td>
<td>CORE COURSE IN ECOLOGY AND EVOLUTIONARY BIOLOGY (course repeatable for credit)</td>
<td>3 credit hours or more</td>
</tr>
<tr>
<td></td>
<td>Select 2 from the following (two semesters of any combination of EBIO &quot;Topics&quot; courses):</td>
<td>2 credit hours or more</td>
</tr>
<tr>
<td>EBIO 561</td>
<td>TOPICS IN EVOLUTION</td>
<td></td>
</tr>
<tr>
<td>EBIO 562</td>
<td>TOPICS IN BEHAVIORAL BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 563</td>
<td>TOPICS IN ECOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 568</td>
<td>TOPICS IN BIOLOGICAL DIVERSITY</td>
<td></td>
</tr>
<tr>
<td>EBIO 585</td>
<td>GRADUATE SEMINAR IN ECOLOGY AND EVOLUTIONARY BIOLOGY (required in all years of residency, fall semester)</td>
<td>1 credit hour per year</td>
</tr>
<tr>
<td>EBIO 586</td>
<td>GRADUATE SEMINAR/ECOLOGY AND EVOLUTIONARY BIOLOGY (required in all years of residency, spring semester)</td>
<td>1 credit hour per year</td>
</tr>
</tbody>
</table>

Additional Coursework as Approved by Department

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 591</td>
<td>GRADUATE TEACHING IN ECOLOGY AND EVOLUTIONARY BIOLOGY (two semesters)</td>
<td>3 credit hours per semester</td>
</tr>
<tr>
<td>EBIO 801</td>
<td>EEB GRADUATE RESEARCH ²</td>
<td>Variable credit hours</td>
</tr>
</tbody>
</table>

Evaluation of Progress in Graduate Study

Students must maintain a minimum grade average of B (3.0 grade points) in courses taken in the department and satisfactory grades in courses taken outside the department. Students must demonstrate satisfactory progress in their degree program in annual reviews by the EEB Graduate Advising Committee. The review process requires that each student:

- presents a public seminar on their research on Graduate Science Day
- prepares a written report on their progress

First-year students must also participate in an interview with the EEB Graduate Advising Committee.

MS Degree Program

Although students are not normally admitted to study for an MS, graduate students may earn the MS after obtaining approval of their candidacy for the PhD. In addition to the general university requirements and those listed above, the Master of Science degree in Ecology and Evolutionary Biology requires at least 10 hours of research credit.

PhD Degree Program

In addition to the general university requirements and those listed above, the PhD degree in Ecology and Evolutionary Biology requires:

- Passing the admission to candidacy examination given by the dissertation committee. (The committee will be composed of at least four members. At least three must be members of the EEB graduate program faculty and one member has to be a Rice faculty member outside the Biosciences department.)
- Complete an original investigation and a doctoral thesis with at least three chapters with the potential to produce publications in reputable, peer-reviewed scientific journals.
- Present a departmental seminar on the research.
- Publicly defend the doctoral thesis.

Policies for the PhD Degree in the field of Ecology and Evolutionary Biology

Ecology and Evolutionary Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Ecology and Evolutionary Biology publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Ecology_Evolutionary_Biology_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Ecology_Evolutionary_Biology_Graduate_Handbook.pdf)
Admission
Applicants for graduate study in the Ecology and Evolutionary Biology Program must have:

- BA or BS degree or equivalent that provides a strong background in biology
- Strong ability and motivation, as indicated by academic record, Graduate Record Examination (GRE) scores, and recommendations
- Scores from the GRE biology subject exam are optional but can be helpful, particularly for students with nontraditional backgrounds in biology

These requirements do not preclude admission of qualified applicants who have majored in areas other than biology. Although the department offers MA and MS degrees, only on rare occasions are students who do not intend to pursue the PhD admitted to the graduate program. For general university requirements, see Graduate Degrees (p. 49).

For additional information, please see the BioSciences website: http://biosciences.rice.edu/

Opportunities for the PhD Degree in the field of Ecology and Evolutionary Biology
All full-time Ecology and Evolutionary Biology graduate students receive funding and full tuition waivers as specified in their offer letters. Information about Student Resources, Attendance at Scientific Conferences, Internships, Graduate Students Awards, the Graduate Student Association, etc. can be found in the Ecology and Evolutionary Biology Graduate Program handbook online at the department website: http://gradhandbooks.rice.edu/2017_18/Ecology_Evolutionary_Biology_Graduate_Handbook.pdf.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/

Master of Arts (MA) Degree in the field of Biochemistry and Cell Biology
Program Learning Outcomes for the MA Degree in the field of Biochemistry and Cell Biology
Upon completing the MA degree in the field of Biochemistry and Cell Biology, students will be able to:

1. Develop a knowledge of past and current research accomplishments and techniques in biochemistry and cell biology.
2. Demonstrate problem solving and critical thinking skills.
3. Demonstrate the effective written communication skills required for a thesis describing independent research and contributions to publishable research.
4. Demonstrate the effective oral and visual communication skills necessary for articulating scientific findings and significance to diverse audiences.

Requirements for the MA Degree in the field of Biochemistry and Cell Biology
Course Requirements
The MA degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 67). Most of the formal course studies will be completed in the first year of residence to allow the students to commence thesis research at the end of their second semester at Rice. During the first year, the BCB Graduate Advisory Committee will advise all graduate students. This committee will determine the formal course program to be taken during the first year in residence. Students are required to have training in biochemistry and cell biology, training in genetics and physical chemistry or biophysics is also beneficial. Students lacking formal training in biochemistry or cell biology are required to take the equivalent background courses during their first year.

The following Rice courses must be taken if students lack these prerequisites in their final undergraduate transcript:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 301</td>
<td>BIOCHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 341</td>
<td>CELL BIOLOGY</td>
<td>3</td>
</tr>
</tbody>
</table>

Summary
The following Rice courses must be taken if students lack these prerequisites in their final undergraduate transcript:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Credit Hours Required for the MA Degree in the field of Biochemistry and Cell Biology</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>
| Required Courses
| BIOC 575   | INTRODUCTION TO RESEARCH                   | 1            |
| BIOC 581   | GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY (required in all semesters of residency, fall semester) | 1 credit hour per year |
| BIOC 582   | GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY (required in all semesters of residency, spring semester) | 1 credit hour per year |
| BIOC 583   | MOLECULAR INTERACTIONS ¹                   | 4            |
| BIOC 587   | RESEARCH DESIGN, PROPOSAL WRITING, AND PROFESSIONAL DEVELOPMENT ¹ | 3            |
| BIOC 588   | CELLULAR INTERACTIONS ¹                   | 4            |
| BIOC 701   | GRADUATE LAB RESEARCH I (first year research course, fall semester) | 2            |
| BIOC 701   | GRADUATE LAB RESEARCH I (first year research course, spring semester) | 2            |
| BIOC 702   | GRADUATE LAB RESEARCH II (first year research course, fall semester) | 2            |
| BIOC 702   | GRADUATE LAB RESEARCH II (first year research course, spring semester) | 2            |
| BIOC 800   | BIOCHEMISTRY & CELL BIOLOGY GRADUATE RESEARCH ² | 1-15          |
| UNIV 594   | RESPONSIBLE CONDUCT OF RESEARCH            | 1            |

Elective Requirements
Select at least 6 credit hours from the set of 500-level advanced BIOC electives listed below:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 523</td>
<td>EXTRACELLULAR MATRIX</td>
</tr>
<tr>
<td>BIOC 524</td>
<td>MICROBiology &amp; BIOTECHNOLOGY</td>
</tr>
<tr>
<td>BIOC 525</td>
<td>PLANT MOLECULAR GENETICS AND DEVELOPMENT</td>
</tr>
<tr>
<td>BIOC 530</td>
<td>LAB MODULE IN NMR SPECTROSCOPY AND MOLECULAR MODELING</td>
</tr>
<tr>
<td>BIOC 535</td>
<td>PRACTICAL X-RAY CRYSTALLOGRAPHY</td>
</tr>
<tr>
<td>BIOC 540</td>
<td>METABOLIC ENGINEERING</td>
</tr>
<tr>
<td>BIOC 544</td>
<td>ADVANCED CONCEPTS AND CRITICAL ANALYSIS IN MODERN DEVELOPMENTAL BIOLOGY</td>
</tr>
<tr>
<td>BIOC 545</td>
<td>ADVANCED MOLECULAR BIOLOGY AND GENETICS</td>
</tr>
<tr>
<td>BIOC 547</td>
<td>EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE</td>
</tr>
<tr>
<td>BIOC 550</td>
<td>VIRUSES AND INFECTIOUS DISEASES</td>
</tr>
<tr>
<td>BIOC 551</td>
<td>MOLECULAR BIOPHYSICS</td>
</tr>
<tr>
<td>BIOC 552</td>
<td>STRUCTURAL BIOLOGY</td>
</tr>
<tr>
<td>BIOC 555</td>
<td>COMPUTATIONAL SYNTHETIC BIOLOGY</td>
</tr>
<tr>
<td>BIOC 560</td>
<td>CANCER BIOLOGY</td>
</tr>
<tr>
<td>BIOC 570</td>
<td>COMPUTATION WITH BIOLOGICAL DATA</td>
</tr>
<tr>
<td>BIOC 571</td>
<td>BIOINFORMATICS: SEQUENCE ANALYSIS</td>
</tr>
<tr>
<td>BIOC 572</td>
<td>BIOINFORMATICS: NETWORK ANALYSIS</td>
</tr>
<tr>
<td>BIOC 580</td>
<td>PROTEIN ENGINEERING</td>
</tr>
</tbody>
</table>

**Thesis**

Completion and public defense of a thesis.

**Additional Coursework as Approved by Department**

| Total Credit Hours | Minimum of 30 |

**Footnotes and Additional Information**

1. Students generally complete BIOC 583, BIOC 587, and BIOC 588 in their first year, and will be responsible for the content of these courses in their admission to candidacy examination.

2. Students are required to enroll in at least 9 hours of BIOC 800 during all semesters of residency after the first 2 semesters.

**Evaluation of Progress in Graduate Study**

The BCB Graduate Advising Committee evaluates each student’s undergraduate record and recommends course work based on the requirements. Thesis advisors may require additional courses.

At the end of each semester, the department chair, in consultation with the faculty, reviews student performance in the formal course work. MA candidates must maintain a GPA ≥ 2.67, complete a thesis, and successfully complete a public oral defense of their research work to their Thesis Committee and other interested parties.

Evaluation after the first year includes:

- The research progress review examination held during the MA student’s second year replaces the admission to candidacy examination; no other preliminary examination is required before the final oral defense of the master’s thesis; satisfactory research progress will be indicated by a grade of “S” in BIOC 800 each semester

- Presentation of research progress at least once a year in seminar format (BIOC 581/BIOC 582) starting in the fourth semester and continuing until submission of the doctoral thesis

- Defense of the MA thesis research and text in a final public seminar presentation and oral examination attended by the student’s Thesis Committee

**Policies for the MA Degree in the field of Biochemistry and Cell Biology**

**Biochemistry and Cell Biology Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Biochemistry and Cell Biology publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Biochemistry_Cell%20Biology_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Biochemistry_Cell%20Biology_Graduate_Handbook.pdf)

**Admission**

Applicants for graduate study in the Department of Biochemistry and Cell Biology must have:

- BA or BS degree in biochemistry, biology, chemistry, chemical engineering, physics, or some equivalent
- High levels of intellectual strength and motivation, as indicated by academic record, Graduate Record Examination (GRE) scores, and recommendations

Although the department offers an MA degree in biochemistry and cell biology, the department admits students who intend to pursue the PhD program. For general university requirements, see Graduate Degrees (p. 49).

For additional information, please see the BioSciences website: [http://biosciences.rice.edu/](http://biosciences.rice.edu/)

**Opportunities for the MA Degree in the field of Biochemistry and Cell Biology**

All full-time Biochemistry and Cell Biology graduate students receive funding and full tuition waivers as specified in their offer letters. Information about Student Resources, Attendance at Scientific Conferences, Internships, Graduate Students Awards, the Graduate Student Association, etc. can be found in the Biochemistry and Cell Biology Graduate Program Handbook online at the department website: [http://gradhandbooks.rice.edu/2017_18/Biochemistry_Cell%20Biology_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Biochemistry_Cell%20Biology_Graduate_Handbook.pdf)

For additional information, please see the BioSciences website: [http://biosciences.rice.edu/](http://biosciences.rice.edu/)

**Master of Arts (MA) Degree in the field of Ecology and Evolutionary Biology**
Program Learning Outcomes for the MA Degree in the field of Ecology and Evolutionary Biology

Upon completing the MA degree in the field of Ecology and Evolutionary Biology, students will be able to:

1. Demonstrate comprehensive knowledge of current and past research accomplishments and techniques in ecology and evolutionary biology.
2. Synthesize and evaluate critically scientific literature and concepts in ecology and evolutionary biology.
3. Demonstrate technical proficiency in a range of ecology and evolutionary biology research methods.
4. Demonstrate the effective oral and visual communication skills necessary for articulating scientific findings and significance to diverse audiences.
5. Understand pedagogical methods appropriate for teaching undergraduate students in biology.

Requirements for the MA Degree in the field of Ecology and Evolutionary Biology

Course Requirements

The MA degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 67). Most of the formal course studies will be completed in the first year of residence to allow the students to begin thesis research at the end of their second semester at Rice. Entering students will meet with a faculty advisor to form a course of study of the first year. Students should have completed coursework in ecology, evolution (or equivalent), mathematics (including calculus), and statistics prior to admission. Deficiencies in these subject areas should be made up during the first year of residence; some may be waived at the discretion of the EEB Graduate Advising Committee and the EEB Graduate Program Director.

The following Rice courses must be taken if students lack coursework in ecology or evolution in their final undergraduate transcript:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 325</td>
<td>ECOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>EBIO 334 / BIOC 334</td>
<td>EVOLUTION</td>
<td>3</td>
</tr>
</tbody>
</table>

Summary

Total Credit Hours Required for the MA Degree in the field of Ecology and Evolutionary Biology

30

Degree Requirements

Required Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 569</td>
<td>CORE COURSE IN ECOLOGY AND EVOLUTIONARY BIOLOGY (course repeatable for credit)</td>
<td>3 credit hours or more</td>
</tr>
</tbody>
</table>

Select a minimum of 2 from the following (2 semesters of any combination of EBIO “Topics” courses):

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 561</td>
<td>TOPICS IN EVOLUTION</td>
<td></td>
</tr>
<tr>
<td>EBIO 562</td>
<td>TOPICS IN BEHAVIORAL BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 563</td>
<td>TOPICS IN ECOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 568</td>
<td>TOPICS IN BIOLOGICAL DIVERSITY</td>
<td></td>
</tr>
<tr>
<td>EBIO 585</td>
<td>GRADUATE SEMINAR IN ECOLOGY AND EVOLUTIONARY BIOLOGY (required in all years of residency, fall semester)</td>
<td>1 credit hour per year</td>
</tr>
<tr>
<td>EBIO 586</td>
<td>GRADUATE SEMINAR/ECOLOGY AND EVOLUTIONARY BIOLOGY (required in all years of residency, spring semester)</td>
<td>1 credit hour per year</td>
</tr>
<tr>
<td>EBIO 591</td>
<td>GRADUATE TEACHING IN ECOLOGY AND EVOLUTIONARY BIOLOGY (two semesters)</td>
<td>3 credit hours per semester</td>
</tr>
<tr>
<td>EBIO 801</td>
<td>EEB GRADUATE RESEARCH</td>
<td>Variable credit hours</td>
</tr>
</tbody>
</table>

Thesis

Completion and public defense of a thesis embodying the results of an original investigation

Additional Coursework as Approved by Department

Total Credit Hours

Minimum of 30

Footnotes and Additional Information

1 At least 2 special topics courses must be completed before candidacy. Students are strongly encouraged to take at least 1 topics course per semester during all years of residency.

2 Students must complete 2 semesters of EBIO 591 during their first 4 semesters to gain teaching experience; additional teaching experiences are available on an optional basis.

3 A minimum of 10 credit hours of EBIO 801 EEB Graduate Research is required for a master’s degree. EBIO 801 credit hours vary per student, depending on the number of other courses the student is taking in a given semester.

Evaluation of Progress in Graduate Study

Students must maintain a minimum grade average of B (3.0 grade points) in courses taken in the department and satisfactory grades in courses taken outside the department. Students must demonstrate satisfactory progress in their degree program in annual reviews by the EEB Graduate Advising Committee. The review process requires that each student:

• presents a public seminar on their research on Graduate Science Day
• prepares a written report on their progress

First-year students must also participate in an interview with the EEB Graduate Advising Committee.

Policies for the MA Degree in the field of Ecology and Evolutionary Biology

Ecology and Evolutionary Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Ecology and Evolutionary Biology publishes a graduate program handbook, which can be found
Admission
Applicants for graduate study in the Ecology and Evolutionary Biology (EEB) Program must have:

- BA or BS degree or equivalent that provides a strong background in biology
- Strong ability and motivation, as indicated by academic record, Graduate Record Examination (GRE) scores, and recommendations
- Scores from the GRE biology subject exam are optional but can be helpful, particularly for student with nontraditional backgrounds in biology

These requirements do not preclude admission of qualified applicants who have majored in areas other than biology. Although the department offers MA and MS degrees, only on rare occasions are students who do not intend to pursue the PhD admitted to the graduate program. For general university requirements, see Graduate Degrees (p. 49).

For additional information, please see the BioSciences website: http://biosciences.rice.edu/

Opportunities for the MA Degree in the field of Ecology and Evolutionary Biology
All full-time Ecology and Evolutionary Biology graduate students receive funding and full tuition waivers as specified in their offer letters. Information about Student Resources, Attendance at Scientific Conferences, Internships, Graduate Students Awards, the Graduate Student Association, etc. can be found in the Ecology and Evolutionary Biology Graduate Program handbook here: http://gradhandbooks.rice.edu/2017_18/Ecology_Evolutionary%20Biology_Graduate_Handbook.pdf.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/

Minor in Biochemistry and Cell Biology

Program Learning Outcomes for the Minor in Biochemistry and Cell Biology
Upon completing the minor in Biochemistry and Cell Biology, students will be able to:

1. Demonstrate knowledge of biology with particular emphasis on biochemistry and cell biology.
2. Demonstrate effective oral and written communication skills, including the ability to interpret and communicate the results of biological research.
3. Demonstrate the critical thinking and analysis skills necessary to evaluate published and proposed research in the biological sciences.

Requirements for the Minor in Biochemistry and Cell Biology
Students pursuing the minor in Biochemistry and Cell Biology must complete:

- A minimum of 18 courses (44 credit hours) to satisfy minor requirements.

The minor in Biochemistry and Cell Biology is intended for those with an interest in the life sciences but who may be majoring in other areas. This minor incorporates many of the life science core courses required for the health professions.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 126</td>
<td>GENERAL PHYSICS II (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
<td>4</td>
</tr>
<tr>
<td>&amp; CHEM 123</td>
<td>and GENERAL CHEMISTRY LABORATORY I</td>
<td></td>
</tr>
<tr>
<td>CHEM 122</td>
<td>GENERAL CHEMISTRY II</td>
<td>4</td>
</tr>
<tr>
<td>&amp; CHEM 124</td>
<td>and GENERAL CHEMISTRY LABORATORY II</td>
<td></td>
</tr>
<tr>
<td>CHEM 211</td>
<td>ORGANIC CHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>&amp; CHEM 213</td>
<td>and ORGANIC CHEM DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>CHEM 212</td>
<td>ORGANIC CHEMISTRY II</td>
<td>3</td>
</tr>
<tr>
<td>&amp; CHEM 214</td>
<td>and ORGANIC CHEM DISCUSSION II</td>
<td></td>
</tr>
<tr>
<td>CHEM 215</td>
<td>ORGANIC CHEMISTRY LAB</td>
<td>2</td>
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<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY</td>
<td>3</td>
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<tr>
<td>BIOC 301</td>
<td>BIOCHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 341</td>
<td>CELL BIOLOGY</td>
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<td>BIOC 305</td>
<td>INVESTIGATIVE BIOCHEMISTRY</td>
<td>3</td>
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<td>BIOC 211</td>
<td>INTERMEDIATE EXPERIMENTAL BIOSCIENCES</td>
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<tr>
<td>BIOC 305</td>
<td>INVESTIGATIVE BIOCHEMISTRY</td>
<td>3</td>
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</tbody>
</table>

Total Credit Hours: 44

Footnotes and Additional Information
1 Permissible Substitutions: MATH 111 and MATH 112 may be substituted for MATH 101; CHEM 151 and CHEM 153 may be substituted for CHEM 121 and CHEM 123; CHEM 152 and CHEM 154 may be substituted for CHEM 122 and CHEM 124; CHEM 320 may be substituted for CHEM 212; CHEM 365 may be substituted for CHEM 215; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125; PHYS 102 and PHYS 104 or PHYS 112 may be substituted for PHYS 126.
Policies for the Minor in Biochemistry and Cell Biology

Advising

Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of BioSciences can be found at the department website by clicking on the tab for Undergraduate Studies: http://biosciences.rice.edu/.

Program Restrictions and Exclusions

Students pursuing the minor in Biochemistry and Cell Biology should be aware of the following program restrictions:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.
- Students pursuing the major in Biological Sciences may not declare the minor in Biochemistry and Cell Biology.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the minor in Biochemistry and Cell Biology should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Opportunities for the Minor in Biochemistry and Cell Biology

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Research in the BioSciences

Research is highly encouraged for all biosciences majors, and there are many opportunities for independent research at Rice. Information about research for credit and research internships specific to the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: http://biosciences.rice.edu/.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Minor in Ecology and Evolutionary Biology

Program Learning Outcomes for the Minor in Ecology and Evolutionary Biology

Upon completing the minor in Ecology and Evolutionary Biology, students will be able to:

1. Demonstrate knowledge of biology with particular emphasis on ecology and evolutionary biology.
2. Demonstrate effective oral and written communication skills, including the ability to interpret and communicate the results of biological research.
3. Demonstrate the critical thinking and analysis skills necessary to evaluate published and proposed research in the biological sciences.

Requirements for the Minor in Ecology and Evolutionary Biology

Students pursuing the minor in Ecology and Evolutionary Biology must complete:

- A minimum of 7 courses (20 credit hours) to satisfy minor requirements.
- A minimum of 4 courses (12 credit hours) at the 300-level or above.

The minor in Ecology and Evolutionary Biology is intended for the numerous Rice students with an avid interest in ecology and evolutionary biology but whose major interests are in other departments.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Minor in Ecology and Evolutionary Biology</td>
<td>20</td>
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Minor Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>BIOC 201</td>
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<tr>
<td>EBIO 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
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<tr>
<td>EBIO 213</td>
<td>INTRO EXPERIMENTAL ECOLOGY AND</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>EVOLUTIONARY BIOLOGY</td>
<td></td>
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</table>

Elective Requirements

Select 4 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>EBIO 321</td>
<td>ANIMAL BEHAVIOR</td>
<td></td>
</tr>
</tbody>
</table>
Policies for the Minor in Ecology and Evolutionary Biology

Advising
Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of BioSciences can be found at the department website by clicking on the tab for Undergraduate Studies: http://biosciences.rice.edu/.

Program Restrictions and Exclusions
Students pursuing the minor in Ecology and Evolutionary Biology should be aware of the following program restrictions:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.
- Students pursuing the major in Biological Sciences may not declare the minor in Ecology and Evolutionary Biology.

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the minor in Ecology and Evolutionary Biology should be aware of the following departmental transfer credit guidelines:

- Request for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Opportunities for the Minor in Ecology and Evolutionary Biology

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Research in the BioSciences
Research is highly encouraged for all biosciences majors, and there are many opportunities for independent research at Rice. Information about research for credit and research internships specific to the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: http://biosciences.rice.edu/.

For additional information, please see the BioSciences website: http://biosciences.rice.edu/.

Bioscience and Health Policy

Contact Information
Bioscience and Health Policy
https://profms.rice.edu/
203 Keck Hall
713-348-3188
Dagmar Beck
Program Director
dbeck@rice.edu
Janet Braam
Faculty Director
braam@rice.edu

The Bioscience and Health Policy degree program creates broad options for science students interested in working in biomedical research, health care professions, health care management, for the government, or in governmental relations positions at non-profit organizations, in industry, and in academic institutions. This interdisciplinary program equips students with advanced bioscience skills; teaches quantitative skills and data analysis; provides students with communication skills enabling them to understand and formulate public policy recommendations; and trains students how to integrate science knowledge into developing informed policies and practices.

The Bioscience and Health Policy program gives students an advanced background in bioscience complemented by courses in business, economics, humanities, and policy studies to foster their understanding of the role of science in policy making and the role of public policy in science. The coursework provides research and study skills enabling
development of specific policy recommendations. Students will also receive the tool-set necessary to become knowledgeable in the formulation and execution of public policy. Direct access to the Baker Institute will allow students to work closely with policy scholars as well as meet with many of the leaders in science and technology policy.

This degree is one of five degrees in the professional science master's (PSM) program at Rice housed in the Wiess School of Natural Sciences. These master’s degrees are designed for students seeking to gain further scientific core expertise coupled with enhanced management and communication skills. These degrees instill a level of scholastic proficiency that exceeds that of the bachelor’s level, and they create the cross-functional aptitudes needed in modern industry and government.

Students receiving the MS in Bioscience and Health Policy degree will be able to enter into governmental positions; work in non-governmental agencies, insurance, medical and pharmaceutical companies; serve as governmental relations officers for companies or universities with a vested science interest; or enter into post-graduate training in health care professions or biosciences.

Bioscience and Health Policy does not currently offer an academic program at the undergraduate level.

**Master's Program**
- Master of Science in Bioscience and Health Policy (MSBHP) Degree (p. 189)

**Coordinated Program**
- Master of Business Administration (MBA) Degree / Master of Science in Bioscience and Health Policy (MSBHP) Degree (p. 188)

**Director**
Janet Braam

**Track Advising Faculty Committee**
Janet Braam
Susan Cates
Kathleen S. Matthews
Kristin R. W. Matthews
Daniel S. Wanger

**Description and Code Legend**
*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**
- Course offerings/subject code: Courses from various subjects may apply towards this program

**Department Description and Code**
- Biosciences: BIOS

**Graduate Degree Descriptions and Codes**
- Master of Science in Bioscience and Health Policy degree: MSBHP

**Graduate Degree Program Description and Code**
- Degree Program in Bioscience and Health Policy: BSHP

**Master of Business Administration (MBA) Degree / Master of Science in Bioscience and Health Policy (MSBHP) Degree**

**Program Learning Outcomes for the MBA/MSBHP Coordinated Degree Program**
Upon completing the MBA/MSBHP Coordinated Degree Program, students will:

1. Become knowledgeable in current advanced bioscience topics affecting society and integrate their science understanding into better policies and practices.
2. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
3. Develop, evaluate, and implement business strategies and operational solutions holistically, effectively integrating management principles across the functional areas both as a leader and a contributor.

**Requirements for the MBA/MSBHP Coordinated Degree Program**
Students may earn a Master of Science degree from the Weiss School of Natural Sciences Professional Science Master’s (PSM) program in the following fields:
- Bioscience and Health Policy
- Environmental Analysis and Decision Making
- Nanoscale Science
- Space Studies
- Subsurface Geoscience

For the coordinated MBA/Master of Science degree from the professional master's program, students must complete:
- a minimum of 75 credit hours of coursework, including:
  - a minimum of 30 credit hours in a science discipline
  - a minimum of 45 credit hours of business course work
- Satisfy all MBA core curriculum requirements
- Satisfy all PSM track-specific requirements
- Complete a summer internship

Students plan their course schedules in consultation with the Weiss School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degree candidates can fulfill requirements for both degrees within 3 academic years.

**Policies for the MBA/MSBHP Coordinated Degree Program**
For additional information on these two degrees:
1. Please see the Business website: https://business.rice.edu/
2. Please see the Bioscience and Health Policy website: https://profms.rice.edu/.

Opportunities for the MBA/MSBHP Coordinated Degree Program
For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Bioscience and Health Policy website: https://profms.rice.edu/.

Master of Science in Bioscience and Health Policy (MSBHP) Degree
Program Learning Outcomes for the MSBHP Degree
Upon completing the MSBHP degree, students will:

1. Be knowledgeable in current advanced bioscience and health policy topics affecting society
2. Be able to integrate science knowledge into better policies and practices.
3. Demonstrate written, oral, and visual communication strategies required to work effectively across science, business, and government.

Requirements for the MSBHP Degree
The MSBHP degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MSBHP degree must complete:

- A minimum of 39 credit hours to satisfy degree requirements. Additional credit hours may be required depending on course selection.
- A 3-6 month internship. At the conclusion of their internship, students must present a summary of their internship project in both oral and written form as part of the professional master's seminar.
- A minimum of 30 credit hours at the 500-level or above.

Part-time students who already work in their area of study may request approval to fulfill the internship requirements by working on project with their current employer.

Note: Some of the listed courses are not offered every year, and some may also have prerequisites or require instructor permission. Students cannot take more than two (2) 300 or 400-level courses as part of the degree program without permission of advising faculty.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the PSM (Professional Science Masters) program director and the MSBHP advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be completed in advance of registration.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
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<td>Minimum of 39</td>
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### Degree Requirements

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<td>Core Requirements</td>
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<tr>
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<td>Science Core Courses</td>
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<td>Select 4 from the following:</td>
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<tr>
<td>BIOC 524</td>
<td>MICROBIOLOGY &amp; BIOTECHNOLOGY</td>
<td>2</td>
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<tr>
<td>BIOC 525</td>
<td>PLANT MOLECULAR GENETICS AND DEVELOPMENT</td>
<td></td>
</tr>
<tr>
<td>BIOC 540 / CHBE 640</td>
<td>METABOLIC ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>BIOC 544</td>
<td>ADVANCED CONCEPTS AND CRITICAL ANALYSIS IN MODERN DEVELOPMENTAL BIOLOGY</td>
<td></td>
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<tr>
<td>BIOC 545</td>
<td>ADVANCED MOLECULAR BIOLOGY AND GENETICS</td>
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<tr>
<td>BIOC 547</td>
<td>EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE</td>
<td></td>
</tr>
<tr>
<td>BIOC 550</td>
<td>VIRUSES AND INFECTIOUS DISEASE</td>
<td></td>
</tr>
<tr>
<td>BIOC 555</td>
<td>COMPUTATIONAL SYNTHETIC BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 560 / BIOE 560</td>
<td>CANCER BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 570</td>
<td>COMPUTATION WITH BIOLOGICAL DATA</td>
<td></td>
</tr>
<tr>
<td>BIOC 573</td>
<td>IMMUNOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 580 / BIOE 580 / CHBE 580</td>
<td>PROTEIN ENGINEERING</td>
<td></td>
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<tr>
<td>BIOC 585</td>
<td>FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE</td>
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<tr>
<td>EBIO 523</td>
<td>CONSERVATION BIOLOGY</td>
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<td>EBIO 524</td>
<td>CONSERVATION BIOLOGY LAB</td>
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<td>EBIO 525</td>
<td>ECOLOGY</td>
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<tr>
<td>EBIO 540</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
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<tr>
<td>NSCI 501</td>
<td>PROFESSIONAL MASTER'S SEMINAR (first semester)</td>
<td>1</td>
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<tr>
<td>NSCI 501</td>
<td>PROFESSIONAL MASTER'S SEMINAR (second semester)</td>
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<tr>
<td>NSCI 511</td>
<td>SCIENCE POLICY, AND ETHICS</td>
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<tr>
<td>NSCI 512</td>
<td>PROFESSIONAL MASTER'S PROJECT</td>
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<tr>
<td>NSCI 610 / ENGI 610</td>
<td>MANAGEMENT FOR SCIENCE AND ENGINEERING</td>
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</table>

### Analytical Competency Requirement

#### A. Statistics or Data Analytics - Select 1 from the following:

<table>
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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOC 552</td>
<td>INTRO COMPUTATIONAL SYSTEMS BIOLOGY. MODELING &amp; DESIGN PRINCIPLES OF BIOCHEM NETWORKS</td>
<td>3-4</td>
</tr>
<tr>
<td>ESCI 654</td>
<td>GEOGRAPHIC INFORMATION SCIENCE</td>
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</table>
### Master of Science in Bioscience and Health Policy (MSBHP) Degree

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
</tr>
<tr>
<td>STAT 385</td>
<td>METHODS OF DATA ANALYSIS AND SYSTEM OPTIMIZATION</td>
</tr>
<tr>
<td>STAT 553</td>
<td>BIOSTATISTICS</td>
</tr>
<tr>
<td>STAT 605</td>
<td>R FOR DATA SCIENCE</td>
</tr>
<tr>
<td>STAT 684 / CEVE 684</td>
<td>ENVIRONMENTAL RISK ASSESSMENT &amp; HUMAN HEALTH</td>
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**B. Finance or Economics - Select a minimum of 3 credit hours from the following:**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ECON 450</td>
<td>ECONOMIC DEVELOPMENT</td>
</tr>
<tr>
<td>MGMT 631</td>
<td>HEALTH INSURANCE IN THE U.S.: THE ESSENTIALS</td>
</tr>
<tr>
<td>MGMT 673</td>
<td>COST ANALYSIS IN HEALTHCARE</td>
</tr>
<tr>
<td>MGMT 678</td>
<td>U.S. HEALTH CARE MANAGEMENT</td>
</tr>
<tr>
<td>MGMT 679</td>
<td>COST AND QUALITY IN HEALTH CARE</td>
</tr>
<tr>
<td>MGMT 750</td>
<td>STRATEGIC CONSIDERATIONS IN HEALTH INFORMATICS</td>
</tr>
<tr>
<td>MGMT 751</td>
<td>ECONOMICS OF HEALTH CARE SECTORS</td>
</tr>
</tbody>
</table>

**C. Policy Courses - Select a minimum of 6 credit hours from the following:**

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>ANTH 581</td>
<td>MEDICAL ANTHROPOLOGY</td>
</tr>
<tr>
<td>ANTH 643</td>
<td>ANTHROPOLOGY OF RACE, ETHNICITY AND HEALTH</td>
</tr>
<tr>
<td>HEAL 580</td>
<td>DISPARITIES IN HEALTH IN AMERICA</td>
</tr>
<tr>
<td>MGMT 631</td>
<td>HEALTH INSURANCE IN THE U.S.: THE ESSENTIALS</td>
</tr>
<tr>
<td>MGMT 690</td>
<td>HEALTHCARE STRATEGY</td>
</tr>
<tr>
<td>MGMT 691</td>
<td>BREAKTHROUGH NEGOTIATIONS IN A HEALTH CARE CONTEXT</td>
</tr>
<tr>
<td>MGMT 694</td>
<td>INTERPERSONAL COMMUNICATION IN HEALTHCARE</td>
</tr>
<tr>
<td>NSCI 530</td>
<td>THE SHAPING OF HEALTH POLICY</td>
</tr>
<tr>
<td>SOCI 525</td>
<td>POPULATION HEALTH SEMINAR</td>
</tr>
</tbody>
</table>

**Three to Six Month Internship**

Practical experience is offered via a 3 to 6 month work immersion.

**Elective Requirements**

Select a minimum of 6 credit hours from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGI 505</td>
<td>ENGINEERING PROJECT MANAGEMENT AND ECONOMICS</td>
</tr>
<tr>
<td>ENGI 515</td>
<td>LEADING TEAMS AND INNOVATION</td>
</tr>
<tr>
<td>ENGI 529</td>
<td>ETHICS AND ENGINEERING LEADERSHIP</td>
</tr>
<tr>
<td>ENGI 614</td>
<td>LEARNING HOW TO INNOVATE?</td>
</tr>
<tr>
<td>ENGI 615</td>
<td>LEADERSHIP COACHING FOR ENGINEERS</td>
</tr>
<tr>
<td>HEAL 507</td>
<td>EPIDEMIOLOGY</td>
</tr>
<tr>
<td>HEAL 560</td>
<td>PLANNING AND EVALUATION OF HEALTH PROMOTION AND EDUCATION</td>
</tr>
<tr>
<td>HURC 506</td>
<td>HEALTH AND HUMANITIES MASTER CLASS</td>
</tr>
<tr>
<td>MGMT 623</td>
<td>COMMERCIALIZATION IN PHARMA/BIOTECH</td>
</tr>
<tr>
<td>MGMT 633 / BIOE 633</td>
<td>LIFE SCIENCE ENTREPRENEURSHIP &amp; ROLES OF FOUNDERS &amp; VENTURE CAPITAL IN HIGH-TECH STARTUPS</td>
</tr>
<tr>
<td>MGMT 712</td>
<td>PROCESS MANAGEMENT AND QUALITY IMPROVEMENT</td>
</tr>
<tr>
<td>MGMT 738</td>
<td>CUSTOMER FOCUS IN HEALTH CARE AND SERVICE INDUSTRIES: A STRATEGIC APPROACH</td>
</tr>
<tr>
<td>MGMT 961</td>
<td>BUSINESS LAW</td>
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</tbody>
</table>

**Total Credit Hours**

Minimum of 39

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**Footnotes and Additional Information**

1. There are other courses that may satisfy the Finance or Economics requirement or serve as courses that satisfy the Electives Requirement. For example, students can choose up to two electives from the UT Graduate School of Biomedical Science (GS), Informatics (HI), and/or Health Science Center (PH). See department for more details.

2. PH 3910 offered by the UT School of Public Health is approved to meet the 3 credit hour requirement for Group B, Finance and Economics.

3. Practical experience is offered via a three to six month immersion. The internship will be under the guidance of a host company, government agency, or non-profit organization. A summary of the internship project is required in both oral and written form for the cohort course NSCI 512.

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**Policies for the MSBHP Degree**

**Bioscience and Health Policy Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Bioscience and Health Policy publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Professional_Science_Masters_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Professional_Science_Masters_Handbook.pdf)

**Admission**

Admission to graduate study in Bioscience and Health Policy is open to qualified students holding a bachelor's degree in biology or a related field that includes completed course work in biology, chemistry, calculus and statistics. Scores from the general Graduate Record Examination (GRE), good critical thinking and communication skills, and completed course work in introductory economics is preferred. Department faculty evaluate the previous academic record and credentials of each applicant individually and make admission decisions.

The Bioscience and Health Policy Professional Master's Program has distinct focus areas for students with primary interests in policy careers, biomedical and health care related positions, or additional post-graduate training or education after degree conferral.

**Transfer Credit**

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

For additional information, please see the Bioscience and Health Policy website: [https://profms.rice.edu/](https://profms.rice.edu/)
Opportunities for the MSBHP Degree
Fifth-Year MSBHP Degree Option for Rice Undergraduate Students

Rice undergraduate students have an option to pursue the MSBHP degree by adding an additional fifth year to their four undergraduate years of science studies. Advanced Rice students in good academic standing may apply to the graduate program during their junior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking required core courses of the Bioscience and Health Policy program during their senior year. A plan of study based on their particular focus area will need to be approved by the PSM (Professional Science Masters) program director and the MSBHP advisor.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for their bachelor’s degree and the MSBHP degree independently of each other (i.e., no course may be counted toward the fulfillment of both degrees).
- should be aware that there could be financial aid implications, if the conversion of undergraduate coursework to that of graduate-level reduces their earned undergraduate credit for any semester below that of full-time (12 credit hours) status.

For additional information, please see the Bioscience and Health Policy website: https://profms.rice.edu/

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The Jesse H. Jones Graduate School of Business (JGSB) was established in 1974 through a gift from Houston Endowment, Inc. The Jones Graduate School of Business offers a minor in business (BUSI) for undergraduate students, a master’s degree in business administration (MBA) program for graduate students seeking to further their professional careers in business, a one-year master of accounting (MAcc) program, and a PhD program in business for graduate students seeking academic careers at research universities.

Undergraduate Minor in Business

The business minor consists of six integrated courses designed to provide a strong foundation in the essential disciplines of business and to develop students’ critical thinking and communication skills. All courses in the minor are taught by JGSB faculty.

Master of Accounting (MAcc) Degree

The Master of Accounting degree is designed to enable students with a top-tier non-accounting undergraduate education to complete the educational requirements for becoming a certified public accountant. Program requirements and additional information regarding the Master of Accounting program may be found here (p. 109).

Master of Business Administration (MBA) Degree Programs

The MBA degree can be obtained via the Full-Time MBA program, the MBA for Executives program, or the MBA for Professionals program. The Executive and Professional MBA programs are designed for executives and working professionals who do not wish to interrupt their careers while pursuing the MBA degree. The MBA for Professionals program has three formats: an evening format, an alternating weekend format, and an extended evening format.

A coordinated MBA/master of engineering program is offered by the Jones Graduate School of Business and the George R. Brown School of Engineering, in any of the departments of engineering. This program prepares students to become managers in organizations requiring a high level of technical expertise and management skills. Students must apply separately and be accepted by both the business school and by the appropriate engineering department.

A coordinated MBA/master of science program is offered by the Jones Graduate School of Business and the Weiss School of Natural Sciences Professional Science Master's (PSM) Program. This program prepares students to become managers in organizations requiring specialized technical knowledge and general management skills. Students must apply separately and be accepted by both the business school and by the appropriate PSM program.

An MBA/MD dual degree program is offered by the Jones Graduate School of Business and Baylor College of Medicine. This program prepares students to become both physicians and managers in institutions involved in the delivery of high-quality health care, as well as biotechnology-focused industries, health insurance/managed health care firms, and pharmaceutical and medical supply and equipment companies.

Doctor of Philosophy (PhD) Degree in the field of Business

The Jones Graduate School of Business PhD program is designed for candidates with outstanding intellectual abilities and a strong commitment to research. The goal of the PhD program is to train students for academic careers focused on cutting-edge, rigorous research and teaching in a business school environment. Applicants to the PhD program must hold a four-year bachelor’s degree from an accredited institution. A master’s degree and work experience are not required for PhD admission. (Advanced degrees (e.g. master’s degrees) and prior work experience are taken into account in admission decisions, but evidence of strong intellectual ability is of utmost importance). The Jones Graduate School of Business does not have an MA program. During the course of the PhD program, a master’s degree (MA) will be
awarded after students have achieved doctoral candidacy and are in the process of completing the doctorate.

**Minor**
- Minor in Business (p. 257)

**Master's Programs**
- Master of Arts (MA) Degree in the field of Business Administration*
- Master of Accounting (MAcc) Degree (p. 109) (p. 110)
- Master of Business Administration (MBA) Degree, Full-Time Program (p. 210)
  - and a Major Concentration in Accounting (p. 215)
  - and a Major Concentration in Energy (p. 219)
  - and a Major Concentration in Entrepreneurship (p. 223)
  - and a Major Concentration in Finance (p. 227)
  - and a Major Concentration in Health Care (p. 231)
  - and a Major Concentration in Marketing (p. 236)
  - and a Major Concentration in Operations Management (p. 240)
  - and a Major Concentration in Real Estate (p. 244)
  - and a Major Concentration in Strategic Management (p. 248)
- Master of Business Administration (MBA) Degree, Executive Program (p. 207)
- Master of Business Administration (MBA) Degree, Professional Program (p. 252)

**Doctoral Program**
- Doctor of Philosophy (PhD) Degree in the field of Business (p. 194)
  - and a Major Concentration in Economics and Finance (p. 194)

**Coordinated Programs**
**With the George R. Brown School of Engineering**
- Master of Business Administration (MBA) Degree
  - and the Master of Bioengineering (MBE) Degree (p. 195)
  - and the Master of Chemical Engineering (MChE) Degree (p. 196)
  - and the Master of Civil and Environmental Engineering (MCEE) Degree in the field of Civil Engineering (p. 197)
  - and the Master of Civil and Environmental Engineering (MCEE) Degree in the field of Environmental Engineering (p. 198)
  - and the Master of Computational and Applied Mathematics (MCAAM) Degree (p. 206)
  - and the Master of Computational Science and Engineering (MCSE) Degree (p. 199)
  - and the Master of Computer Science (MCS) Degree (p. 199)
  - and the Master of Electrical Engineering (MEE) Degree (p. 200)
  - and the Master of Materials Science and Nanoengineering (MMSNE) Degree (p. 201)
  - and the Master of Mechanical Engineering (MME) Degree (p. 201)
  - and the Master of Statistics (MStat) Degree (p. 205)

**With the Wiess School of Natural Sciences**
- Master of Business Administration (MBA) Degree
  - and the Master of Science in Bioscience and Health Policy (MSBHP) Degree (p. 202)
  - and the Master of Science in Environmental Analysis and Decision Making (MSEADM) Degree (p. 203)
  - and the Master of Science in Nanoscale Science (MSNS) Degree (p. 203)
  - and the Master of Science in Space Studies (MSSpS) Degree (p. 204)
  - and the Master of Science in Subsurface Geoscience (MSSG) Degree (p. 205)

**Dual Degree Program**
**With the Baylor College of Medicine**
- Master of Business Administration (MBA) Degree and the Doctor of Medicine (MD) Degree (p. 195)
  *Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.*

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Visiting Assistant Professor
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Jill Foote

Lecturers
Abby Larson
Janet Moore
Lydia Mushar
Hesam Panahi

Joint Appointments
Linda Driskill
Mikki Hebl
David Lane
Fred Oswald

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code for Business: BUSI
- Course offerings/subject code for Management: MGMT
- Course offerings/subject code for Management Integrated Course Offering: MICO
- Course offerings/subject code for Master of Accounting: MACC
- Course offerings/subject code for MBA for Professionals-Evening: MGMP
- Course offerings/subject code for MBA for Professionals-Weekend: MGMW

Department Description and Code
- Business: BUSI
- Management: MGMT

Undergraduate Minor Description and Code
- Minor in Business: BUSI

Graduate Degree Descriptions and Codes
- Master of Accounting degree: MAcc
- Master of Business Administration degree: MBA
- Doctor of Philosophy degree: PhD

Graduate Degree Program Descriptions and Codes
- Degree Program in Accounting: ACCO
- Degree Program in Business: MGMT

Graduate Major Concentration Descriptions and Codes
- Major Concentration in Accounting: BACT (MBA degree, full-time program)
- Major Concentration in Energy: BENR (MBA degree, full-time program)
- Major Concentration in Entrepreneurship: BENT (MBA degree, full-time program)
- Major Concentration in Finance: BFIN (MBA degree, full-time program)
- Major Concentration in Health Care: BHCR (MBA degree, full-time program)
Doctor of Philosophy (PhD) Degree in the field of Business

Program Learning Outcomes for the PhD Degree in the field of Business

Upon completing the PhD degree in the field of Business, students will be able to:

1. Summarize major themes and current research problems in their area of specialization.
2. Explain and identify open problems and areas needing development in their discipline.
3. Execute and present original research in their discipline.
4. Communicate effectively, orally and in writing, their research and the major tenets of their discipline.

Requirements for the PhD Degree in the field of Business Administration

For general university requirements, please see Doctoral Degrees (p. 64). For program details, see the PhD Program Guidebook distributed by the Jones Graduate School of Business. Admissions applications should include scores on the Graduate Management Admissions Test (GMAT) or the Graduate Record Examination (GRE). Full financial support will be provided to admitted doctoral students. Candidates for the PhD degree spend at least two years in full-time course work and at least two years writing the dissertation. Four to five years is a reasonable goal for completing the program. For the PhD, students must:

- Complete a program of doctoral-level courses that is approved by the area faculty advisor. Students take courses from departments such as economics, psychology, statistics, and political science in addition to courses from Jones Graduate School of Business.
- Complete and defend orally a doctoral dissertation, setting forth in publishable form, the results of original research.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Business</td>
<td>90</td>
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</table>

Policies for the PhD Degree in the field of Business

Withdrawal Policy

A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars).

For additional information, please see the Business website: https://business.rice.edu/

Opportunities for the PhD Degree in the field of Business

Financial Aid

Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

For additional information, please see the Business website: https://business.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Business and a Major Concentration in Economics and Finance

Program Learning Outcomes for the PhD Degree in the field of Business and a Major Concentration in Economics and Finance

Upon completing the PhD degree in the field of Business and a major concentration in Economics and Finance, students will be able to:

- Learn mathematical, statistical, econometric and computational tools to carry out independent research in economics and finance.
- Write an independent and original dissertation that is of sufficient quality to merit publication in a top economics or finance journal.
- Conduct a focused review of the literature and develop a research design to carry out independent research.
- Learn to defend their research design and modeling choices by presenting their paper in a seminar environment.
- Communicate their research effectively by writing clearly, concisely and cogently.
• Read critically and assess research manuscripts related to their field of study and in other fields.

Requirements for the PhD Degree in the field of Business with a Major Concentration in Economics and Finance

The PhD in Business degree program offers a wide range of areas of specialization, depending on each student’s interests and goals. Students are encouraged to contact the Jones Graduate School of Business for additional details regarding the areas of specialization available.

Students pursuing the PhD degree programs in the fields of Business or Economics have the option to participate in a unique program of study, one recognized with a formal major concentration in Economics and Finance. To participate, PhD students in either program (Business or Economics) have the option to declare the major concentration in Economics and Finance.

Policies for the PhD Degree in the field of Business and a Major Concentration in Economics and Finance

For additional information, please see the Business website: https://business.rice.edu/

Opportunities for the PhD Degree in the field of Business and a Major Concentration in Economics and Finance

For additional information, please see the Business website: https://business.rice.edu/

Master of Business Administration (MBA) Degree / Doctor of Medicine (MD) Degree with Baylor College of Medicine

Program Learning Outcomes for the MBA/MD Dual Degree Program

Upon completing the MBA/MD dual degree program, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and contributor.

Requirements for the MBA/MD Dual Degree Program

As part of the coordinated dual degree program, students have the opportunity to earn both the (Rice) MBA degree and the (Baylor College of Medicine) MD degree in 5 years. The program is structured as follows:

• Years 1, 2, and 3—Medical training at Baylor College of Medicine.
• Year 4—First-year MBA core courses at Rice including 2 custom core courses and 2 electives.
• Summer—Students are encouraged to do an internship. To ensure that the internship is a combination of business/management and health care, approval is required from both schools. The internship does not count toward credit for either degree.
• Year 5—Second-year MBA elective courses in fall including US Health Care Management, MGMT 678 and medical training at Baylor College of Medicine in the spring semester.

Students are expected to follow the requirements for the health care concentration as the blueprint for their MBA studies, to the extent possible and in consultation with the Program Director of the Health Care Initiative at Jones Graduate School of Business. To obtain the concentration, students take US Health Care Management in fall of their second year and complete 12 credits from a suite of health care courses offered throughout the year.

Students are eligible to receive their MBA degree from Rice i.) after they have completed 45 credit hour of approved business coursework, and ii.) after they have completed the MD degree requirements specified by the Baylor College of Medicine.

Policies for the MBA/MD Dual Degree Program

For additional information, please see the Jones School website: https://business.rice.edu/

Opportunities for the MBA/MD Dual Degree Program

For additional information, please see the Jones School website: https://business.rice.edu/

Master of Business Administration (MBA) Degree / Master of Bioengineering (MBE) Degree

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MBE Degree

Program Learning Outcomes for the Applied Bioengineering Track

Upon completing the MBE degree, students pursuing the Applied Bioengineering track requirements will be able to:

1. Apply and integrate advanced knowledge of Bioengineering topics in at least one of the following areas: Biomaterials and Drug Delivery, Biomedical Imaging and Diagnostics, Computational and Theoretical Bioengineering, Tissue Engineering and Biomechanics, or Systems and Synthetic Biology.
2. Apply knowledge from engineering and other disciplines to identify, formulate, and solve novel and complex problems that require advanced knowledge in bioengineering.
3. Select and apply quantitative analytic techniques to analyze bioengineering data.
4. Gain admission to a graduate or professional program, if students want to pursue further education.

Program Learning Outcomes for the Global Medical Innovation Track

Upon completing the MBE degree, students pursuing the Global Medical Innovation track requirements will be able to:

1. Apply knowledge of Bioengineering topics in at least one of the following areas: Biomaterials and Drug Delivery, Biomedical Imaging and Diagnostics, Computational and Theoretical Bioengineering, Tissue Engineering and Biomechanics, or Systems and Synthetic Biology.
2. Develop effective medical products, from concept to commercialization, within a team environment.
3. Comprehend and navigate the global medical technology industry by leveraging an internship experience.
4. Gain employment or advance professionally in a technical field related to bioengineering.

Requirements for the MBA/MBE Coordinated Degree Program

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

Policies for the MBA/MBE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Bioengineering website: http://bioengineering.rice.edu/

Opportunities for the MBA/MBE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Bioengineering website: http://bioengineering.rice.edu/

Master of Business Administration (MBA) Degree / Master of Chemical Engineering (MChE) Degree

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MChE Degree

Upon completing the MChE degree, students will be able to:
1. Identify, formulate, and solve complex engineering problems that require synthesis of advanced knowledge in chemical engineering fundamentals.
2. Demonstrate broad advanced knowledge in science and math, and depth in one chemical engineering sub-discipline (energy engineering, biomolecular engineering, materials science).
3. Demonstrate knowledge of business policies and practices in the current business environment in identifying, formulating, and solving engineering challenges in a problem/engineering challenge they undertake to solve as part of independent study.
4. Demonstrate effective oral and written communication skills.

**Requirements for the MBA/MChE Coordinated Degree Program**

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

For general university requirements, see Graduate Degrees (p. 49). Candidates for the MChE degree in the MBA/MChE coordinated degree program must complete all requirements as listed above for the MChE degree, and must apply and be accepted in both degree programs.

**Policies for the MBA/MChE Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/

**Opportunities for the MBA/MChE Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/

**Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree in the field of Civil Engineering**

**Program Learning Outcomes for the MBA Degree Programs**

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

**Program Learning Outcomes for the MCEE Degree in the field of Civil Engineering**

Upon completing the MCEE degree in the field of Civil Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
2. Demonstrate professional written and oral communication skills.

**Requirements for the MBA/MCEE Coordinated Degree Program**

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics
Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

Policies for the MBA/MCEE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Civil and Environmental Engineering website: https://ceve.rice.edu/

Opportunities for the MBA/MCEE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Civil and Environmental Engineering website: https://ceve.rice.edu/

Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree in the field of Environmental Engineering

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MCEE Degree in the field of Civil Engineering

Upon completing the MCEE degree in the field of Civil Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
2. Demonstrate professional written and oral communication skills.

Requirements for the MBA/MCEE Coordinated Degree Program

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

Policies for the MBA/MCEE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Civil and Environmental Engineering website: https://ceve.rice.edu/

Opportunities for the MBA/MCEE Coordinated Degree Program

For additional information on these two degrees:
1. Please see the Business website: https://business.rice.edu/
2. Please see the Civil and Environmental Engineering website: https://ceve.rice.edu/

**Master of Business Administration (MBA) Degree / Master of Computational Science and Engineering (MCSE) Degree**

**Program Learning Outcomes for the MBA Degree Programs**

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

**Program Learning Outcomes for the MCSE Degree**

Upon completing the MCSE degree, students will be able to:

1. Acquire broad, advanced knowledge in modern computational techniques.
2. Possess skills to identify, formulate, and solve advance technical problems related to one of the three focus areas.
3. Communicate technical ideas effectively.

**Requirements for the MBA/MCSE Coordinated Degree Program**

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

**Policies for the MBA/MCSE Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Computational Science and Engineering website: https://engrprofmasters.rice.edu/

**Opportunities for the MBA/MCSE Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Computational Science and Engineering website: https://engrprofmasters.rice.edu/

**Master of Business Administration (MBA) Degree / Master of Computer Science (MCS) Degree**

**Program Learning Outcomes for the MBA Degree Programs**

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

**Program Learning Outcomes for the MCS Degree**

Upon completing the MCS degree, students will be able to:

1. Solve advanced Computer Science problems. Students will acquire and apply a graduate-level understanding of material in sub-areas of Computer Science.
2. Design and implement complex software systems. Students will demonstrate skill in their design and implementation and function effectively in teams.
3. Communicate effectively to a client and user.
4. Have improved professional opportunities relative to the time before entering the program.

Requirements for the MBA/MCS Coordinated Degree Program

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

Policies for the MBA/MCS Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Computer Science website: http://www.cs.rice.edu/

Opportunities for the MBA/MCS Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Computer Science website: http://www.cs.rice.edu/

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MEE Degree

Upon completing the MEE degree, students will be able to:

1. Apply the principles of mathematics and science necessary to solve advanced electrical engineering problems.
2. Practice at an advanced level in at least one of the major sub-fields of electrical engineering.

Requirements for the MBA/MEE Coordinated Degree Program

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.
Policies for the MBA/MEE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/

Opportunities for the MBA/MEE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/

Master of Business Administration (MBA) Degree / Master of Materials Science and Nanoengineering (MMSNE) Degree

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MMSNE Degree

Upon completing the MMSNE degree, students will be able to:

1. Acquire broad, advanced knowledge within either Materials Science or NanoEngineering, which is also in-depth in one major sub-discipline of the field.
2. Conduct research at an advanced level in at least one area of Materials Science and Nanoengineering.
3. Communicate scientific ideas effectively in writing and when speaking.
4. Demonstrate the ability to gain admission to a graduate or professional program, if interested in pursuing further education.
5. Demonstrate the ability to gain employment or advancement in a technical field related to Materials Science and NanoEngineering, if pursuing non-academic careers.

Requirements for the MBA/MMSNE Coordinated Degree Program

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

Policies for the MBA/MMSNE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Materials Science and Nanoengineering website: https://msne.rice.edu/

Opportunities for the MBA/MMSNE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Materials Science and Nanoengineering website: https://msne.rice.edu/

Master of Business Administration (MBA) Degree / Master of Mechanical Engineering (MME) Degree
Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Program Learning Outcomes for the MME Degree

Upon completing the MME degree, students will be able to:

1. Demonstrate an advanced command of Mechanical Engineering fieldwork.
2. Apply professional standards and exercise ethical judgment.
3. Communicate scientific ideas effectively in writing and when speaking.
4. Recognize the need for, and ability to engage in life-long learning.

Requirements for the MBA/MME Coordinated Degree Program

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

Policies for the MBA/MME Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Mechanical Engineering website: https://mech.rice.edu/

Opportunities for the MBA/MME Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Mechanical Engineering website: https://mech.rice.edu/

Master of Business Administration (MBA) Degree / Master of Science in Bioscience and Health Policy (MSBHP) Degree

Program Learning Outcomes for the MBA/MSBHP Coordinated Degree Program

Upon completing the MBA/MSBHP Coordinated Degree Program, students will:

1. Become knowledgeable in current advanced bioscience topics affecting society and integrate their science understanding into better policies and practices.
2. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
3. Develop, evaluate, and implement business strategies and operational solutions holistically, effectively integrating management principles across the functional areas both as a leader and a contributor.

Requirements for the MBA/MSBHP Coordinated Degree Program

Students may earn a Master of Science degree from the Weiss School of Natural Sciences Professional Science Master's (PSM) program in the following fields:

- Bioscience and Health Policy
- Environmental Analysis and Decision Making
- Nanoscale Science
- Space Studies
- Subsurface Geoscience
For the coordinated MBA/Master of Science degree from the professional master’s program, students must complete:

- a minimum of 75 credit hours of coursework, including:
  - a minimum of 30 credit hours in a science discipline
  - a minimum of 45 credit hours of business course work
- Satisfy all MBA core curriculum requirements
- Satisfy all PSM track-specific requirements
- Complete a summer internship

Students plan their course schedules in consultation with the Weiss School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degree candidates can fulfill requirements for both degrees within 3 academic years.

**Policies for the MBA/MSBHP Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: [https://business.rice.edu/](https://business.rice.edu/)
2. Please see the Bioscience and Health Policy website: [https://profms.rice.edu/](https://profms.rice.edu/).

**Opportunities for the MBA/MSBHP Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: [https://business.rice.edu/](https://business.rice.edu/)
2. Please see the Bioscience and Health Policy website: [https://profms.rice.edu/](https://profms.rice.edu/).

**Master of Business Administration (MBA) Degree / Master of Science in Environmental Analysis and Decision Making (MSEADM) Degree**

**Program Learning Outcomes for the MBA/MSEADM Coordinated Degree Program**

Upon completing the MBA/MSEADM Coordinated Degree Program, students will:

1. Be able to apply technical, analytical skills, and scientific evaluation methods to help solve problems affecting the environment.
2. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
3. Develop, evaluate, and implement business strategies and operational solutions holistically, effectively integrating management principles across the functional areas both as a leader and a contributor.

**Requirements for the MBA/MSEADM Coordinated Degree Program**

Students may earn a Master of Science degree from the Weiss School of Natural Sciences Professional Science Master's (PSM) program in the following fields:

- Bioscience and Health Policy
- Environmental Analysis and Decision Making
- Nanoscale Science
- Space Studies
- Subsurface Geoscience

For the coordinated MBA/Master of Science degree from the professional master’s program, students must complete:

- a minimum of 75 credit hours of coursework, including:
  - a minimum of 30 credit hours in a science discipline
  - a minimum of 45 credit hours of business course work
- Satisfy all MBA core curriculum requirements
- Satisfy all PSM track-specific requirements
- Complete a summer internship

Students plan their course schedules in consultation with the Weiss School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degree candidates can fulfill requirements for both degrees within 3 academic years.

**Policies for the MBA/MSEADM Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: [https://business.rice.edu/](https://business.rice.edu/)
2. Please see the Environmental Analysis and Decision Making website: [https://profms.rice.edu/](https://profms.rice.edu/)

**Opportunities for the MBA/MSEADM Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: [https://business.rice.edu/](https://business.rice.edu/)
2. Please see the Environmental Analysis and Decision Making website: [https://profms.rice.edu/](https://profms.rice.edu/)

**Master of Business Administration (MBA) Degree / Master of Science in Nanoscale Science (MSNS) Degree**

**Program Learning Outcomes for the MBA/MSNS Coordinated Degree Program**

Upon completing the MBA/MSNS Coordinated Degree Program, students will:

1. Develop knowledge of quantum theory and its application to nano- and mesoscale devices.
Master of Business Administration (MBA) Degree / Master of Science in Space Studies (MSSpS) Degree

Program Learning Outcomes for the MBA/MSSpS Coordinated Degree Program

Upon completing the MBA/MSSpS Coordinated Degree Program, students will:

1. Achieve advanced science, engineering, and computational skills and abroad understanding of the methodologies applied in the space industry.
2. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
3. Develop, evaluate, and implement business strategies and operational solutions holistically, effectively integrating management principles across the functional areas both as a leader and as a contributor.

Requirements for the MBA/MSNS Coordinated Degree Program

Students may earn a Master of Science degree from the Weiss School of Natural Sciences Professional Science Master's (PSM) program in the following fields:

- Bioscience and Health Policy
- Environmental Analysis and Decision Making
- Nanoscale Science
- Space Studies
- Subsurface Geoscience

For the coordinated MBA/Master of Science degree from the professional master's program, students must complete:

- a minimum of 75 credit hours of coursework, including:
  - a minimum of 30 credit hours in a science discipline
  - a minimum of 45 credit hours of business course work
- Satisfy all MBA core curriculum requirements
- Satisfy all PSM track-specific requirements
- Complete a summer internship

Students plan their course schedules in consultation with the Weiss School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degree candidates can fulfill requirements for both degrees within 3 academic years.

Policies for the MBA/MSNS Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Nanoscale Science website: https://profms.rice.edu/

Opportunities for the MBA/MSNS Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Nanoscale Science website: https://profms.rice.edu/

Master of Business Administration (MBA) Degree / Master of Science in Space Studies (MSSpS) Degree

For additional information on these two degrees:
1. Please see the Business website: https://business.rice.edu/
2. Please see the Space Studies website: https://profms.rice.edu/

**Master of Business Administration (MBA) Degree / Master of Science in Subsurface Geoscience (MSSG) Degree**

**Program Learning Outcomes for the MBA/MSSG Coordinated Degree Program**

Upon completing the MBA/MSSG Coordinated Degree Program, students will:

1. Become proficient in applying geological and geophysical knowledge and methods.
2. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
3. Develop, evaluate, and implement business strategies and operational solutions holistically, effectively integrating management principles across the functional areas both as a leader and a contributor.

**Requirements for the MBA/MSSG Coordinated Degree Program**

Students may earn a Master of Science degree from the Weiss School of Natural Sciences Professional Science Master's (PSM) program in the following fields:

- Bioscience and Health Policy
- Environmental Analysis and Decision Making
- Nanoscale Science
- Space Studies
- Subsurface Geoscience

For the coordinated MBA/Master of Science degree from the professional master's program, students must complete:

- a minimum of 75 credit hours of coursework, including:
  - a minimum of 30 credit hours in a science discipline
  - a minimum of 45 credit hours of business course work
- Satisfy all MBA core curriculum requirements
- Satisfy all PSM track-specific requirements
- Complete a summer internship

Students plan their course schedules in consultation with the Weiss School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degree candidates can fulfill requirements for both degrees within 3 academic years.

**Policies for the MBA/MSSG Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Subsurface Geoscience website: https://profms.rice.edu/

**Opportunities for the MBA/MSSG Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Subsurface Geoscience website: https://profms.rice.edu/

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**Master of Business Administration (MBA) Degree / Master of Statistics (MStat) Degree**

**Program Learning Outcomes for the MBA Degree Programs**

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

**Program Learning Outcomes for the MStat Degree**

Upon completing the MStat degree, students will be able to:

1. Master fundamental theory in probability and statistics.
2. Become familiar with a broad range of statistical methods for applications.
4. Develop effective communication skills as a professional statistician.

**Requirements for the MBA/MStat Coordinated Degree Program**

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
Program Learning Outcomes for the MCAAM Coordinated Degree

Upon completing the MCAAM degree, students will be able to:

1. Acquire broad, advanced knowledge in Computational and Applied Mathematics that is also deep within a major sub-discipline.
2. Demonstrate an ability to gain employment or advancement in a technical field related to Computational and Applied Mathematics

Requirements for the MBA/MCAAM Coordinated Degree Program

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

Policies for the MBA/MCAAM Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Computational and Applied Mathematics website: http://www.caam.rice.edu/

Opportunities for the MBA/MCAAM Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Computational and Applied Mathematics website: http://www.caam.rice.edu/

Master of Business Administration (MBA) Degree /Master of Computational and Applied Mathematics (MCAAM) Degree

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.
1. Please see the Business website: https://business.rice.edu/
2. Please see the Computational and Applied Mathematics website: http://www.caam.rice.edu/

Master of Business Administration (MBA) Degree, Executive Program

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Executive Program

The MBA degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the Executive MBA degree must complete:

• A minimum of 54 credit hours to satisfy degree requirements over a two-year period.
• A minimum overall GPA of 3.0 in required coursework and with a minimum grade of C (2.0 grade points) in each course.

The program is a lock-step progression in which students take required courses in sequence. The program includes four 5-day intensive executive forums that focus on leadership, strategy, critical decision-making and global management. Students pursuing the Executive MBA degree must complete:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>EMBA 911</td>
<td>EXECUTIVE SEMINAR I</td>
<td>1.5</td>
</tr>
<tr>
<td>EMBA 912</td>
<td>EXECUTIVE SEMINAR II</td>
<td>3</td>
</tr>
<tr>
<td>EMBA 913</td>
<td>EXECUTIVE SEMINAR III</td>
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<td>EXECUTIVE SEMINAR IV</td>
<td>3</td>
</tr>
<tr>
<td>EMBA 920</td>
<td>MANAGING THE GLOBAL FIRM: MICRO FOUNDATIONS</td>
<td>1.5</td>
</tr>
<tr>
<td>EMBA 921</td>
<td>GLOBAL MARKETS AND INSTITUTIONS</td>
<td>1.5</td>
</tr>
<tr>
<td>EMBA 922</td>
<td>MANAGING THE GLOBAL FIRM: STRATEGY</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Elective Requirements

Select an additional 10.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above

Total Credit Hours 54

Footnotes and Additional Information

1 9 credit hours (of the 10.5 credit hours of required Electives) are to be completed during the 3rd semester of the student’s program of study along with EMBA 913 and EMBA 993. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School of Business registrar department. Electives are offered on the weekend schedule, the evening schedule, and the daytime schedule.

2 Students participate in a required global experience during the second year of the program. Additional costs apply toward this global experience.

Policies for the MBA Degree, Executive Program

MBA Admission Requirements

Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

Executive MBA Degree Program

In addition to meeting the standards for admission to the other MBA programs, students admitted to the Executive MBA degree program typically have at least 10 years of relevant work experience.

Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the
MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

**Academic Standards**
A minimum cumulative grade point average of 3.00 (B) is required for graduation. All courses taken towards the MBA degree (including approved courses taken at the university but outside the Jones Graduate School of Business) are counted in the cumulative grade point average calculation.

Students with a cumulative grade point average lower than 3.00 at the end of any semester will be notified of standing. A student who has been notified may appeal to the Academic Standards Committee of the Jones Graduate School of Business requesting to be placed on academic probation. The committee will decide, based on the circumstances of the appeal, whether the student:

1. may resume studies on academic probation,
2. is to be academically suspended for one semester or an academic year, or
3. is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must apply to the Academic Standards Committee and receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only grades of C and above are counted for credit toward graduation. If students receive a grade below a C in a course required for graduation, they must repeat the course. If students receive a grade below a C in an elective course, they need not repeat the specific course, but they must make up the credits. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional course work is completed.

Students may retake a failed course only once and then only if their cumulative grade point average is 3.00 or higher or if they have received the permission of the Sr. Associate Dean of Degree Programs to do so. Students who fail a course twice will be notified of dismissal. (Students may not take any course for which the failed course is a prerequisite until they pass the prerequisite course.)

Students on academic probation cannot be candidates for student offices and must complete all future courses with a grade of C or above. Students are removed from probation only upon achieving a cumulative grade point average of at least 3.00 must appeal to the Academic Standards Committee.

Students who have completed the required number of hours for the MBA degree, the coordinated MBA/Master of Engineering degrees, the coordinated MBA/Master of Science Professional Science Masters degrees, or the coordinated MBA/MD dual degree, but who have a cumulative grade point average lower than 3.00, are dismissed without graduation.

Jones Graduate School of Business students may not take courses pass/fail to count toward their degree requirements. Jones Graduate School of Business students may audit courses with professor approval. The Audited courses do not count toward the MBA, but do appear on the transcript.

**Professional Standards**
MBA students are held to the high standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 81). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)

**Guidelines for Appealing Academic Dismissal**

**The Process**
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee. These questions should be answered in the appeal letter:

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

**Timing**
If the student intends to appeal the letter to the committee must be filed within two weeks after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

**Appeals**
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

**Confidentiality**
The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

**Grade Appeal Process**
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.

4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.

5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).

6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

8. The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

**MBA Elective Course Add/Drop Policy and Procedures**

Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Associate Registrar administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

**MBA Course Registration Policy for non-Jones Graduate School of Business Rice University Students**

Graduate students from outside the Jones Graduate School of Business may register for elective courses in the full-time MBA program and the MBA for Professionals program. To be eligible for a specific course, a student must be in good academic standing in their program, have permission from the student’s department advisor, and have satisfied the specified course prerequisites. In order to register for the course, the student should verify eligibility with the Jones Graduate School of Business associate registrar and then request approval from the course instructor.

Non-Jones Graduate School of Business students may not register for elective courses in the MBA for Executives program or core (required) courses in any of the school’s MBA programs.

Rice undergraduate students are not allowed to register for any MBA-level courses (MGMT, MGMP, or MGMW) offered at the Jones Graduate School of Business.

**Class Attendance Policy**

Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the instructor.

**Withdrawal Policy**

A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars).

**Jones Graduate School of Business Student Handbook**

Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, academic discipline, dismissal, procedures for resolution of problems, and appeal of academic regulations. A copy of the handbook is available on Campus Groups.

**Financial Aid**

Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

For additional information, please see the Jones School website: https://business.rice.edu/

**Opportunities for the MBA Degree, Executive Program**

**Independent Study**

**Minimum Hours Requirement**

Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

**Restrictions**

No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic...
Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study’s academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

**Faculty Sponsorship**
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee’s approval before the term in which the project is to begin.

**Common Requirements**
The goal of independent study projects is to advance or deepen a student’s knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

**Applications**
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

For additional information, please see the Jones School website: [https://business.rice.edu/](https://business.rice.edu/)

**Master of Business Administration (MBA) Degree, Full-Time Program**

**Program Learning Outcomes for the MBA Degree Programs**
Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

**Requirements for the MBA Degree Programs**
The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66).

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER ([https://esther.rice.edu](https://esther.rice.edu)). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

**Waivers and Transfers of Credit**
At its sole discretion, the school may allow students to transfer a maximum of 6 credit hours. Students must follow the prescribed curriculum of study and are not allowed to waive any core requirements.

**Requirements for the Full-Time MBA Degree Program**
Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements taken over a two-year period.
- A minimum overall GPA of 3.0 in required coursework with a minimum grade of C (2.0 grade points) in each course.
- A minimum of 6 credit hours from graduate transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.

**Summary**

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<th>Code</th>
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**For additional information, please see the Jones School website:** [https://business.rice.edu/](https://business.rice.edu/)
Degree Requirements

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<td>MGMT 571</td>
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<td>MGMT 574</td>
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<td>MGMT 595</td>
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<tr>
<td>MGMT 596</td>
<td>STRATEGIC BUSINESS COMMUNICATION II</td>
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<td>DATA ANALYSIS II</td>
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<tr>
<td>MGMT 710</td>
<td>LEADERSHIP ILE</td>
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<tr>
<td>MGMT 711</td>
<td>NEGOTIATIONS ILE</td>
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Custom Core Courses: 2

Select 2 from the following:

- MGMT 503 MANAGEMENT CONTROL
- MGMT 541 ECONOMIC ENVIRONMENT OF BUSINESS
- MGMT 561 BUSINESS-GOVERNMENT RELATIONS
- MGMT 599 ACTION LEARNING PROJECT
- MGMT 621 THE NEW ENTERPRISE
- MGMT 721 BUSINESS LAW

Elective Requirements

Select an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours 3

Total Credit Hours 60

Footnotes and Additional Information

1 The first year of the program is primarily dedicated to core courses in the basic functional areas of business.
2 The custom core courses are taken during the second semester of the first year.
3 To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. Students take two elective courses during the spring semester of the first year. The second year of the program is dedicated entirely to elective course work. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School Associate Registrar. Electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.
4 MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

Major Concentrations: MBA Degree, Full-Time Program

The Rice MBA program at the Jones Graduate School of Business offers major concentrations to students enrolled in the full-time MBA program. The goal of a major concentration is to provide students with the ability to demonstrate functional, professional, or industry expertise in a particular area of interest within a general management program. Major concentrations are revised annually and students are encouraged to contact the Jones Graduate School Associate Registrar for additional information.

Students have the option of selecting up to 2 functional or professional major concentrations. Completing a major concentration is not required to complete the requirements for the MBA degree; it is optional. Students must officially declare the major concentration through the Jones Graduate School of Business Associate Registrar.

Major concentrations typically consist of 9 to 12 credit hours of course work. If a student completes 2 concentrations, a maximum of 3 credit hours can be shared between the 2 concentrations. Similarly, a custom core course listed in the Core Requirements above can be counted toward the completion of a concentration only if the student has taken 3.0 credit hours of custom core which can be counted toward the custom core requirement. Specific concentration requirements for the academic year are available on Campus Groups. Students should know that the classes listed will likely not be offered each semester, and that the course offerings are subject to change. Students should see courses.rice.edu to review the course offerings each semester.

Major Concentration: Accounting

The major concentration in Accounting provides a broad understanding of the use and importance of accounting information to decision makers within the firm and to external users of financial statements. The core financial and management accounting courses provide a basic understanding of accounting principles. Completion of the concentration in accounting will serve to reinforce the fundamental concepts for the core, to provide additional insight into accounting processes and principles, and to enhance the ability to analyze and interpret accounting reports.

Major Concentration: Energy

The major concentration in Energy provides commercial acumen and leadership perspective to students with a technical background and develops their capability for taking additional responsibilities and higher-level management roles at companies in the energy sector. This is accomplished by engaging students in a curriculum that addresses three distinct, but inter-related, career paths which are widely regarded as conduits to leadership positions in energy industry midstream and upstream organizations: finance, operations, and product/customer focus.

Major Concentration: Entrepreneurship

The major concentration in Entrepreneurship provides students a framework for being an entrepreneur. The required courses equip students with the tools and processes for starting a business. The remaining courses allow students to select specific entrepreneurial topics suited to their objectives.
Major Concentration: Finance
The major concentration in Finance provides students with a broad foundation in financial management principles and an opportunity for further specialization. Students are required to complete the primary finance electives in the MBA program and Financial Statement Analysis. Students supplement these foundational courses with at least two specialized courses from a list of approved offerings.

Major Concentration: Health Care
The focus of the major concentration in Health Care is to provide students with an understanding of how management principles are interpreted and applied in the different interlocking sectors (providers, hospitals/small practices, payers, pharmaceutical, biotechnology) of the health care industry, and how the different dynamics in these sectors make it uniquely health care.

Major Concentration: Marketing
The major concentration in Marketing prepares students for careers in strategic marketing across a wide range of organizations, markets and industries. It provides critical knowledge for understanding and analyzing customers, and emphasizes the development of requisite quantitative and conceptual skills to contribute to the firm’s overall success. Among the career trajectories for which students will be prepared are product management, customer analytics and customer insights, and management consulting.

Major Concentration: Operations Management
The major concentration in Operations Management presents students with a framework for design, planning, control, coordination, and improvement of business processes, systems, and resources essential to meet consumers’ needs. Instead of the technical engineering view of operations, the focus is on managing the business well.

Major Concentration: Real Estate
The major concentration in Real Estate prepares students for a career in the real estate industry. The required course introduces a series of basic business concepts commonly used in the real estate industry, and it covers in detail the application of the discounted cash flow model to real estate decisions. The elective courses provide for both a depth and breadth of understanding of the industry.

Major Concentration: Strategic Management
The major concentration in Strategic Management prepares students for careers in strategic planning, management consulting, and global business management across a variety of industries such as health care, energy, high technologies, consumer products, and professional services. It provides knowledge and analytic tools for students to understand why some companies are financially much more successful than others and to analyze how executives (at different levels) can devise a set of strategies and design processes that allow companies to achieve competitive advantage.

Policies for the MBA Degree Programs

MBA Admission Requirements
Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

MBA/Master of Engineering Program
To enter this coordinated degree program, applicants apply separately and be accepted by both the Jones Graduate School of Business and the engineering department in which they wish to pursue graduate study. The program requires the Jones Graduate School of Business application, one letter of recommendation, if it is from the applicant’s direct supervisor, (otherwise two letters of recommendation), and the GMAT or GRE.

MBA/Professional Science Master’s Program
To enter this coordinated degree program, applicants must be accepted by both the Jones Graduate School of Business and one of the following Weiss School of Natural Sciences Professional Science Master’s (PSM) programs: Environmental Analysis and Decision Making, Nanoscale Science, Space Studies or, Subsurface Geoscience. The program requires the Jones Graduate School of Business application, two letters of recommendation and the GMAT or GRE.

MBA/Doctor of Medicine (MD) Program
To enter this coordinated degree program, applicants must first be accepted by Baylor College of Medicine and apply separately to the Jones Graduate School of Business. The MCAT is accepted rather than the GMAT or GRE, but the GMAT or GRE is required for scholarship consideration. Three years of medical school are recommended before starting MBA classes.

Academic and Professional Standards
Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards
A minimum cumulative grade point average of 3.00 (B) is required for graduation. All courses taken towards the MBA degree (including approved courses taken at the university but outside the Jones Graduate School of Business) are counted in the cumulative grade point average calculation.

Students with a cumulative grade point average lower than 3.00 at the end of any semester will be notified of standing. A student who has been notified may appeal to the Academic Standards Committee of the Jones Graduate School of Business requesting to be placed on academic probation. The committee will decide, based on the circumstances of the appeal, whether the student:

1. may resume studies on academic probation,
2. is to be academically suspended for one semester or an academic year, or
3. is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must apply to the Academic Standards Committee and receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only grades of C and above are counted for credit toward graduation. If students receive a grade below a C in a course required for graduation, they must repeat the course. If students receive a grade below a C in an elective course, they need not repeat the specific course, but they must
make up the credits. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional course work is completed.

Students may retake a failed course only once and then only if their cumulative grade point average is 3.00 or higher or if they have received the permission of the Sr. Associate Dean of Degree Programs to do so. Students who fail a course twice will be notified of dismissal. (Students may not take any course for which the failed course is a prerequisite until they pass the prerequisite course.)

Students on academic probation cannot be candidates for student offices and must complete all future courses with a grade of C or above. Students are removed from probation only upon achieving a cumulative grade point average of at least 3.00 must appeal to the Academic Standards Committee.

Students who have completed the required number of hours for the MBA degree, the coordinated MBA/Master of Engineering degrees, the coordinated MBA/Master of Science Professional Science Masters degrees, or the coordinated MBA/MD dual degree, but who have a cumulative grade point average lower than 3.00, are dismissed without graduation.

Jones Graduate School of Business students may not take courses pass/fail to count toward their degree requirements. Jones Graduate School of Business students may audit courses with professor approval. The audited courses do not count toward the MBA, but do appear on the transcript.

Professional Standards
MBA students are held to the high standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 81). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)

Guidelines for Appealing Academic Dismissal
The Process
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee. These questions should be answered in the appeal letter:

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing
If the student intends to appeal the letter to the committee must be filed within two weeks after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up in with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality
The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.
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MBA Elective Course Add/Drop Policy and Procedures
Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Associate Registrar administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.
MBA Course Registration Policy for non-Jones Graduate School of Business Rice University Students

Graduate students from outside the Jones Graduate School of Business may register for elective courses in the full-time MBA program and the MBA for Professionals program. To be eligible for a specific course, a student must be in good academic standing in their program, have permission from the student's department advisor, and have satisfied the specified course prerequisites. In order to register for the course, the student should verify eligibility with the Jones Graduate School of Business associate registrar and then request approval from the course instructor.

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Class Attendance Policy

Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the instructor.

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Financial Aid

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Opportunities for the MBA Degree Programs

Independent Study

Minimum Hours Requirement

Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

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Restrictions

No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study's academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

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Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee's approval before the term in which the project is to begin.

Common Requirements

The goal of independent study projects is to advance or deepen a student’s knowledge or competency in a business discipline or activity. To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure
relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

For additional information, please see the Jones School website: https://business.rice.edu/

Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Accounting

Program Learning Outcomes for the MBA Degree Programs
Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree Programs
The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66).

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER (https://esther.rice.edu). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

Waivers and Transfers of Credit
At its sole discretion, the school may allow students to transfer a maximum of 6 credit hours. Students must follow the prescribed curriculum of study and are not allowed to waive any core requirements.

Requirements for the Full-Time MBA Degree Program
Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements taken over a two-year period.
- A minimum overall GPA of 3.0 in required coursework with a minimum grade of C (2.0 grade points) in each course.
- A minimum of 6 credit hours from graduate transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.

Summary

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Degree Requirements

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<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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Major Concentration: Accounting

The major concentration in Accounting provides a broad understanding of the use and importance of accounting information to decision makers within the firm and to external users of financial statements. The core financial and management accounting courses provide a basic understanding of accounting principles. Completion of the concentration in accounting will serve to reinforce the fundamental concepts for understanding of accounting principles. Completion of the concentration core financial and management accounting courses provide a basic understanding within the firm and to external users of financial statements. The major concentration in Accounting provides a broad understanding of the use and importance of accounting information to decision makers within the firm and to external users of financial statements. The core financial and management accounting courses provide a basic understanding of accounting principles. Completion of the concentration in accounting will serve to reinforce the fundamental concepts for understanding of accounting principles. Completion of the concentration core financial and management accounting courses provide a basic understanding within the firm and to external users of financial statements.

Students pursuing the major concentration in Accounting must complete:

- A minimum of 9 credit hours as listed below to satisfy major concentration requirements*

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<tr>
<td>MGMT 503</td>
<td>MANAGEMENT CONTROL</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Credit Hours: 60

Footnotes and Additional Information

1. The first year of the program is primarily dedicated to core courses in the basic functional areas of business.
2. The custom core courses are taken during the second semester of the first year.
3. To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. Students take two elective courses during the spring semester of the first year. The second year of the program is dedicated entirely to elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School Associate Registrar. Electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.
4. MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade; however, these courses do not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

Policies for the MBA Degree Programs

MBA Admission Requirements

Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards

A minimum cumulative grade point average of 3.00 (B) is required for graduation. All courses taken towards the MBA degree (including approved courses taken at the university but outside the Jones Graduate School of Business) are counted in the cumulative grade point average calculation.

Students with a cumulative grade point average lower than 3.00 at the end of any semester will be notified of standing. A student who has been notified may appeal to the Academic Standards Committee of the Jones Graduate School of Business requesting to be placed on academic probation. The committee will decide, based on the circumstances of the appeal, whether the student:

1. may resume studies on academic probation,
2. is to be academically suspended for one semester or an academic year, or
3. is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must apply to the Academic Standards Committee and receive permission to
be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only grades of C and above are counted for credit toward graduation. If students receive a grade below a C in a course required for graduation, they must repeat the course. If students receive a grade below a C in an elective course, they need not repeat the specific course, but they must make up the credits. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional course work is completed.

Students may retake a failed course only once and then only if their cumulative grade point average is 3.00 or higher or if they have received the permission of the Sr. Associate Dean of Degree Programs to do so. Students who fail a course twice will be notified of dismissal. (Students may not take any course for which the failed course is a prerequisite until they pass the prerequisite course.)

Students on academic probation cannot be candidates for student offices and must complete all future courses with a grade of C or above. Students are removed from probation only upon achieving a cumulative grade point average of at least 3.00 must appeal to the Academic Standards Committee.

Students who have completed the required number of hours for the MBA degree, the coordinated MBA/Master of Engineering degrees, the coordinated MBA/Master of Science Professional Science Masters degrees, or the coordinated MBA/MD dual degree, but who have a cumulative grade point average lower than 3.00, are dismissed without graduation.

Jones Graduate School of Business students may not take courses pass/fail to count toward their degree requirements. Jones Graduate School of Business students may audit courses with professor approval. The Audited courses do not count toward the MBA, but do appear on the transcript.

Professional Standards
MBA students are held to the high standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 81). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)

Guidelines for Appealing Academic Dismissal
The Process
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee. These questions should be answered in the appeal letter:

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing
If the student intends to appeal the letter to the committee must be filed within two weeks after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up in with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality
The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grade question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.
8. The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.
MBA Elective Course Add/Drop Policy and Procedures
Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Associate Registrar administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

MBA Course Registration Policy for non-Jones Graduate School of Business Rice University Students
Graduate students from outside the Jones Graduate School of Business may register for elective courses in the full-time MBA program and the MBA for Professionals program. To be eligible for a specific course, a student must be in good academic standing in their program, have permission from the student’s department advisor, and have satisfied the specified course prerequisites. In order to register for the course, the student should verify eligibility with the Jones Graduate School of Business associate registrar and then request approval from the course instructor.

Non-Jones Graduate School of Business students may not register for elective courses in the MBA for Executives program or core (required) courses in any of the school's MBA programs.

Rice undergraduate students are not allowed to register for any MBA-level courses (MGMT, MGMP, or MGMW) offered at the Jones Graduate School of Business.

Class Attendance Policy
Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the instructor.

Withdrawal Policy
A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars).

Jones Graduate School of Business Student Handbook
Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, academic discipline, dismissal, procedures for resolution of problems, and appeal of academic regulations. A copy of the handbook is available on Campus Groups.

Financial Aid
Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

For additional information, please see the Business website: https://business.rice.edu/.

Opportunities for the MBA Degree Programs
Independent Study
Minimum Hours Requirement
Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study’s academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee’s approval before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a student’s knowledge or competency in a business discipline or activity.
To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

For additional information, please see the Business website: https://business.rice.edu/

Requirements for the MBA Degree Programs
The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66).

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Waivers and Transfers of Credit
At its sole discretion, the school may allow students to transfer a maximum of 6 credit hours. Students must follow the prescribed curriculum of study and are not allowed to waive any core requirements.

Requirements for the Full-Time MBA Degree Program
Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements taken over a two-year period.
- A minimum overall GPA of 3.0 in required coursework with a minimum grade of C (2.0 grade points) in each course.
- A maximum of 6 credit hours from graduate transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.

Summary

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<td>MGMT 710</td>
<td>LEADERSHIP ILE</td>
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</table>

Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Energy Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

For additional information, please see the Business website: https://business.rice.edu/
MGMT 711 NEGOTIATIONS ILE  

**Custom Core Courses:**

Select 2 from the following:

- MGMT 503 MANAGEMENT CONTROL
- MGMT 541 ECONOMIC ENVIRONMENT OF BUSINESS
- MGMT 561 BUSINESS-GOVERNMENT RELATIONS
- MGMT 599 ACTION LEARNING PROJECT
- MGMT 621 THE NEW ENTERPRISE
- MGMT 721 BUSINESS LAW

**Elective Requirements**

Select an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours

**Total Credit Hours**

60

**Footnotes and Additional Information**

1. The first year of the program is primarily dedicated to core courses in the basic functional areas of business.
2. The custom core courses are taken during the second semester of the first year.
3. To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. Students take two elective courses during the spring semester of the first year. The second year of the program is dedicated entirely to elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School Associate Registrar. Electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.
4. MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

**Major Concentration: Energy**

The major concentration in Energy provides commercial acumen and leadership perspective to students with a technical background and develops their capability for taking additional responsibilities and higher-level management roles at companies in the energy sector. This is accomplished by engaging students in a curriculum that addresses three distinct, but inter-related, career paths which are widely regarded as conduits to leadership positions in energy industry midstream and upstream organizations: finance, operations, and product/customer focus.

Students pursuing the major concentration in Energy must complete:

- A minimum of 9-10.5 credit hours as listed below to satisfy major concentration requirements*

---

**Code** | **Title** | **Credit Hours**
--- | --- | ---

**Block A - Foundational Courses**

| MGMT 610 | FUNDAMENTALS OF THE ENERGY INDUSTRY | 1.5 |
| MGMT 611 | GEOPOLITICS OF ENERGY | 1.5 |

**Block B - Environmental Courses**

| MGMT 541 | ECONOMIC ENVIRONMENT OF BUSINESS | 1.5 |
| or MGMT 561 | BUSINESS-GOVERNMENT RELATIONS |

**Block C - Application and Context Courses**

Select 3 from the following:

| MGMT 609 | MANAGING ENERGY TRANSITIONS |
| MGMT 616 | ENERGY MARKET ORGANIZATION |
| MGMT 656 | ENERGY DERIVATIVES |
| MGMT 708 | PRICING STRATEGIES: OIL & GAS INDUSTRY |
| MGMT 739 | CAPITAL FORMATION IN THE ENERGY INDUSTRY |
| MGMT 743 | MANAGING INNOVATION IN ENERGY TECHNOLOGIES |
| MGMT 745 | INTERNATIONAL ENERGY DEVELOPMENT |

**Total Credit Hours**

9-10.5

**Footnotes and Additional Information**

* The courses listed are approved to satisfy the requirements for the Energy concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

1. Students may complete Integrative Course Offerings as substitutes for the credit hours required in Blocks A, B, and/or C These courses include: MGMT 604, MICO 602, MICO 603, or MICO 605.

2. MGMT 541 or MGMT 561 can be applied if the course is not used to satisfy the Custom Core requirement.

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**Policies for the MBA Degree Programs**

**MBA Admission Requirements**

Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

**Academic and Professional Standards**

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

**Academic Standards**

A minimum cumulative grade point average of 3.00 (B) is required for graduation. All courses taken towards the MBA degree (including
approved courses taken at the university but outside the Jones Graduate School of Business) are counted in the cumulative grade point average calculation.

Students with a cumulative grade point average lower than 3.00 at the end of any semester will be notified of standing. A student who has been notified may appeal to the Academic Standards Committee of the Jones Graduate School of Business requesting to be placed on academic probation. The committee will decide, based on the circumstances of the appeal, whether the student:

1. may resume studies on academic probation,
2. is to be academically suspended for one semester or an academic year, or
3. is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must apply to the Academic Standards Committee and receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only grades of C and above are counted for credit toward graduation. If students receive a grade below a C in a course required for graduation, they must repeat the course. If students receive a grade below a C in an elective course, they need not repeat the specific course, but they must make up the credits. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional course work is completed.

Students may retake a failed course only once and then only if their cumulative grade point average is 3.00 or higher or if they have received the permission of the Sr. Associate Dean of Degree Programs to do so. Students who fail a course twice will be notified of dismissal. (Students may not take any course for which the failed course is a prerequisite until they pass the prerequisite course.)

Students on academic probation cannot be candidates for student offices and must complete all future courses with a grade of C or above. Students are removed from probation only upon achieving a cumulative grade point average of at least 3.00 must appeal to the Academic Standards Committee.

Students who have completed the required number of hours for the MBA degree, the coordinated MBA/Master of Engineering degrees, the coordinated MBA/Master of Science Professional Science Masters degrees, or the coordinated MBA/MD dual degree, but who have a cumulative grade point average lower than 3.00, are dismissed without graduation.

Jones Graduate School of Business students may not take courses pass/fail to count toward their degree requirements. Jones Graduate School of Business students may audit courses with professor approval. The Audited courses do not count toward the MBA, but do appear on the transcript.

Professional Standards

MBA students are held to the high standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 81). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)

Guidelines for Appealing Academic Dismissal

The Process

A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee. These questions should be answered in the appeal letter:

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing

If the student intends to appeal the letter to the committee must be filed within two weeks after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up in with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals

Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality

The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process

Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).

6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.

8. The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

MBA Elective Course Add/Drop Policy and Procedures
Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Associate Registrar administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

MBA Course Registration Policy for non-Jones Graduate School of Business Rice University Students
Graduate students from outside the Jones Graduate School of Business may register for elective courses in the full-time MBA program and the MBA for Professionals program. To be eligible for a specific course, a student must be in good academic standing in their program, have permission from the student’s department advisor, and have satisfied the specified course prerequisites. In order to register for the course, the student should verify eligibility with the Jones Graduate School of Business associate registrar and then request approval from the course instructor.

Non-Jones Graduate School of Business students may not register for elective courses in the MBA for Executives program or core (required) courses in any of the school’s MBA programs.

Rice undergraduate students are not allowed to register for any MBA-level courses (MGMT, MGMP, or MGMW) offered at the Jones Graduate School of Business.

Class Attendance Policy
Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the instructor.

Withdrawal Policy
A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars).

Jones Graduate School of Business Student Handbook
Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, academic discipline, dismissal, procedures for resolution of problems, and appeal of academic regulations. A copy of the handbook is available on Campus Groups.

Financial Aid
Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

For additional information, please see the Business website: https://business.rice.edu/.

Opportunities for the MBA Degree Programs
Independent Study
Minimum Hours Requirement
Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study’s academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.
Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee's approval before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a student’s knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects is at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student's final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

Program Learning Outcomes for the MBA Degree Programs
Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree Programs
The MBA degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 66).

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER (https://esther.rice.edu). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

Waivers and Transfers of Credit
At its sole discretion, the school may allow students to transfer a maximum of 6 credit hours. Students must follow the prescribed curriculum of study and are not allowed to waive any core requirements.

Requirements for the Full-Time MBA Degree Program
Students pursuing the full-time MBA degree program must complete:

• A minimum of 60 credit hours to satisfy degree requirements taken over a two-year period.
• A minimum overall GPA of 3.0 in required coursework with a minimum grade of C (2.0 grade points) in each course.
• A maximum of 6 credit hours from graduate transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.

Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Entrepreneurship
### Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 60</td>
<td>THE ENTREPRENEURIAL TOOLKIT</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 61</td>
<td>THE NEW ENTERPRISE</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 626</td>
<td>VENTURE CAPITAL</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 641</td>
<td>ENTREPRENEURIAL STRATEGY</td>
<td>1.5</td>
</tr>
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</table>

### Experiential Learning

Select a minimum of 1.5 credit hours from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 734</td>
<td>TECHNOLOGY ENTREPRENEURSHIP</td>
<td></td>
</tr>
<tr>
<td>MGMT 761</td>
<td>E-LAB: ENTERPRISE ACQUISITION ¹</td>
<td></td>
</tr>
<tr>
<td>MGMT 762</td>
<td>E-LAB: NEW ENTERPRISE</td>
<td></td>
</tr>
<tr>
<td>MGMT 763</td>
<td>E-LAB: TECHNOLOGY ¹</td>
<td></td>
</tr>
<tr>
<td>MGMT 764</td>
<td>ENTREPRENEURIAL LAB: ENERGY</td>
<td></td>
</tr>
<tr>
<td>MGMT 766</td>
<td>E-LAB: HEALTH CARE ¹</td>
<td></td>
</tr>
</tbody>
</table>

### Elective Requirements

Select 3 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 623</td>
<td>COMMERCIALIZATION IN PHARMA/BIOTECH</td>
<td>4.5</td>
</tr>
<tr>
<td>MGMT 627</td>
<td>ENTERPRISE ACQUISITION</td>
<td></td>
</tr>
<tr>
<td>MGMT 633</td>
<td>LIFE SCIENCE ENTREPRENEURSHIP &amp; ROLES OF FOUNDERS &amp; VENTURE CAPITAL IN HIGH-TECH STARTUPS</td>
<td></td>
</tr>
<tr>
<td>MGMT 637</td>
<td>DILEMMAS IN FOUNDING NEW VENTURES</td>
<td></td>
</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
<td></td>
</tr>
<tr>
<td>MGMT 724</td>
<td>SOCIAL ENTREPRENEURSHIP</td>
<td></td>
</tr>
<tr>
<td>MGMT 725</td>
<td>INTELLECTUAL PROPERTY STRATEGY FOR ENTREPRENEURS: LEGAL AND STRATEGIC ASPECTS</td>
<td></td>
</tr>
<tr>
<td>MGMT 730</td>
<td>LEGAL ASPECTS OF ENTREPRENEURSHIP</td>
<td></td>
</tr>
</tbody>
</table>

### Major Concentration: Entrepreneurship

The major concentration in Entrepreneurship provides students a framework for being an entrepreneur. The required courses equip students with the tools and processes for starting a business. The remaining courses allow students to select specific entrepreneurial topics suited to their objectives.

Students pursuing the major concentration in Entrepreneurship must complete:

- A minimum of 13.5 credit hours as listed below to satisfy major concentration requirements*

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 594</td>
<td>STRATEGIC BUSINESS COMMUNICATION ⁴</td>
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</tr>
<tr>
<td>MGMT 595</td>
<td>DATA ANALYSIS I</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 596</td>
<td>STRATEGIC BUSINESS COMMUNICATIONS II ⁴</td>
<td>0.75</td>
</tr>
<tr>
<td>MGMT 597</td>
<td>DATA ANALYSIS II</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 710</td>
<td>LEADERSHIP ILE ⁴</td>
<td>0.75</td>
</tr>
<tr>
<td>MGMT 711</td>
<td>NEGOTIATIONS ILE ⁴</td>
<td>0.75</td>
</tr>
</tbody>
</table>

### Footnotes and Additional Information

1. The first year of the program is primarily dedicated to core courses in the basic functional areas of business.
2. The custom core courses are taken during the second semester of the first year.
3. To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours.
4. MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

### Footnotes and Additional Information

The courses listed are approved to satisfy the requirements for the Entrepreneurship concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

¹. MGMT 761, MGMT 762, MGMT 763, and MGMT 766 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.
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Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

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A minimum cumulative grade point average of 3.00 (B) is required for graduation. All courses taken towards the MBA degree (including approved courses taken at the university but outside the Jones Graduate School of Business) are counted in the cumulative grade point average calculation.

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7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.
8. The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

MBA Elective Course Add/Drop Policy and Procedures

Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Associate Registrar administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

MBA Course Registration Policy for non-Jones Graduate School of Business Rice University Students

Graduate students from outside the Jones Graduate School of Business may register for elective courses in the full-time MBA program and the MBA for Professionals program. To be eligible for a specific course, a student must be in good academic standing in their program, have permission from the student’s department advisor, and have satisfied the specified course prerequisites. In order to register for the course, the student should verify eligibility with the Jones Graduate School of Business associate registrar and then request approval from the course instructor.

Non-Jones Graduate School of Business students may not register for elective courses in the MBA for Executives program or core (required) courses in any of the school’s MBA programs.
The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study’s academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee’s approval before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a student’s knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

For additional information, please see the Business website: [https://business.rice.edu/](https://business.rice.edu/)

Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Finance

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree Programs

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66).

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER ([https://esther.rice.edu/](https://esther.rice.edu/)). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

Waivers and Transfers of Credit

At its sole discretion, the school may allow students to transfer a maximum of 6 credit hours. Students must follow the prescribed curriculum of study and are not allowed to waive any core requirements.

Requirements for the Full-Time MBA Degree Program

Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements taken over a two-year period.
- A minimum overall GPA of 3.0 in required coursework with a minimum grade of C (2.0 grade points) in each course.
• A maximum of 6 credit hours from graduate transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Full-Time MBA Degree Program</td>
<td>60</td>
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Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MGMT 501</td>
<td>FINANCIAL ACCOUNTING</td>
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<td>MGMT 502</td>
<td>MANAGERIAL ACCOUNTING</td>
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<tr>
<td>MGMT 510</td>
<td>ORGANIZATIONAL BEHAVIOR</td>
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<tr>
<td>MGMT 512</td>
<td>LEADING CHANGE</td>
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</tr>
<tr>
<td>MGMT 540</td>
<td>MANAGERIAL ECONOMICS</td>
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</tr>
<tr>
<td>MGMT 543</td>
<td>FINANCE</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 560</td>
<td>CORPORATE RESPONSIBILITY</td>
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</tr>
<tr>
<td>MGMT 570</td>
<td>COMPETITIVE AND INDUSTRY ANALYSIS</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 571</td>
<td>STRATEGY FORMULATION AND IMPLEMENTATION</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 574</td>
<td>OPERATIONS MANAGEMENT</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 580</td>
<td>MARKETING</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 594</td>
<td>STRATEGIC BUSINESS COMMUNICATION</td>
<td>4</td>
</tr>
<tr>
<td>MGMT 595</td>
<td>DATA ANALYSIS I</td>
<td>0.75</td>
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<tr>
<td>MGMT 596</td>
<td>STRATEGIC BUSINESS COMMUNICATION II</td>
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<tr>
<td>MGMT 597</td>
<td>DATA ANALYSIS II</td>
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<tr>
<td>MGMT 710</td>
<td>LEADERSHIP ILE</td>
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</tr>
<tr>
<td>MGMT 711</td>
<td>NEGOTIATIONS ILE</td>
<td>0.75</td>
</tr>
</tbody>
</table>

Custom Core Courses:

Select 2 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 503</td>
<td>MANAGEMENT CONTROL</td>
<td>3-6</td>
</tr>
<tr>
<td>MGMT 541</td>
<td>ECONOMIC ENVIRONMENT OF BUSINESS</td>
<td></td>
</tr>
<tr>
<td>MGMT 561</td>
<td>BUSINESS-GOVERNMENT RELATIONS</td>
<td></td>
</tr>
<tr>
<td>MGMT 599</td>
<td>ACTION LEARNING PROJECT</td>
<td></td>
</tr>
<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
<td></td>
</tr>
<tr>
<td>MGMT 721</td>
<td>BUSINESS LAW</td>
<td></td>
</tr>
</tbody>
</table>

Elective Requirements

Select an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. Students take two elective courses during the spring semester of the first year. The second year of the program is dedicated entirely to elective course work. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School Associate Registrar. Electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

Major Concentration: Finance

The major concentration in Finance provides students with a broad foundation in financial management principles and an opportunity for further specialization. Students are required to complete the primary finance electives in the MBA program and Financial Statement Analysis. Students supplement these foundational courses with at least two specialized courses from a list of approved offerings.

Students pursuing the major concentration in Finance must complete:

- A minimum of 12-14 credit hours as listed below to satisfy major concentration requirements*

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 601</td>
<td>FINANCIAL STATEMENT ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 642</td>
<td>FUTURES AND OPTIONS I</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 645</td>
<td>PORTFOLIO MANAGEMENT</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 646</td>
<td>CORPORATE INVESTMENT POLICY</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Elective Requirements

Select 2 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 638</td>
<td>QUANTITATIVE INVESTMENT STRATEGIES</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 643</td>
<td>EQUITY PRACTICUM I - WRIGHT FUND</td>
<td>1</td>
</tr>
<tr>
<td>MGMT 644</td>
<td>EQUITY PRACTICUM II - WRIGHT FUND</td>
<td>1</td>
</tr>
<tr>
<td>MGMT 647</td>
<td>CORPORATE FINANCIAL POLICY</td>
<td></td>
</tr>
<tr>
<td>MGMT 650</td>
<td>FUTURES AND OPTIONS II</td>
<td></td>
</tr>
<tr>
<td>MGMT 651</td>
<td>FIXED INCOME MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>MGMT 652</td>
<td>Mergers and acquisitions</td>
<td></td>
</tr>
<tr>
<td>MGMT 655</td>
<td>ENERGY DERIVATIVES</td>
<td></td>
</tr>
<tr>
<td>MGMT 658</td>
<td>APPLIED RISK MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>MGMT 659</td>
<td>REAL ESTATE FINANCE: ASSET VALUATION</td>
<td></td>
</tr>
<tr>
<td>MGMT 674</td>
<td>REAL ESTATE FINANCE: SECURITIES</td>
<td></td>
</tr>
<tr>
<td>MGMT 726</td>
<td>FIXED INCOME PRACTICUM I - RICE FI FUND</td>
<td>1</td>
</tr>
<tr>
<td>MGMT 727</td>
<td>FIXED INCOME PRACTICUM II - RICE FI FUND</td>
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</tr>
<tr>
<td>MGMT 739</td>
<td>CAPITAL FORMATION IN THE ENERGY INDUSTRY</td>
<td></td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 The first year of the program is primarily dedicated to core courses in the basic functional areas of business.

2 The custom core courses are taken during the second semester of the first year.

3 To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings.
Footnotes and Additional Information

* The courses listed are approved to satisfy the requirements for the Finance concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

1. Only 3 credit hours from an investment practicum course will count as elective hours toward the major concentration in finance. These 3 credit hours may come from either (a) three of the four credit hours from the Wright Fund curriculum (MGMT 643 plus one credit hour from MGMT 644) or (b) the two 1.5 credit hour courses in the Zions Portfolio curriculum (MGMT 726 and MGMT 727).

Policies for the MBA Degree Programs

MBA Admission Requirements

Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards

A minimum cumulative grade point average of 3.00 (B) is required for graduation. All courses taken towards the MBA degree (including approved courses taken at the university but outside the Jones Graduate School of Business) are counted in the cumulative grade point average calculation.

Students with a cumulative grade point average lower than 3.00 at the end of any semester will be notified of standing. A student who has been notified may appeal to the Academic Standards Committee of the Jones Graduate School of Business.) in the cumulative grade point average of at least 3.00 must appeal to the Academic Standards Committee.

Students who have completed the required number of hours for the MBA degree, the coordinated MBA/Master of Engineering degrees, the coordinated MBA/Master of Science Professional Science Masters degrees, or the coordinated MBA/MD dual degree, but who have a cumulative grade point average lower than 3.00, are dismissed without graduation.

Students on academic probation are held to the high standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 81). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)

Guidelines for Appealing Academic Dismissal

The Process

A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee. These questions should be answered in the appeal letter:

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

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2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?
Students may include any additional information they deem relevant in the appeal letter.

**Timing**

If the student intends to appeal the letter to the committee must be filed within two weeks after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up in with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

**Appeals**

Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

**Confidentiality**

The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

**Grade Appeal Process**

Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.
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**MBA Elective Course Add/Drop Policy and Procedures**

Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Associate Registrar administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

**MBA Course Registration Policy for non-Jones Graduate School of Business Rice University Students**

Graduate students from outside the Jones Graduate School of Business may register for elective courses in the full-time MBA program and the MBA for Professionals program. To be eligible for a specific course, a student must be in good academic standing in their program, have permission from the student’s department advisor, and have satisfied the specified course prerequisites. In order to register for the course, the student should verify eligibility with the Jones Graduate School of Business associate registrar and then request approval from the course instructor.

Non-Jones Graduate School of Business students may not register for elective courses in the MBA for Executives program or core (required) courses in any of the school’s MBA programs.

Rice undergraduate students are not allowed to register for any MBA-level courses (MGMT, MGMP, or MGMW) offered at the Jones Graduate School of Business.

**Class Attendance Policy**

Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the instructor.

**Withdrawal Policy**

A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars).

**Jones Graduate School of Business Student Handbook**

Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, academic discipline, dismissal, procedures for resolution of problems, and appeal of academic regulations. A copy of the handbook is available on Campus Groups.

**Financial Aid**

Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student
loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

For additional information, please see the Business website: https://business.rice.edu/

Opportunities for the MBA Degree Programs

Independent Study

Minimum Hours Requirement
Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study’s academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

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The goal of independent study projects is to advance or deepen a student’s knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

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4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

For additional information, please see the Business website: https://business.rice.edu/

Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Health Care

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.
Requirements for the MBA Degree Programs

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66).

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER (https://esther.rice.edu). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

Waivers and Transfers of Credit

At its sole discretion, the school may allow students to transfer a maximum of 6 credit hours. Students must follow the prescribed curriculum of study and are not allowed to waive any core requirements.

Requirements for the Full-Time MBA Degree Program

Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements taken over a two-year period.
- A minimum overall GPA of 3.0 in required coursework with a minimum grade of C (2.0 grade points) in each course.
- A maximum of 6 credit hours from graduate transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.

Summary

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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Degree Requirements

Core Requirements

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<tr>
<td>MGMT 510</td>
<td>ORGANIZATIONAL BEHAVIOR</td>
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</tr>
<tr>
<td>MGMT 512</td>
<td>LEADING CHANGE</td>
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<td>MGMT 560</td>
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<td>MGMT 570</td>
<td>COMPETITIVE AND INDUSTRY ANALYSIS</td>
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<tr>
<td>MGMT 571</td>
<td>STRATEGY FORMULATION AND IMPLEMENTATION</td>
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</tr>
<tr>
<td>MGMT 574</td>
<td>OPERATIONS MANAGEMENT</td>
<td>1.5</td>
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<tr>
<td>MGMT 580</td>
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<td>MGMT 595</td>
<td>DATA ANALYSIS I</td>
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<td>MGMT 596</td>
<td>STRATEGIC BUSINESS COMMUNICATIONS II</td>
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<tr>
<td>MGMT 597</td>
<td>DATA ANALYSIS II</td>
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<td>MGMT 710</td>
<td>LEADERSHIP ILE</td>
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Elective Requirements

Select 2 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>MGMT 503</td>
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<td>MGMT 541</td>
<td>ECONOMIC ENVIRONMENT OF BUSINESS</td>
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<td>MGMT 561</td>
<td>BUSINESS-GOVERNMENT RELATIONS</td>
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<tr>
<td>MGMT 599</td>
<td>ACTION LEARNING PROJECT</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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<tr>
<td>MGMT 721</td>
<td>BUSINESS LAW</td>
<td>3</td>
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</tbody>
</table>

Total Credit Hours 60

Footnotes and Additional Information

1. The first year of the program is primarily dedicated to core courses in the basic functional areas of business.
2. The custom core courses are taken during the second semester of the first year.
3. To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours.
4. MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

Major Concentration: Health Care

The focus of the major concentration in Health Care is to provide students with an understanding of how management principles are interpreted and applied in the different inter-locking sectors (providers, hospitals/small practices, payers, pharmaceutical, biotechnology) of the health care industry, and how the different dynamics in these sectors make it uniquely health care.

Students pursuing the major concentration in Health Care must complete:

- A minimum of 8 courses (12 credit hours) as listed below to satisfy the major concentration requirements*

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MGMT 678</td>
<td>U.S. HEALTH CARE MANAGEMENT</td>
<td>1.5</td>
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## Footnotes

1. The first year of the program is primarily dedicated to core courses in the basic functional areas of business.
2. The custom core courses are taken during the second semester of the first year.
3. To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours.
4. MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

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<td>NEGOTIATIONS ILE</td>
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<td>MGMT 599</td>
<td>ACTION LEARNING PROJECT</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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<td>MGMT 721</td>
<td>BUSINESS LAW</td>
<td>3</td>
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Select a minimum of 5 from the following:  

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<td>COMMERCIALIZATION IN PHARMA/BIOTECH</td>
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<td>MGMT 631</td>
<td>HEALTH INSURANCE IN THE U.S.: THE ESSENTIALS</td>
</tr>
<tr>
<td>MGMT 633</td>
<td>LIFE SCIENCE ENTREPRENEURSHIP &amp; ROLES OF FOUNDERS &amp; VENTURE CAPITAL IN HIGH-TECH STARTUPS</td>
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<td>MGMT 690</td>
<td>HEALTHCARE STRATEGY</td>
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<td>BREAKTHROUGH NEGOTIATIONS IN A HEALTH CARE CONTEXT</td>
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<td>MGMT 694</td>
<td>INTERPERSONAL COMMUNICATION IN HEALTHCARE</td>
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<td>MGMT 699</td>
<td>STRATEGIC CONSIDERATIONS IN CAPITAL INVESTMENT: HEALTH CARE AND BEYOND</td>
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<td>CUSTOMER FOCUS IN HEALTH CARE AND SERVICE INDUSTRIES: A STRATEGIC APPROACH</td>
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<td>MGMT 750</td>
<td>STRATEGIC CONSIDERATIONS IN HEALTH INFORMATICS</td>
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<td>PROCESS MANAGEMENT AND QUALITY IMPROVEMENT</td>
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<td>or MGMT 746 SERVICES OPERATIONS</td>
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<td>OPERATIONS LAB: HEALTH CARE ¹</td>
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<td>or MGMT 76 E-LAB: HEALTH CARE</td>
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Total Credit Hours 12

Footnotes and Additional Information

¹ MGMT 776 is taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade; however, this course does not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

Policies for the MBA Degree Programs

MBA Admission Requirements

Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn their undergraduate degree from an institution where the primary language of instruction was English, must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards

A minimum cumulative grade point average of 3.00 (B) is required for graduation. All courses taken towards the MBA degree (including approved courses taken at the university but outside the Jones Graduate School of Business) are counted in the cumulative grade point average calculation.

Students with a cumulative grade point average lower than 3.00 at the end of any semester will be notified of standing. A student who has been notified may appeal to the Academic Standards Committee of the Jones Graduate School of Business requesting to be placed on academic probation. The committee will decide, based on the circumstances of the appeal, whether the student:

1. may resume studies on academic probation,
2. is to be academically suspended for one semester or an academic year, or
3. is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must apply to the Academic Standards Committee and receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only grades of C and above are counted for credit toward graduation. If students receive a grade below a C in a course required for graduation, they must repeat the course. If students receive a grade below a C in an elective course, they need not repeat the specific course, but they must make up the credits. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional course work is completed.

Students may retake a failed course only once and then only if their cumulative grade point average is 3.00 or higher or if they have received the permission of the Sr. Associate Dean of Degree Programs to do so. Students who fail a course twice will be notified of dismissal. (Students may not take any course for which the failed course is a prerequisite until they pass the prerequisite course.)

Students on academic probation cannot be candidates for student offices and must complete all future courses with a grade of C or above. Students are removed from probation only upon achieving a cumulative grade point average of at least 3.00 must appeal to the Academic Standards Committee.

Students who have completed the required number of hours for the MBA degree, the coordinated MBA/Master of Engineering degrees, the coordinated MBA/Master of Science Professional Science Masters degrees, or the coordinated MBA/MD dual degree, but who have a cumulative grade point average lower than 3.00, are dismissed without graduation.

Jones Graduate School of Business students may not take courses pass/fail to count toward their degree requirements. Jones Graduate School of Business students may audit courses with professor approval. The Audited courses do not count toward the MBA, but do appear on the transcript.
Professional Standards

MBA students are held to the high standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 81). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)

Guidelines for Appealing Academic Dismissal

The Process

A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee. These questions should be answered in the appeal letter:

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing

If the student intends to appeal the letter to the committee must be filed within two weeks after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals

Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality

The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process

Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.
8. The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

MBA Elective Course Add/Drop Policy and Procedures

Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Associate Registrar administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

MBA Course Registration Policy for non-Jones Graduate School of Business Rice University Students

Graduate students from outside the Jones Graduate School of Business may register for elective courses in the full-time MBA program and the MBA for Professionals program. To be eligible for a specific course, a student must be in good academic standing in their program, have permission from the student’s department advisor, and have satisfied the specified course prerequisites. In order to register for the course, the student should verify eligibility with the Jones Graduate School of Business associate registrar and then request approval from the course instructor.

Non-Jones Graduate School of Business students may not register for elective courses in the MBA for Executives program or core (required) courses in any of the school’s MBA programs.

Rice undergraduate students are not allowed to register for any MBA-level courses (MGMT, MGMP, or MGMW) offered at the Jones Graduate School of Business.

Class Attendance Policy

Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the instructor.
Withdrawal Policy
A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university's Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars).

Jones Graduate School of Business Student Handbook
Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, academic discipline, dismissal, procedures for resolution of problems, and appeal of academic regulations. A copy of the handbook is available on Campus Groups.

Financial Aid
Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

For additional information, please see the Business website: https://business.rice.edu/

Opportunities for the MBA Degree Programs
Independent Study
Minimum Hours Requirement
Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study's academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee's approval before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a student's knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into two broad categories:
1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the "deliverable."

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:
1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student's final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.
For additional information, please see the Business website: https://business.rice.edu/

Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Marketing

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree Programs

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66).

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER (https://esther.rice.edu). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

Waivers and Transfers of Credit

At its sole discretion, the school may allow students to transfer a maximum of 6 credit hours. Students must follow the prescribed curriculum of study and are not allowed to waive any core requirements.

Requirements for the Full-Time MBA Degree Program

Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements taken over a two-year period.
- A minimum overall GPA of 3.0 in required coursework with a minimum grade of C (2.0 grade points) in each course.
- A maximum of 6 credit hours from graduate transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.

Summary

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<tr>
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Degree Requirements

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</table>
| Core Requirements 1
| MGMT 501 | FINANCIAL ACCOUNTING                          | 3            |
| MGMT 502 | MANAGERIAL ACCOUNTING                        | 1.5          |
| MGMT 510 | ORGANIZATIONAL BEHAVIOR                      | 1.5          |
| MGMT 512 | LEADING CHANGE                               | 0.75         |
| MGMT 540 | MANAGERIAL ECONOMICS                         | 1.5          |
| MGMT 543 | FINANCE                                      | 3            |
| MGMT 560 | CORPORATE RESPONSIBILITY                     | 0.75         |
| MGMT 570 | COMPETITIVE AND INDUSTRY ANALYSIS            | 1.5          |
| MGMT 571 | STRATEGY FORMULATION AND IMPLEMENTATION      | 1.5          |
| MGMT 574 | OPERATIONS MANAGEMENT                        | 1.5          |
| MGMT 580 | MARKETING                                    | 3            |
| MGMT 594 | STRATEGIC BUSINESS COMMUNICATION 4           | 0.75         |
| MGMT 595 | DATA ANALYSIS I                             | 1.5          |
| MGMT 596 | STRATEGIC BUSINESS COMMUNICATION II          | 0.75         |
| MGMT 597 | DATA ANALYSIS II                            | 1.5          |
| MGMT 710 | LEADERSHIP ILE 4                            | 0.75         |
| MGMT 711 | NEGOTIATIONS ILE 4                          | 0.75         |

Custom Core Courses: 2

Select 2 from the following:

- MGMT 503 | MANAGEMENT CONTROL 3-6
- MGMT 541 | ECONOMIC ENVIRONMENT OF BUSINESS
- MGMT 561 | BUSINESS-GOVERNMENT RELATIONS
- MGMT 599 | ACTION LEARNING PROJECT
- MGMT 621 | THE NEW ENTERPRISE
- MGMT 721 | BUSINESS LAW

Elective Requirements

Select an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours.

Total Credit Hours 60

Footnotes and Additional Information

1 The first year of the program is primarily dedicated to core courses in the basic functional areas of business.
2 The custom core courses are taken during the second semester of the first year.
3 To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. Students take two elective courses during the spring semester of the first year. The second year of the program is dedicated entirely to elective course work. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School Associate Registrar. Electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

2017-2018 General Announcements
The major concentration in Marketing prepares students for careers in strategic marketing across a wide range of organizations, markets and industries. It provides critical knowledge for understanding and analyzing customers, and emphasizes the development of requisite quantitative and conceptual skills to contribute to the firm’s overall success. Among the career trajectories for which students will be prepared are product management, customer analytics and customer insights, and management consulting.

Students pursuing the major concentration in Marketing must complete:

- A minimum of 8 courses (12 credit hours) as listed below to satisfy the major concentration requirements*

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic Marketing Foundations</strong></td>
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<tr>
<td>Quantitative Foundations:</td>
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<td>Select a minimum of 2 from the following:</td>
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<tr>
<td>MGMT 680</td>
<td>CUSTOMER ANALYTICS FOR SATISFACTION AND LOYALTY</td>
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<td>MGMT 686</td>
<td>MARKETING RESEARCH</td>
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<tr>
<td>MGMT 689 / MGP 689</td>
<td>DECISION MODELS</td>
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<td>MGMT 707</td>
<td>MARKETING ANALYTICS FOR MANAGERS AND CONSULTANTS</td>
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<td>Conceptual Foundations:</td>
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<tr>
<td>MGMT 682</td>
<td>PRICING STRATEGIES</td>
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<td>MGMT 684</td>
<td>BRAND STRATEGY</td>
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<td>MGMT 685</td>
<td>GO-TO-MARKET STRATEGY</td>
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<td>MGMT 688</td>
<td>BUYER BEHAVIOR</td>
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<td>MGMT 692</td>
<td>CUSTOMER RELATIONSHIP MANAGEMENT</td>
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<td>MGMT 693</td>
<td>NEW PRODUCTS</td>
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<td>MGMT 744</td>
<td>SERVICES OPERATIONS</td>
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<td><strong>Marketing Applications</strong></td>
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<td>MGMT 687</td>
<td>APPLIED MARKETING STRATEGY</td>
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<td>MGMT 708</td>
<td>PRICING STRATEGIES: OIL &amp; GAS INDUSTRY</td>
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<tr>
<td>MGMT 770</td>
<td>CONSULTATIVE SELLING</td>
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<td><strong>Elective Requirements</strong></td>
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<td>Select 3 additional courses from the courses listed in any of the categories above.</td>
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<td><strong>Total Credit Hours</strong></td>
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<td>12</td>
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</tbody>
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**Footnotes and Additional Information**

* The courses listed are approved to satisfy the requirements for the Marketing concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

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**Policies for the MBA Degree Programs**

**MBA Admission Requirements**

Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

**Academic and Professional Standards**

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

**Academic Standards**

A minimum cumulative grade point average of 3.00 (B) is required for graduation. All courses taken towards the MBA degree (including approved courses taken at the university but outside the Jones Graduate School of Business) are counted in the cumulative grade point average calculation.

Students with a cumulative grade point average lower than 3.00 at the end of any semester will be notified of standing. A student who has been notified may appeal to the Academic Standards Committee of the Jones Graduate School of Business requesting to be placed on academic probation. The committee will decide, based on the circumstances of the appeal, whether the student:

1. may resume studies on academic probation,
2. is to be academically suspended for one semester or an academic year, or
3. is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must apply to the Academic Standards Committee and receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only grades of C and above are counted for credit toward graduation. If students receive a grade below a C in a course required for graduation, they must repeat the course. If students receive a grade below a C in an elective course, they need not repeat the specific course, but they must make up the credits. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional course work is completed.

Students may retake a failed course only once and then only if their cumulative grade point average is 3.00 or higher or if they have received...
the permission of the Sr. Associate Dean of Degree Programs to do so. Students who fail a course twice will be notified of dismissal. (Students may not take any course for which the failed course is a prerequisite until they pass the prerequisite course.)

Students on academic probation cannot be candidates for student offices and must complete all future courses with a grade of C or above. Students are removed from probation only upon achieving a cumulative grade point average of at least 3.00 must appeal to the Academic Standards Committee.

Students who have completed the required number of hours for the MBA degree, the coordinated MBA/Master of Engineering degrees, the coordinated MBA/Master of Science Professional Science Masters degrees, or the coordinated MBA/MD dual degree, but who have a cumulative grade point average lower than 3.00, are dismissed without graduation.

Jones Graduate School of Business students may not take courses pass/fail to count toward their degree requirements. Jones Graduate School of Business students may audit courses with professor approval. The Audited courses do not count toward the MBA, but do appear on the transcript.

Professional Standards
MBA students are held to the high standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 81). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)

Guidelines for Appealing Academic Dismissal
The Process
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee. These questions should be answered in the appeal letter:

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing
If the student intends to appeal the letter to the committee must be filed within two weeks after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up in with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality
The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.
8. The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

MBA Elective Course Add/Drop Policy and Procedures
Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Associate Registrar administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

MBA Course Registration Policy for non-Jones Graduate School of Business Rice University Students
Graduate students from outside the Jones Graduate School of Business may register for elective courses in the full-time MBA program and the MBA for Professionals program. To be eligible for a specific course, a student must be in good academic standing in their program, have
permission from the student’s department advisor, and have satisfied
the specified course prerequisites. In order to register for the course,
the student should verify eligibility with the Jones Graduate School of
Business associate registrar and then request approval from the course
instructor.

Non-Jones Graduate School of Business students may not register for
elective courses in the MBA for Executives program or core (required)
courses in any of the school’s MBA programs.

Rice undergraduate students are not allowed to register for any MBA-level
courses (MGMT, MGMP, or MGMW) offered at the Jones Graduate School
of Business.

Class Attendance Policy
Students are expected to be in class on the first day of each term. The
instructor reserves the right to exclude a student from their course who is
absent on the first day. Students should refer to the specific attendance
policy for each program. This information can be found in the Jones
Graduate School of Business Student Handbook, which is referenced
below. For special circumstances, students should see the instructor.

Withdrawal Policy
A Jones Graduate School of Business student, participating in any
offered program, may voluntarily withdraw from school at any time. Upon
withdrawal, Rice University applies a sliding scale to tuition, which is
noted in the university’s Academic Calendar posted on the Rice Office of
the Registrar website (https://registrar.rice.edu/calendars).

Jones Graduate School of Business Student Handbook
Generally, the Jones Graduate School of Business adheres to the
academic regulations of Rice University. However, the Jones Graduate
School of Business MBA program has unique policies and procedures
that vary from the Office of Graduate and Postdoctoral Studies regarding,
but not limited to, leave of absence, withdrawals and readmission,
add/drop, academic discipline, dismissal, procedures for resolution of
problems, and appeal of academic regulations. A copy of the handbook is
available on Campus Groups.

Financial Aid
Jones Graduate School of Business scholarships are awarded at the
point of admission and are based on the merit of the application.
Financial assistance is generally awarded one academic year at a time.
Continuation of assistance depends on Satisfactory Academic Progress
(SAP) in accordance with Academic and Professional Standards of
performance, professional behavior, and is subject to the availability
of funds. Academic or disciplinary probation, suspension, or general
failure to maintain academic pace will result in the removal of all forms
of financial assistance (i.e. scholarship, employment, Federal/State student
loans, etc.). Students have the right to appeal the suspension. All appeals
will be reviewed by a committee.

For additional information, please see the Business website: https://
business.rice.edu/

Opportunities for the MBA Degree
Programs
Independent Study
Minimum Hours Requirement
Each credit of independent study should contain approximately as
much time content as a one-credit course at Jones Graduate School of
Business, which is 12 hours of class time, plus an average of at least
24–36 outside-class hours, for a minimum total of 36–48 hours of work.
Independent study projects can be accommodated in increments of 1.0,
1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are
rarely approved. Occasionally, a group independent study project may
arise, though most independent studies are undertaken by individual
students.

The number of credits for an independent study must be determined at
the beginning of a project. Increases to the number of project credit hours
after the project overview has been filed with the Jones Graduate School
of Business associate registrar must be approved by the Academic
Standards Committee. The committee will rely on input from sponsoring
faculty in making its decision about ex post credit increases. Requests to
increase the number of project credit hours must be made before the end
of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study
during the course of the MBA program without the approval of the
Academic Standards Committee. If an independent study is proposed
that would cause a student to exceed the 3.0 credit limit, the Academic
Standards Committee will select two faculty members, other than the
faculty member who will supervise the project, within the area most
closely related to the study’s academic content to review and approve
the study. Independent study exceeding 3.0 credits in total should
consider current policies restricting use of independent study as well
as the incremental value of additional independent study in light of past
independent studies. If the study does not align with any of the Jones
Graduate School of Business academic groups, the Academic Standards
Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students
may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time
Jones Graduate School of Business faculty; faculty typically sponsor
projects only in their area of expertise. Students wanting sponsorship
by a part-time faculty member must submit a project overview to the
Academic Standards Committee and obtain the committee’s approval
before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a
student’s knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into
two broad categories:
1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as
an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects are at the
discretion of a student and the sponsoring faculty member, to ensure
relatively equal workloads per unit of independent study credit and some
common requirements across independent study projects, students and/
or sponsoring faculty should:
1. Prepare and submit to the Jones Graduate School of Business
associate registrar an overview of the independent study project
with number of project credits, anticipated final results, and a broad
timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experimental projects).
4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

For additional information, please see the Business website: https://business.rice.edu/

Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Operations Management

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree Programs

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66).

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER (https://esther.rice.edu). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

Waivers and Transfers of Credit
At its sole discretion, the school may allow students to transfer a maximum of 6 credit hours. Students must follow the prescribed curriculum of study and are not allowed to waive any core requirements.

Requirements for the Full-Time MBA Degree Program

Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements taken over a two-year period.
- A minimum overall GPA of 3.0 in required coursework with a minimum grade of C (2.0 grade points) in each course.
- A maximum of 6 credit hours from graduate transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MGMT 501</td>
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<td>MGMT 502</td>
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<td>ORGANIZATIONAL BEHAVIOR</td>
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<td>MGMT 512</td>
<td>LEADING CHANGE</td>
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<td>MANAGERIAL ECONOMICS</td>
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<td>MGMT 543</td>
<td>FINANCE</td>
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<td>COMPETITIVE AND INDUSTRY ANALYSIS</td>
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<tr>
<td>MGMT 571</td>
<td>STRATEGY FORMULATION AND IMPLEMENTATION</td>
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<tr>
<td>MGMT 574</td>
<td>OPERATIONS MANAGEMENT</td>
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<td>MGMT 580</td>
<td>MARKETING</td>
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<td>MGMT 594</td>
<td>STRATEGIC BUSINESS COMMUNICATION</td>
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<td>STRATEGIC BUSINESS COMMUNICATION II</td>
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<td>LEADERSHIP ILE</td>
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<tr>
<td>MGMT 711</td>
<td>NEGOTIATIONS ILE</td>
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Custom Core Courses:

Select 2 from the following:

- MGMT 503 MANAGEMENT CONTROL
- MGMT 541 ECONOMIC ENVIRONMENT OF BUSINESS
- MGMT 561 BUSINESS-GOVERNMENT RELATIONS
- MGMT 599 ACTION LEARNING PROJECT
- MGMT 621 THE NEW ENTERPRISE
- MGMT 721 BUSINESS LAW

Elective Requirements

Select an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours.

Total Credit Hours 60
Footnotes and Additional Information
1 The first year of the program is primarily dedicated to core courses in the basic functional areas of business.
2 The custom core courses are taken during the second semester of the first year.
3 To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. Students take two elective courses during the spring semester of the first year. The second year of the program is dedicated entirely to elective course work. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School Associate Registrar. Electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.
4 MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

Major Concentration: Operations Management
The major concentration in Operations Management presents students with a framework for design, planning, control, coordination, and improvement of business processes, systems, and resources essential to meet consumers' needs. Instead of the technical engineering view of operations, the focus is on managing the business well.

Students pursuing the major concentration in Operations Management must complete:
• A minimum of 10.5 credit hours as listed below to satisfy the major concentration requirements*

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<td>MGMT 574</td>
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<tr>
<td>MGMT 622</td>
<td>FOUNDATIONS OF SUPPLY CHAIN MANAGEMENT</td>
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<tr>
<td>MGMT 719</td>
<td>SUPPLY CHAIN MANAGEMENT: AN INTEGRATED APPROACH</td>
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<td>MGMT 722</td>
<td>SUPPLY CHAIN MANAGEMENT: MAINTAINING AND OPTIMIZING VALUE</td>
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<td>MGMT 670</td>
<td>OPERATIONS STRATEGY</td>
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Foundation Courses
Select a minimum of 2 from the following: 3

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<tr>
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<td>GO-TO-MARKET STRATEGY</td>
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<tr>
<td>MGMT 712</td>
<td>PROCESS MANAGEMENT AND QUALITY IMPROVEMENT</td>
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<tr>
<td>MGMT 719</td>
<td>SUPPLY CHAIN MANAGEMENT: AN INTEGRATED APPROACH</td>
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Elective Requirements
Select a maximum of 2 from the following: 3

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<tbody>
<tr>
<td>MGMT 722</td>
<td>SUPPLY CHAIN MANAGEMENT: MAINTAINING AND OPTIMIZING VALUE</td>
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<tr>
<td>MGMT 744</td>
<td>SERVICES OPERATIONS</td>
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<tr>
<td>MGMT 752</td>
<td>OPERATIONS LAB: ENERGY</td>
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<tr>
<td>MGMT 753</td>
<td>OPERATIONS LAB: HEALTH CARE</td>
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Total Credit Hours 9

Footnotes and Additional Information
* The courses listed are approved to satisfy the requirements for the Operations Management concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.
1 MGMT 574 is a Custom Core course that must be taken for the major concentration, but the credit hours do not count towards the major concentration's minimum credit hour requirement.
2 Course may be applied to the Foundation Courses requirement if it was not applied to the Core Requirements above.
3 MGMT 752 is taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, this course does not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

Policies for the MBA Degree Programs
MBA Admission Requirements
Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

Academic and Professional Standards
Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.
Academic Standards
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Students with a cumulative grade point average lower than 3.00 at the end of any semester will be notified of standing. A student who has been notified may appeal to the Academic Standards Committee of the Jones Graduate School of Business requesting to be placed on academic probation. The committee will decide, based on the circumstances of the appeal, whether the student:

1. may resume studies on academic probation,
2. is to be academically suspended for one semester or an academic year, or
3. is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must apply to the Academic Standards Committee and receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only grades of C and above are counted for credit toward graduation. If students receive a grade below a C in a course required for graduation, they must repeat the course. If students receive a grade below a C in an elective course, they need not repeat the specific course, but they must make up the credits. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional course work is completed.

Students may retake a failed course only once and then only if their cumulative grade point average is 3.00 or higher or if they have received the permission of the Sr. Associate Dean of Degree Programs to do so. Students who fail a course twice will be notified of dismissal. (Students may not take any course for which the failed course is a prerequisite until they pass the prerequisite course.)

Students on academic probation cannot be candidates for student offices and must complete all future courses with a grade of C or above. Students are removed from probation only after achieving a cumulative grade point average of at least 3.00 must appeal to the Academic Standards Committee.

Students who have completed the required number of hours for the MBA degree, the coordinated MBA/Master of Engineering degrees, the coordinated MBA/Master of Science Professional Science Masters degrees, or the coordinated MBA/MD dual degree, but who have a cumulative grade point average lower than 3.00, are dismissed without graduation.

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Professional Standards
MBA students are held to the high standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 81). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)

Guidelines for Appealing Academic Dismissal
The Process
A student who wishes to appeal dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee. These questions should be answered in the appeal letter:

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing
If the student intends to appeal the letter to the committee must be filed within two weeks after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up in with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

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Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
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sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.

5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).

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**MBA Elective Course Add/Drop Policy and Procedures**

Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Associate Registrar administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

**MBA Course Registration Policy for non-Jones Graduate School of Business Rice University Students**

Graduate students from outside the Jones Graduate School of Business may register for elective courses in the full-time MBA program and the MBA for Professionals program. To be eligible for a specific course, a student must be in good academic standing in their program, have permission from the student’s department advisor, and have satisfied the specified course prerequisites. In order to register for the course, the student should verify eligibility with the Jones Graduate School of Business associate registrar and then request approval from the course instructor.

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Rice undergraduate students are not allowed to register for any MBA-level courses (MGMT, MGMP, or MGMW) offered at the Jones Graduate School of Business.

**Class Attendance Policy**

Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the instructor.

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A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars).

**Jones Graduate School of Business Student Handbook**

Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, academic discipline, dismissal, procedures for resolution of problems, and appeal of academic regulations. A copy of the handbook is available on Campus Groups.

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Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

For additional information, please see the Business website: https://business.rice.edu/

**Opportunities for the MBA Degree Programs**

**Independent Study**

**Minimum Hours Requirement**

Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

**Restrictions**

No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study’s academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones
Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

**Faculty Sponsorship**
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee's approval before the term in which the project is to begin.

**Common Requirements**
The goal of independent study projects is to advance or deepen a student's knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the "deliverable."

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student's final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

**Applications**
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

For additional information, please see the Business website: [https://business.rice.edu/](https://business.rice.edu/)

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**Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Real Estate**

**Program Learning Outcomes for the MBA Degree Programs**

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

**Requirements for the MBA Degree Programs**

The MBA degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66).

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER ([https://esther.rice.edu](https://esther.rice.edu)). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

**Waivers and Transfers of Credit**

At its sole discretion, the school may allow students to transfer a maximum of 6 credit hours. Students must follow the prescribed curriculum of study and are not allowed to waive any core requirements.

**Requirements for the Full-Time MBA Degree Program**

Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements taken over a two-year period.
- A minimum overall GPA of 3.0 in required coursework with a minimum grade of C (2.0 grade points) in each course.
- A maximum of 6 credit hours from graduate transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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**Total Credit Hours Required for the Full-Time MBA Degree Program**
## Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
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<td><strong>Core Requirements</strong></td>
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<tr>
<td>MGMT 501</td>
<td>FINANCIAL ACCOUNTING</td>
<td>3</td>
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<td>MANAGERIAL ACCOUNTING</td>
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<td>MGMT 510</td>
<td>ORGANIZATIONAL BEHAVIOR</td>
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<td>MGMT 512</td>
<td>LEADING CHANGE</td>
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<td>MGMT 540</td>
<td>MANAGERIAL ECONOMICS</td>
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<tr>
<td>MGMT 543</td>
<td>FINANCE</td>
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<tr>
<td>MGMT 560</td>
<td>CORPORATE RESPONSIBILITY</td>
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<tr>
<td>MGMT 570</td>
<td>STRATEGY FORMULATION AND IMPLEMENTATION</td>
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<tr>
<td>MGMT 571</td>
<td>OPERATIONS MANAGEMENT</td>
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<tr>
<td>MGMT 580</td>
<td>MARKETING</td>
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</tr>
<tr>
<td>MGMT 594</td>
<td>STRATEGIC BUSINESS COMMUNICATION</td>
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<tr>
<td>MGMT 595</td>
<td>DATA ANALYSIS I</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 596</td>
<td>STRATEGIC BUSINESS COMMUNICATION II</td>
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<tr>
<td>MGMT 597</td>
<td>DATA ANALYSIS II</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 710</td>
<td>LEADERSHIP ILE</td>
<td>0.75</td>
</tr>
<tr>
<td>MGMT 711</td>
<td>NEGOTIATIONS ILE</td>
<td>0.75</td>
</tr>
</tbody>
</table>

### Custom Core Courses: 2

Select 2 from the following: 3-6

- MGMT 503 MANAGEMENT CONTROL
- MGMT 541 ECONOMIC ENVIRONMENT OF BUSINESS
- MGMT 561 BUSINESS-GOVERNMENT RELATIONS
- MGMT 599 ACTION LEARNING PROJECT
- MGMT 621 THE NEW ENTERPRISE
- MGMT 721 BUSINESS LAW

### Elective Requirements

Select an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours 3

### Total Credit Hours

60

## Footnotes and Additional Information

1. The first year of the program is primarily dedicated to core courses in the basic functional areas of business.

2. The custom core courses are taken during the second semester of the first year.

3. To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 28.5-31.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. Students take two elective courses during the spring semester of the first year. The second year of the program is dedicated entirely to elective coursework. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School Associate Registrar. Electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.

4. MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

## Major Concentration: Real Estate

The major concentration in Real Estate prepares students for a career in the real estate industry. The required course introduces a series of basic business concepts commonly used in the real estate industry, and it covers in detail the application of the discounted cash flow model to real estate decisions. The elective courses provide for both a depth and breadth of understanding of the industry.

Students pursuing the MBA degree and a major concentration in Real Estate must complete:

- A minimum of 12 credit hours as listed below to satisfy the major concentration requirements 4

### Code | Title                                         | Credit Hours |
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>MGMT 659</td>
<td>REAL ESTATE FINANCE: ASSET VALUATION</td>
<td>1.5</td>
</tr>
</tbody>
</table>

### Elective Requirements

Select a minimum of 10.5 credit hours from the following: 10.5

- MGMT 624 REAL ESTATE
- MGMT 648 APPLIED FINANCE
- MGMT 654 REAL ESTATE CAPITAL MARKETS: PUBLIC & PRIVATE
- MGMT 660 REAL ESTATE CONTRACT NEGOTIATIONS FOR BUSINESS PROFESSIONALS
- MGMT 674 REAL ESTATE FINANCE: SECURITIES
- MGMT 675 CORPORATE REAL ESTATE
- MGMT 728 REAL ESTATE DEVELOPMENT
- MGMT 742 INTERNATIONAL PRIVATE EQUITY REAL ESTATE
- MGMT 746 REAL PROPERTY
- MGMT 757 REAL ESTATE LAB: DEVELOP, DESIGN AND CONSTRUCTION
- MGMT 754 REAL ESTATE: ULI LAB 1
- MGMT 776 INTRODUCTION TO REAL ESTATE INDUSTRY 2

### Total Credit Hours

12

## Footnotes and Additional Information

4. The courses listed are approved to satisfy the requirements for the Real Estate concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

1. MGMT 754 may be taken twice with approval of instructor.
MGMT 776 is taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, this course does not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

**Policies for the MBA Degree Programs**

**MBA Admission Requirements**

Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

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Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

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A minimum cumulative grade point average of 3.00 (B) is required for graduation. All courses taken towards the MBA degree (including approved courses taken at the university but outside the Jones Graduate School of Business) are counted in the cumulative grade point average calculation.

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Minimum Hours Requirement
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1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

**Restrictions**

No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study's academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

**Faculty Sponsorship**

Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee's approval before the term in which the project is to begin.

**Common Requirements**

The goal of independent study projects is to advance or deepen a student's knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the "deliverable."

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student's final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

**Applications**

Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

For additional information, please see the Business website: [https://business.rice.edu/](https://business.rice.edu/)

**Master of Business Administration (MBA) Degree, Full-Time Program, and a Major Concentration in Strategic Management**

**Program Learning Outcomes for the MBA Degree Programs**

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

**Requirements for the MBA Degree Programs**

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66).

Students who register for a standard course load of 9-18 credit hours per semester are considered full-time students. All registration and elective selection via add/drop is completed online through ESTHER ([https://esther.rice.edu](https://esther.rice.edu)). It is the responsibility of the student to monitor and maintain his or her schedule and academic record.

**Waivers and Transfers of Credit**

At its sole discretion, the school may allow students to transfer a maximum of 6 credit hours. Students must follow the prescribed curriculum of study and are not allowed to waive any core requirements.
Requirements for the Full-Time MBA Degree Program

Students pursuing the full-time MBA degree program must complete:

- A minimum of 60 credit hours to satisfy degree requirements taken over a two-year period.
- A minimum overall GPA of 3.0 in required coursework with a minimum grade of C (2.0 grade points) in each course.
- A maximum of 6 credit hours from graduate transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab. Information regarding Exchange Program transfer credit can be found in the Student Handbook under Campus Groups.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Full-Time MBA Degree Program</td>
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Degree Requirements

<table>
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<tr>
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<tr>
<td>MGMT 501</td>
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<td>FINANCE</td>
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<td>MGMT 571</td>
<td>STRATEGY FORMULATION AND IMPLEMENTATION</td>
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<tr>
<td>MGMT 574</td>
<td>OPERATIONS MANAGEMENT</td>
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<td>MGMT 580</td>
<td>MARKETING</td>
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<td>MGMT 594</td>
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<td>MGMT 595</td>
<td>DATA ANALYSIS I</td>
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<td>MGMT 596</td>
<td>STRATEGIC BUSINESS COMMUNICATIONS II 4</td>
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<td>MGMT 597</td>
<td>DATA ANALYSIS II</td>
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<tr>
<td>MGMT 710</td>
<td>LEADERSHIP ILE</td>
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<tr>
<td>MGMT 711</td>
<td>NEGOTIATIONS ILE</td>
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Custom Core Courses: 2

Select 2 from the following:

<table>
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<tr>
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<th>Title</th>
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<td>MGMT 541</td>
<td>ECONOMIC ENVIRONMENT OF BUSINESS</td>
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<td>MGMT 561</td>
<td>BUSINESS-GOVERNMENT RELATIONS</td>
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<tr>
<td>MGMT 599</td>
<td>ACTION LEARNING PROJECT</td>
<td></td>
</tr>
<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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</tr>
<tr>
<td>MGMT 721</td>
<td>BUSINESS LAW</td>
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Elective Requirements

Select an additional 28.5-31.5 credit hours from departmental (MGM, MGM, or MICO) course offerings at the 500-level or above to reach 60 total credit hours 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MGMT 561</td>
<td>BUSINESS-GOVERNMENT RELATIONS 1</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1. The first year of the program is primarily dedicated to core courses in the basic functional areas of business.
2. The custom core courses are taken during the second semester of the first year.
3. To fulfill the remaining requirements for the full-time MBA degree program, students must complete an additional 28.5-31.5 credit hours from departmental (MGM, MGM, or MICO) course offerings at the 500-level or above to reach 60 total credit hours. Students take two elective courses during the spring semester of the first year. The second year of the program is dedicated entirely to elective course work. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGM, MGM, or MICO course offerings), the student must obtain permission from the Jones Graduate School Associate Registrar. Electives are offered on the daytime schedule, the evening schedule, and the weekend schedule.
4. MGMT 594, MGMT 596, MGMT 710, and MGMT 711 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

Major Concentration: Strategic Management

The major concentration in Strategic Management prepares students for careers in strategic planning, management consulting, and global business management across a variety of industries such as health care, energy, high technologies, consumer products, and professional services. It provides knowledge and analytic tools for students to understand why some companies are financially much more successful than others and to analyze how executives (at different levels) can devise a set of strategies and design processes that allow companies to achieve competitive advantage.

Students pursuing the major concentration in Strategic Management must complete:

- A minimum of 6 courses (9 credit hours) as listed below to satisfy the major concentration requirements*

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
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<tr>
<td>MGMT 713</td>
<td>STRATEGIC ISSUES FOR GLOBAL BUSINESS</td>
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</tr>
<tr>
<td>MGMT 715</td>
<td>STATE INNOVATION AND COMPETITIVE ADVANTAGE IN TECHNOLOGY</td>
<td></td>
</tr>
<tr>
<td>MGMT 720</td>
<td>STRATEGY AND MANAGING INTERNATIONAL STRATEGIC ALLIANCES</td>
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<tr>
<td>MGMT 723</td>
<td>PROFESSIONAL SERVICE FIRMS</td>
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</tr>
<tr>
<td>MGMT 733</td>
<td>STRATEGIES FOR GROWTH</td>
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</table>

Elective Requirements

Select a minimum of 3 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 561</td>
<td>BUSINESS-GOVERNMENT RELATIONS 1</td>
<td>4.5</td>
</tr>
</tbody>
</table>

2017-2018 General Announcements
Footnotes and Additional Information

* The courses listed are approved to satisfy the requirements for the Strategic Management concentration for the current academic year only. Courses not on this official list may be substituted upon approval of the Jones Graduate School of Business Associate Registrar. Students and their academic advisors should identify and clearly document the courses to be taken with the Jones Graduate School of Business Associate Registrar.

1 MGMT 561 can only be applied toward major concentration requirements if not counted as a Custom Core course.

2 Students may only apply one Jones EdGE course (MGMT 786, MGMT 789, or MGMT 797) towards major concentration requirements.

Policies for the MBA Degree Programs

MBA Admission Requirements

Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn a bachelor's degree from an institution where the primary language of instruction was English, must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards

A minimum cumulative grade point average of 3.00 (B) is required for graduation. All courses taken towards the MBA degree (including approved courses taken at the university but outside the Jones Graduate School of Business) are counted in the cumulative grade point average calculation.

Students with a cumulative grade point average lower than 3.00 at the end of any semester will be notified of standing. A student who has been notified may appeal to the Academic Standards Committee of the Jones Graduate School of Business requesting to be placed on academic probation. The committee will decide, based on the circumstances of the appeal, whether the student:

1. may resume studies on academic probation,
2. is to be academically suspended for one semester or an academic year, or
3. is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must apply to the Academic Standards Committee and receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining.

Only grades of C and above are counted for credit toward graduation. If students receive a grade below a C in a course required for graduation, they must repeat the course. If students receive a grade below a C in an elective course, they need not repeat the specific course, but they must make up the credits. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional course work is completed.

Students may retake a failed course only once and then only if their cumulative grade point average is 3.00 or higher or if they have received the permission of the Sr. Associate Dean of Degree Programs to do so. Students who fail a course twice will be notified of dismissal. (Students may not take any course for which the failed course is a prerequisite until they pass the prerequisite course.)

Students on academic probation cannot be candidates for student offices and must complete all future courses with a grade of C or above. Students are removed from probation only upon achieving a cumulative grade point average of at least 3.00 must appeal to the Academic Standards Committee.

Students who have completed the required number of hours for the MBA degree, the coordinated MBA/Master of Engineering degrees, the coordinated MBA/Master of Science Professional Science Masters degrees, or the coordinated MBA/MD dual degree, but who have a cumulative grade point average lower than 3.00, are dismissed without graduation.

Jones Graduate School of Business students may not take courses pass/fail to count toward their degree requirements. Jones Graduate School of Business students may audit courses with professor approval. The Audited courses do not count toward the MBA, but do appear on the transcript.

Professional Standards

MBA students are held to the high standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 81). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)
Guidelines for Appealing Academic Dismissal

The Process
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee. These questions should be answered in the appeal letter:

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing
If the student intends to appeal the letter to the committee must be filed within two weeks after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality
The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.
8. The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

MBA Elective Course Add/Drop Policy and Procedures
Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Associate Registrar administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

MBA Course Registration Policy for non-Jones Graduate School of Business Rice University Students
Graduate students from outside the Jones Graduate School of Business may register for elective courses in the full-time MBA program and the MBA for Professionals program. To be eligible for a specific course, a student must be in good academic standing in their program, have permission from the student’s department advisor, and have satisfied the specified course prerequisites. In order to register for the course, the student should verify eligibility with the Jones Graduate School of Business associate registrar and then request approval from the course instructor.

Non-Jones Graduate School of Business students may not register for elective courses in the MBA for Executives program or core (required) courses in any of the school’s MBA programs.

Rice undergraduate students are not allowed to register for any MBA-level courses (MGMT, MGMP, or MGMW) offered at the Jones Graduate School of Business.

Class Attendance Policy
Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the instructor.

Withdrawal Policy
A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university’s Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars).

Jones Graduate School of Business Student Handbook
Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission.
add/drop, academic discipline, dismissal, procedures for resolution of problems, and appeal of academic regulations. A copy of the handbook is available on Campus Groups.

Financial Aid
Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

For additional information, please see the Business website: https://business.rice.edu/

Opportunities for the MBA Degree Programs
Independent Study

Minimum Hours Requirement
Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

Restrictions
No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study’s academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

Faculty Sponsorship
Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee’s approval before the term in which the project is to begin.

Common Requirements
The goal of independent study projects is to advance or deepen a student’s knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into two broad categories:

1. directed reading and study resulting in a research paper, or
2. an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.
2. Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.
3. Prepare a final paper (in the case of directed reading and research projects) or complete a concrete deliverable (for example, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student’s final paper, or executive summary, with the Jones Graduate School of Business associate registrar.

Applications
Independent study applications are available for interested students on Campus Groups. Completed independent study applications must be approved by the senior associate dean of academic affairs. Completed and approved applications are due to the Jones Graduate School of Business associate registrar by the first week of the term in which the project will be completed. The student will be registered for MGMT 700/MGMT 800 independent study for the appropriate credit amount, only when the appropriate permissions have been obtained.

For additional information, please see the Business website: https://business.rice.edu/

Master of Business Administration (MBA) Degree, Professional Program
Program Learning Outcomes for the MBA Degree Programs
Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including
accounting, finance, marketing, organizational behavior, and strategic management.

2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.

3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA Degree, Professional Program

The MBA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). The Jones Graduate School of Business offers the MBA for Professionals program in three formats. These programs cover the same content, but are offered at different times and over different periods.

Students choose a program based on life-style preference and professional and personal commitments. The current three formats are:

• MBA for Professionals, Evening Program (p. 253), or
• MBA for Professionals, Weekend Program (p. 253), or
• MBA for Professionals, Evening Extended Program (p. 254)

MBA for Professionals, Evening Program

The MBA for Professionals Evening Program consists of a 22-month, lock-step curriculum delivered in four consecutive semesters over a two-year period. Students pursuing the MBA for Professionals Evening Program must complete:

• A minimum of 54 credit hours as listed below to satisfy degree requirements.

• A minimum overall GPA of 3.0 in required coursework and with a minimum grade of C (2.0 grade points) in each course.

Summary

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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Degree Requirements

Core Requirements

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<td>MGMP 502</td>
<td>MANAGERIAL ACCOUNTING</td>
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<td>MGMP 510</td>
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<td>ORGANIZATIONAL CHANGE</td>
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<tr>
<td>MGMP 540</td>
<td>MANAGERIAL ECONOMICS</td>
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<tr>
<td>MGMP 543</td>
<td>FINANCE</td>
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<tr>
<td>MGMP 560</td>
<td>CORPORATE RESPONSIBILITY ³</td>
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<tr>
<td>MGMP 570</td>
<td>COMPETITIVE STRATEGY</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMP 571</td>
<td>STRATEGY FORMULATION AND IMPLEMENTATION</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMP 574</td>
<td>OPERATIONS MANAGEMENT</td>
<td>1.5</td>
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</table>

MGMP 580 | MARKETING                                 | 3            |
| MGMP 594 | STRATEGIC BUSINESS COMMUNICATION ³       | 0.75         |
| MGMP 595 | DATA ANALYSIS                             | 3            |
| MGMP 596 | STRATEGIC BUSINESS COMMUNICATION II ³    | 0.75         |
| MGMP 708 | LEADERSHIP ILE ³                         | 1.5          |
| MGMP 709 | NEGOTIATIONS ILE ³                       | 1.5          |
| MGMP 798 | FIRST YEAR CAPSTONE                      | 1.5          |
| MGMP 799 | MBA-P PROGRAM CAPSTONE                   | 3            |

Custom Core Courses

<table>
<thead>
<tr>
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<tr>
<td>MGMT 541</td>
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<tr>
<td>or MGMT 561</td>
<td>BUSINESS-GOVERNMENT RELATIONS</td>
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Elective Requirements

Select an additional 19.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>54</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1. Required first year classes are offered during the week from 6:15pm to 9:30pm predominantly on Monday and Wednesday evenings.

2. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School of Business registrar department. Electives are offered on the evening schedule, the weekend schedule, and the daytime schedule.

3. MGMP 500, MGMP 560, MGMP 594, MGMP 596, MGMP 708, MGMP 709 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

MBA for Professionals Weekend Program

The MBA for Professionals Weekend Program consists of a 22-month, lock-step curriculum delivered in four consecutive semesters over a two-year period. Students pursuing the MBA for Professionals Weekend Program must complete:

• A minimum of 54 credit hours as listed below to satisfy degree requirements.

• A minimum overall GPA of 3.0 in required coursework and with a minimum grade of C (2.0 grade points) in each course.

Summary

<table>
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<th>Code</th>
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<tr>
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Degree Requirements

Core Requirements

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<tr>
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<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>MGMT 500</td>
<td>MBA-W IMMERSION ³</td>
<td>1.5</td>
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MGMW 501  FINANCIAL ACCOUNTING  3
MGMW 502  MANAGERIAL ACCOUNTING  1.5
MGMW 510  ORGANIZATIONAL BEHAVIOR  1.5
MGMW 511  ORGANIZATIONAL CHANGE  0.75
MGMW 540  MANAGERIAL ECONOMICS  1.5
MGMW 543  FINANCE  3
MGMW 560  CORPORATE RESPONSIBILITY  0.75
MGMW 570  COMPETITIVE STRATEGY  1.5
MGMW 571  STRATEGY FORMULATION AND IMPLEMENTATION  1.5
MGMW 574  OPERATIONS  1.5
MGMW 580  MARKETING  3
MGMW 594  STRATEGIC BUSINESS COMMUNICATION  3  0.75
MGMW 595  DATA ANALYSIS  3
MGMW 596  STRATEGIC BUSINESS COMMUNICATIONS II  3  0.75
MGMW 706  LEADERSHIP  1.5
MGMW 709  NEGOTIATIONS  1.5
MGMW 798  FIRST YEAR CAPSTONE  1.5
MGMW 799  PROGRAM CAPSTONE  3

Custom Core Courses
MGMW 541  ECONOMIC ENVIRONMENT OF BUSINESS  or MGMT 561  BUSINESS-GOVERNMENT RELATIONS  1.5

Elective Requirements  2
Select an additional 19.5 credit hours from departmental (MGMP, MGMT, or MICO) course offerings at the 500-level or above  19.5

Total Credit Hours  54

Footnotes and Additional Information
1. Classes are offered predominately on Friday evenings from 4:00pm – 9:30pm and Saturdays from 7:30am – 6:30pm every other weekend.
2. Although the Jones Graduate School of Business offers a variety of courses for students to take as electives, students may wish to take courses from other departments at Rice University. If students wish to apply courses that are offered outside of the Jones Graduate School of Business (MGMP, MGMT, or MICO course offerings), the student must obtain permission from the Jones Graduate School of Business registrar department. Electives are offered on the weekend schedule, the evening schedule, and the daytime schedule.
3. MGMW 500, MGMW 594, and MGMW 596 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of C (2.0 grade points) in each required course.

MBA for Professionals Evening Extended Program
The MBA for Professionals-Evening Extended Program allows students to complete the same curricular requirements as the MBA for Professionals Evening Program (a minimum of 54 credit hours) over a longer period of time (typically 3-5 academic years). There are minimum requirements each semester, but the structure facilitates the alignment of the pace of completion with professional preferences and commitments.

Policies for the MBA Degree, Professional Program

MBA Admission Requirements
Applicants to the MBA programs must submit scores on the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). International applicants, who did not earn an undergraduate degree from an institution where the primary language of instruction was English must submit a valid score report from either TOEFL, PTE, or IELTS. Admission to the MBA programs is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT or GRE.

The MBA for Professionals Programs
The MBA for Professionals Programs do not have specific prerequisite courses required for admission.

Academic and Professional Standards
Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards
A minimum cumulative grade point average of 3.00 (B) is required for graduation. All courses taken towards the MBA degree (including approved courses taken at the university but outside the Jones Graduate School of Business) are counted in the cumulative grade point average calculation.

Students with a cumulative grade point average lower than 3.00 at the end of any semester will be notified of standing. A student who has been notified may appeal to the Academic Standards Committee of the Jones Graduate School of Business requesting to be placed on academic probation. The committee will decide, based on the circumstances of the appeal, whether the student:

1. may resume studies on academic probation,
2. is to be academically suspended for one semester or an academic year, or
3. is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must apply to the Academic Standards Committee and receive permission to be readmitted. If permitted to return, the student will pay the current rate of tuition, based upon the class of students s/he is joining. Only grades of C and above are counted for credit toward graduation. If students receive a grade below a C in a course required for graduation, they must repeat the course. If students receive a grade below a C in an elective course, they need not repeat the specific course, but they must make up the credits. If the required course is not offered again prior to graduation, the student will be permitted to take the course the following academic year, but will be charged the current pro-rated tuition for the program in which the additional course work is completed.

Students may retake a failed course only once and then only if their cumulative grade point average is 3.00 or higher or if they have received the permission of the Sr. Associate Dean of Degree Programs to do so. Students who fail a course twice will be notified of dismissal. (Students
may not take any course for which the failed course is a prerequisite until they pass the prerequisite course.)

Students on academic probation cannot be candidates for student offices and must complete all future courses with a grade of C or above. Students are removed from probation only upon achieving a cumulative grade point average of at least 3.00 must appeal to the Academic Standards Committee.

Students who have completed the required number of hours for the MBA degree, the coordinated MBA/Master of Engineering degrees, the coordinated MBA/Master of Science Professional Science Masters degrees, or the coordinated MBA/MD dual degree, but who have a cumulative grade point average lower than 3.00, are dismissed without graduation.

Jones Graduate School of Business students may not take courses pass/fail to count toward their degree requirements. Jones Graduate School of Business students may audit courses with professor approval. The Audited courses do not count toward the MBA, but do appear on the transcript.

Professional Standards
MBA students are held to the high standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct (p. 81). The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)

Guidelines for Appealing Academic Dismissal
The Process
A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chair of the Academic Standards Committee. These questions should be answered in the appeal letter:

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

Students may include any additional information they deem relevant in the appeal letter.

Timing
If the student intends to appeal the letter to the committee must be filed within two weeks after receiving a dismissal letter. If a student plans to appeal, he/she should continue to attend classes. It is important to keep up in with studies during the appeal process. If the appeal is accepted, the student may continue progress towards the completion of their degree.

Appeals
Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.

Confidentiality
The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

Grade Appeal Process
Once a course grade has been assigned by an instructor, it is generally considered final and is rarely changed for any reason other than calculation or transcription errors. The procedure below outlines the process by which a student may appeal a course grade.

1. The student should first pursue any grading question with the instructor following the formal or informal process the instructor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the instructor and send a copy to the senior associate dean of degree programs. This written appeal must be filed no later than two weeks after the final grade for a course was assigned.
3. The instructor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the instructor to the senior associate dean of degree programs.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Academic Standards Committee by sending a written notice describing the grounds for the appeal within two weeks of the date of the scheduled meeting in step 3.
5. The Academic Standards Committee will seek out information on the appeal from the instructor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Academic Standards Committee will be rendered within 4 weeks of receiving a written notice of appeal (step 4).
6. Appeals beyond the Academic Standards Committee must go to the dean of the Jones Graduate School of Business, who may seek guidance from other constituents of the school. All decisions rendered by the dean are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.
8. The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

MBA Elective Course Add/Drop Policy and Procedures
Due to the unique term schedule followed by the Jones Graduate School of Business MBA programs, MBA students have special procedures they must follow to make schedule changes. The Jones Graduate School of Business Associate Registrar administers an add/drop policy which allows students to add/drop elective courses at various times throughout the semester. For all elective courses, student may not add/drop a course after the deadline for the appropriate term.

MBA Course Registration Policy for non-Jones Graduate School of Business Rice University Students
Graduate students from outside the Jones Graduate School of Business may register for elective courses in the full-time MBA program and the MBA for Professionals program. To be eligible for a specific course, a student must be in good academic standing in their program, have permission from the student’s department advisor, and have satisfied the specified course prerequisites. In order to register for the course, the student should verify eligibility with the Jones Graduate School of
Business associate registrar and then request approval from the course instructor.

Non-Jones Graduate School of Business students may not register for elective courses in the MBA for Executives program or core (required) courses in any of the school's MBA programs.

Rice undergraduate students are not allowed to register for any MBA-level courses (MGMT, MGMP, or MGMW) offered at the Jones Graduate School of Business.

**Class Attendance Policy**

Students are expected to be in class on the first day of each term. The instructor reserves the right to exclude a student from their course who is absent on the first day. Students should refer to the specific attendance policy for each program. This information can be found in the Jones Graduate School of Business Student Handbook, which is referenced below. For special circumstances, students should see the instructor.

**Withdrawal Policy**

A Jones Graduate School of Business student, participating in any offered program, may voluntarily withdraw from school at any time. Upon withdrawal, Rice University applies a sliding scale to tuition, which is noted in the university's Academic Calendar posted on the Rice Office of the Registrar website (https://registrar.rice.edu/calendars).

**Jones Graduate School of Business Student Handbook**

Generally, the Jones Graduate School of Business adheres to the academic regulations of Rice University. However, the Jones Graduate School of Business MBA program has unique policies and procedures that vary from the Office of Graduate and Postdoctoral Studies regarding, but not limited to, leave of absence, withdrawals and readmission, add/drop, academic discipline, dismissal, procedures for resolution of problems, and appeal of academic regulations. A copy of the handbook is available on Campus Groups.

**Financial Aid**

Jones Graduate School of Business scholarships are awarded at the point of admission and are based on the merit of the application. Financial assistance is generally awarded one academic year at a time. Continuation of assistance depends on Satisfactory Academic Progress (SAP) in accordance with Academic and Professional Standards of performance, professional behavior, and is subject to the availability of funds. Academic or disciplinary probation, suspension, or general failure to maintain academic pace will result in the removal of all forms of financial assistance (i.e. scholarship, employment, Federal/State student loans, etc.). Students have the right to appeal the suspension. All appeals will be reviewed by a committee.

For additional information, please see the Jones School website: https://business.rice.edu/

**Opportunities for the MBA Degree, Professional Program**

**Independent Study**

**Minimum Hours Requirement**

Each credit of independent study should contain approximately as much time content as a one-credit course at Jones Graduate School of Business, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Independent study projects can be accommodated in increments of 1.0, 1.5, 2.0, or 3.0 credit hours; 3.0 credit independent study projects are rarely approved. Occasionally, a group independent study project may arise, though most independent studies are undertaken by individual students.

The number of credits for an independent study must be determined at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the Jones Graduate School of Business associate registrar must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the term in which the project begins.

**Restrictions**

No student may take more than three credit hours of independent study during the course of the MBA program without the approval of the Academic Standards Committee. If an independent study is proposed that would cause a student to exceed the 3.0 credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study's academic content to review and approve the study. Independent study exceeding 3.0 credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the Jones Graduate School of Business academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid work.

**Faculty Sponsorship**

Independent study projects normally are sponsored only by full-time Jones Graduate School of Business faculty; faculty typically sponsor projects only in their area of expertise. Students wanting sponsorship by a part-time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee's approval before the term in which the project is to begin.

**Common Requirements**

The goal of independent study projects is to advance or deepen a student's knowledge or competency in a business discipline or activity. To facilitate these goals, independent study projects generally fall into two broad categories:

1. **directed reading and study resulting in a research paper, or**
2. **an experiential or hands-on project resulting in an outcome such as an empirical analysis with an executive summary of the “deliverable.”**

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, to ensure relatively equal workloads per unit of independent study credit and some common requirements across independent study projects, students and/or sponsoring faculty should:

1. **Prepare and submit to the Jones Graduate School of Business associate registrar an overview of the independent study project with number of project credits, anticipated final results, and a broad timeline of anticipated project milestones.**
2. **Meet to discuss the project, after the initial agreement on the project scope, at least once every two to three weeks.**
Minor in Business

Program Learning Outcomes for the Minor in Business

Upon completing the minor in Business, students will be able to:

1. Demonstrate an understanding of financial statements from the perspective of a user of this information.
2. Demonstrate an understanding of the major sociological and social psychological processes that underlie individual and group behavior in organizations.
3. Demonstrate an understanding of the basic concepts of corporate financial management and of the set of analytical tools used to evaluate corporate investment and financing decisions.
4. Demonstrate an understanding of the basic concepts of strategic management and the frameworks necessary to execute competitive industry analysis and strategy formulation and implementation.
5. Demonstrate a basic understanding of the role of marketing in organizations and of the primary marketing decisions facing management.
6. Demonstrate mastery of best practices in creating communication strategies and delivering effective internal and external communications.

Requirements for the Minor in Business

Students pursuing the minor in Business must complete:

- A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Minor Requirements

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<td>FINANCIAL ACCOUNTING</td>
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<td>LEADING PEOPLE IN ORGANIZATIONS</td>
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<td>BUSI 343</td>
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<td>MARKETING</td>
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<td>BUSI 390</td>
<td>STRATEGIC MANAGEMENT</td>
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Total Credit Hours 18

Policies for the Minor in Business

Declaration of the Business Minor

To declare the minor in Business, students must bring a completed declaration form and unofficial transcript to the program director for review and signature. The Declaration and Change of Minor Form is available on ESTHER (https://esther.rice.edu).

Enrollment Lottery

If a given BUSI course is oversubscribed, the Jones Graduate School of Business will conduct a weighted lottery to determine which students will be admitted to the course. The lottery will give greater preference to students who have successfully completed a greater number of BUSI courses and who are closer to graduation.

Prerequisites

Enrollment in BUSI 343, BUSI 380, and BUSI 390 requires completion of instruction in microeconomics and statistics. The statistics requirement can be fulfilled by completing STAT 280 or an approved alternative as listed on the Jones School website (http://business.rice.edu/academic-program/undergraduate-business-minor/course-descriptions). The economics requirement can be fulfilled by completing ECON 100 at Rice. The program director will not approve requests to waive prerequisites for BUSI 343 or BUSI 390.

Enrollment in BUSI 343 also requires completion of BUSI 305.

See the course descriptions for further details on prerequisites.

Program Restrictions and Exclusions

Students pursuing the minor in Business should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://
A coordinated MBA/MChE degree program also is available in conjunction with the Jesse H. Jones Graduate School of Business.

**Bachelor's Programs**

- Bachelor of Arts (BA) Degree with a Major in Chemical Engineering (p. 259)
- Bachelor of Science in Chemical Engineering (BSChE) Degree
  - and a Major Concentration in Biotechnology and Bioengineering (p. 261)
  - and a Major Concentration in Computational Engineering (p. 263)
  - and a Major Concentration in Environmental Engineering (p. 268)
  - and a Major Concentration in Materials Science and Engineering (p. 271)
  - and a Major Concentration in Sustainability and Energy Engineering (p. 273)
  - and a Major Concentration in Engineering Breadth (p. 266)

**Master's Programs**

- Master of Chemical Engineering (MChE) Degree (p. 277)
- Master of Science (MS) Degree in the field of Chemical Engineering *

**Doctoral Program**

- Doctor of Philosophy (PhD) Degree in the field of Chemical Engineering (p. 275)

**Coordinated Program**

- Master of Business Administration (MBA) Degree / Master of Chemical Engineering (MChE) Degree (p. 276)

* Prospective students must receive permission from the graduate program to apply directly to the Master of Science (MS) degree program.

**Chair**

Michael S. Wong
Professors
Walter G. Chapman
Ramon Gonzalez
Frederick C. MacKintosh
Matteo Pasquali
Marc A. Robert
Kyriacos Zygourakis

Associate Professors
Sibani Lisa Biswal
Laura Segatori
Rafael Verduzco

Assistant Professors
Xue Gao
Thomas P. Senftle
Francisco Vargas

Professors Emeriti
William W. Akers
Constantine Armeniades
Sam H. Davis
Derek C. Dyson
Jesse David Hellums
Clarence A. Miller

Professors in the Practice
Kenneth R. Cox

Lecturers
Dilip Asthagiri
Marya Cokar
Rocio Doherty
Vahid Taghikhani
Mohammed Tavakkoli

Joint Appointments
Pulickel M. Ajayan
George N. Bennett
Cecilia Clementi
Rob Griffin
Anatoly B. Kolomeisky
Qilin Li
Antonios G. Mikos
Peter J. Rossky
Ka-Yiu San
Edwin L. Thomas

Research Professor
George J. Hirasaki

Adjunct Professors
Sivaram Arepalli
Marek Behr
Jefferson Creek
Ganesh Kailasam
Michael A. Reynolds

Richard B. Strait
Vahid Taghikhani

Adjunct Associate Professors
Rouhollah Farajzadeh
Deepak Nagrath

Adjunct Lecturer
John T. Perez
Xiankuan Zhang

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: CHBE

Department Description and Code
• Chemical and Biomolecular Engineering: CHBE

Undergraduate Degree Descriptions and Codes
• Bachelor of Arts degree: BA
• Bachelor of Science in Chemical and Engineering degree: BSCHE

Undergraduate Major Description and Code
• Major in Chemical Engineering (both BA and BSCE degrees) code: CENG

Undergraduate Major Concentration Descriptions and Codes
• Major concentration in Biotechnology and Bioengineering (BSCHE degree only): CEBB
• Major concentration in Computational Engineering (BSCHE degree only): CECE
• Major concentration in Environmental Engineering (BSCHE degree only): CEEE
• Major concentration in Materials Science and Engineering (BSCE degree only): CEMS
• Major concentration in Sustainable and Energy Engineering (BSCHE degree only): CESE
• Major concentration in Engineering Breadth (BSCHE degree only): CEBR

Graduate Degree Descriptions and Codes
• Master of Chemical Engineering degree: MChE
• Master of Science degree: MS
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Chemical Engineering: CENG

Bachelor of Arts (BA) Degree with a Major in Chemical Engineering
Program Learning Outcomes for the BA Degree with a Major in Chemical Engineering

Upon completing the BA degree with a major in Chemical Engineering, students will be able to demonstrate:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering programs.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Requirements for the BA Degree with a Major in Chemical Engineering

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Chemical Engineering must complete:

- A minimum of 72 credit hours to satisfy major requirements.
- A minimum of 132 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 13 courses (37 credit hours) taken at the 300-level or above.

The BA with a Major in Chemical Engineering is a flexible program and allows a student to pursue other areas of interest with or without a second major (or an academic minor).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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**Degree Requirements**

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<td>GENERAL CHEMISTRY II and GENERAL CHEMISTRY LABORATORY II</td>
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<td>CHEM 217</td>
<td>ORGANIC LABORATORY FOR CHEMICAL ENGINEERS</td>
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Chemical and Biomolecular Engineering Core Courses

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<td>COMPUTATIONAL METHODS IN CHEMICAL ENGINEERING</td>
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<td>CHBE 343</td>
<td>CHEMICAL ENGINEERING LAB I</td>
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<td>CHBE 390</td>
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<td>TRANSPORT PHENOMENA I</td>
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Mathematics

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<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
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<td>CAAM 336</td>
<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
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Physics

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<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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<tr>
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<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
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Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Biotechnology and Bioengineering

The program leading to the BSChE degree is accredited by the Engineering Accreditation Commission (EAC) of ABET, http://www.abet.org.

Program Learning Outcomes (Student Outcomes) for the BSChE Degree

Upon completing the BSChE degree, students will be able to demonstrate:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and have an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

Program Educational Objectives for the BSChE Degree

Within 3-5 years of graduation, graduates with a Bachelor of Science in Chemical Engineering (BSChE) degree are expected to be:

1. Graduate students, professionals, and entrepreneurs who are moving towards leadership positions as exemplary members of the global workforce; and
2. Professionals who practice their societal, environmental, and ethical responsibilities.

Requirements for the BSChE Degree

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BSChE degree must complete:

- A minimum of 97-100 credit hours, depending on major concentration declared, to satisfy major requirements.
- A minimum of 132 credit hours to satisfy degree requirements.
- A minimum of 18 courses (53 credit hours), depending on major concentration declared, taken at the 300-level or above.
• The requirements of a major concentration. When students declare the major (p. 12) in Chemical Engineering, students must additionally identify and declare one of the major concentrations, either in:
  • Biotechnology and Bioengineering (p. 263), or
  • Computational Engineering (p. 265), or
  • Environmental Engineering (p. 270), or
  • Materials Science and Engineering (p. 272), or
  • Sustainability and Energy Engineering (p. 274), or
  • Engineering Breadth (p. 267) (Engineering Breadth is a major concentration comprised of electives from a mix of engineering disciplines).

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor. Students and their academic advisors should identify and clearly document the courses to be taken.

<table>
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Total Credit Hours Required for the Major in Chemical Engineering: 97-100

Total Credit Hours Required for the BSChE Degree: 132

<table>
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<th>Degree Requirements</th>
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<tr>
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<tr>
<td>Core Requirements</td>
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</table>

| Code | Title | Credit Hours |

Chemistry

| Code | Title | Credit Hours |

& CHEM 123 GENERAL CHEMISTRY LABORATORY I 4

& CHEM 212 GENERAL CHEMISTRY II 4

CHEM 211 ORGANIC CHEMISTRY I 3

& CHEM 213 ORGANIC CHEMISTRY DISCUSSION 3

CHEM 217 ORGANIC LABORATORY FOR CHEMICAL ENGINEERS 1

Select 2 from the following: 6

| Code | Title | Credit Hours |

CHEM 212 ORGANIC CHEMISTRY II 3

CHEM 311 PHYSICAL CHEMISTRY I 3

CHEM 312 PHYSICAL CHEMISTRY II 3

Mathematics

| Code | Title | Credit Hours |

Mathematics

| Code | Title | Credit Hours |

Total Credit Hours Required for the Major in Chemical Engineering: 97-100

Total Credit Hours Required for the BSChE Degree: 132

| Footnotes and Additional Information |

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.
Notes regarding the Chemistry course requirements: CHEM 121 and CHEM 123 can be satisfied by completing CHEM 151 and CHEM 153. CHEM 122 and CHEM 124 can be satisfied by completing CHEM 151 and CHEM 154. For students planning advanced studies in medicine or biotechnology, CHEM 217 can be satisfied by completing CHEM 215.

MATH 221 and MATH 222 may substitute for MATH 212.

Major Concentration: Biotechnology and Bioengineering

To fulfill the remaining requirements for the major in Chemical Engineering with a major concentration in Biotechnology and Bioengineering, students must complete a total of 15 credit hours as listed below.

Please Note: The following list of approved courses can be used to satisfy the requirements of the major concentration. Courses not on the list may be taken upon approval of the academic advisor. Students and their academic advisors should identify and clearly document the courses to be taken.

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<td>BIOE 381</td>
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<td>ELECTROPHYSIOLOGY</td>
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<td>BIOE 383</td>
<td>BIOMEDICAL ENGINEERING INSTRUMENTATION</td>
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<td>SYNTHETIC BIOLOGY</td>
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<td>TRANSPORT PHENOMENA IN BIOENGINEERING</td>
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<td>GENE THERAPY</td>
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<td>BIOE 464</td>
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<td>BIOC 464</td>
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<td>BIOE 470</td>
<td>FROM SEQUENCE TO STRUCTURE: AN INTRODUCTION TO COMPUTATIONAL BIOLOGY</td>
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<td>BIOE 482</td>
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<td>ELEC 482</td>
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<td>BIOE 485</td>
<td>FUNDAMENTALS OF MEDICAL IMAGING I</td>
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<td>BIOE 490</td>
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Total Credit Hours: 15

Policies for the BSChE Degree with a Major Concentration in Biotechnology and Bioengineering

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the BSChE degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/

Opportunities for the BSChE Degree with a Major Concentration in Biotechnology and Bioengineering

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/

Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Computational Engineering

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#### Degree Requirements

**Core Requirements**

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Chemical and Biomolecular Engineering Core Courses

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<td>COMPUTATIONAL METHODS IN CHEMICAL ENGINEERING</td>
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<td>CHBE 310</td>
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<td>CHBE 470</td>
<td>PROCESS DYNAMICS AND CONTROL</td>
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Mathematics

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<td>SINGLE VARIABLE CALCULUS II</td>
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MATH 211 ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA 3
MATH 212 MULTIVARIABLE CALCULUS 2 3
CAAM 336 DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING 3

Physics
Select 1 from the following: 4
PHYS 101 MECHANICS (WITH LAB) & PHYS 103 and MECHANICS DISCUSSION
PHYS 111 HONORS MECHANICS (WITH LAB)

Select 1 from the following: 4
PHYS 102 ELECTRICITY & MAGNETISM (WITH LAB) & PHYS 104 and ELECTRICITY AND MAGNETISM DISCUSSION
PHYS 112 HONORS ELECTRICITY & MAGNETISM (WITH LAB)

Major Concentration
Select 1 from the following Major Concentrations (see below for Major Concentration requirements):
Biotechnology and Bioengineering
Computational Engineering
Environmental Engineering
Materials Science and Engineering
Sustainability and Energy Engineering

Total Credit Hours Required for the Major in Chemical Engineering 97-100
University Graduation Requirements (p. 25) 32-35

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Notes regarding the Chemistry course requirements: CHEM 121 and CHEM 123 can be satisfied by completing CHEM 151 and CHEM 153. CHEM 122 and CHEM 124 can be satisfied by completing CHEM 151 and CHEM 154. For students planning advanced studies in medicine or biotechnology, CHEM 217 can be satisfied by completing CHEM 215.

2 MATH 221 and MATH 222 may substitute for MATH 212.

Major Concentration: Computational Engineering
To fulfill the remaining requirements for the major in Chemical Engineering with a major concentration in Computational Engineering, students must complete a total of 15 credit hours as listed below.

Please Note: The following list of approved courses can be used to satisfy the requirements of the major concentration. As noted above with the major requirements, in certain instances, courses not on the official list may be substituted upon approval of the major’s academic advisor. Students and their academic advisors should identify and clearly document the courses to be taken.

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<td>CAAM 378</td>
<td>INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION</td>
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<td>CAAM 415 / ELEC 488 / NEUR 415</td>
<td>THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS</td>
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<td>CAAM 416 / ELEC 489 / NEUR 416</td>
<td>NEURAL COMPUTATION</td>
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<td>CAAM 471</td>
<td>LINEAR AND INTEGER PROGRAMMING</td>
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Total Credit Hours 15

Policies for the BSChE Degree with a Major Concentration in Computational Engineering

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the BSChE degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Opportunities for the BSChE Degree with a Major Concentration in Computational Engineering

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work.
Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Engineering Breadth

The program leading to the BSChE degree is accredited by the Engineering Accreditation Commission (EAC) of ABET, http://www.abet.org.

Program Learning Outcomes (Student Outcomes) for the BSChE Degree

Upon completing the BSChE degree, students will be able to demonstrate:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and have an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

Program Educational Objectives for the BSChE Degree

Within 3-5 years of graduation, graduates with a Bachelor of Science in Chemical Engineering (BSChE) degree are expected to be:

1. Graduate students, professionals, and entrepreneurs who are moving towards leadership positions as exemplary members of the global workforce; and
2. Professionals who practice their societal, environmental, and ethical responsibilities.

Requirements for the BSChE Degree

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BSChE degree must complete:

- A minimum of 97-100 credit hours, depending on major concentration declared, to satisfy major requirements.
- A minimum of 132 credit hours to satisfy degree requirements.
- A minimum of 18 courses (53 credit hours), depending on major concentration declared, taken at the 300-level or above.
- The requirements of a major concentration. When students declare the major (p. 12) in Chemical Engineering, students must additionally identify and declare one of the major concentrations, either in:
  - Biotechnology and Bioengineering (p. 263), or
  - Computational Engineering (p. 265), or
  - Environmental Engineering (p. 270), or
  - Materials Science and Engineering (p. 272), or
  - Sustainability and Energy Engineering (p. 274), or
  - Engineering Breadth (p. 267) (Engineering Breadth is a major concentration comprised of electives from a mix of engineering disciplines).

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor. Students and their academic advisors should identify and clearly document the courses to be taken.

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<tr>
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<td>CHEM 211 &amp; CHEM 213</td>
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### Chemical and Biomolecular Engineering Core Courses

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<td>CHBE 310</td>
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<td>CHBE 401</td>
<td>TRANSPORT PHENOMENA I</td>
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<td>CHBE 443</td>
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<td>CHBE 470</td>
<td>PROCESS DYNAMICS AND CONTROL</td>
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### Mathematics

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<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
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<td>MULTIVARIABLE CALCULUS</td>
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<tr>
<td>CAAM 336</td>
<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
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</table>

### Physics

Select 1 from the following: 4

- PHYS 101 | MECHANICS (WITH LAB) and MECHANICS DISCUSSION    | 2            |
- PHYS 103 | HONORS MECHANICS (WITH LAB)                     | 2            |

Select 1 from the following: 4

- PHYS 102 | ELECTRICITY & MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION | 2            |
- PHYS 104 | HONORS ELECTRICITY & MAGNETISM (WITH LAB)       | 2            |

### Major Concentration

Select 1 from the following Major Concentrations (see below for Major Concentration requirements):

- Biotechnology and Bioengineering
- Computational Engineering
- Environmental Engineering
- Materials Science and Engineering
- Sustainability and Energy Engineering
- Engineering Breadth

### Elective Requirements

Select a total of 9 credit hours from at least 3 categories below: 1

#### Environmental Engineering Courses

- CEVE 310 | PRINCIPLES OF ENVIRONMENTAL ENGINEERING         |               |
- CEVE 311 / MECH 311 | MECHANICS OF SOLIDS AND STRUCTURES |               |
- CEVE 434 | FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT |               |

#### Materials Science Engineering Courses

- MSNE 301 | MATERIALS SCIENCE                              |               |
- MSNE 402 | MECH PROPERTIES OF MATERIALS                    |               |
- MSNE 406 | PHYSICAL PROPERTIES OF SOLIDS                   |               |

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Notes regarding the Chemistry course requirements: CHEM 121 and CHEM 123 can be satisfied by completing CHEM 151 and CHEM 153. CHEM 122 and CHEM 124 can be satisfied by completing CHEM 151 and CHEM 154. For students planning advanced studies in medicine or biotechnology, CHEM 217 can be satisfied by completing CHEM 215.

2 MATH 221 and MATH 222 may substitute for MATH 212.

### Major Concentration: Engineering Breadth

To fulfill the remaining requirements for the major in Chemical Engineering with a major concentration in Engineering Breadth, students must complete a total of 12 credit hours as listed below. (p. 267)

Please Note: The following list of courses can be used to satisfy the requirements of the major concentration. As noted above with major requirements, in certain instances, courses not on the official list may be substituted upon approval of the major’s academic advisor. Students and their academic advisors should identify and clearly document the courses to be taken.
Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Environmental Engineering

Program Learning Outcomes (Student Outcomes) for the BSChE Degree

Upon completing the BSChE degree, students will be able to demonstrate:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and have an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

Program Educational Objectives for the BSChE Degree

Within 3-5 years of graduation, graduates with a Bachelor of Science in Chemical Engineering (BSChE) degree are expected to be:

1. Graduate students, professionals, and entrepreneurs who are moving towards leadership positions as exemplary members of the global workforce; and
2. Professionals who practice their societal, environmental, and ethical responsibilities.

Requirements for the BSChE Degree

For general university requirements, see Graduation Requirements (p. 25).

Students pursuing the BSChE degree must complete:

- A minimum of 97-100 credit hours, depending on major concentration declared, to satisfy major requirements.
- A minimum of 132 credit hours to satisfy degree requirements.
- A minimum of 18 courses (53 credit hours), depending on major concentration declared, taken at the 300-level or above.
- The requirements of a major concentration. When students declare the major (p. 12) in Chemical Engineering, students must additionally identify and declare one of the major concentrations, either in:
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Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

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<td>CHEM 122 &amp; CHEM 124</td>
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<td>CHEM 211 &amp; CHEM 213</td>
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<td>CHEM 217</td>
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<td>Chemical and Biomolecular Engineering Core Courses</td>
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Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Environmental Engineering

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**Major Concentration**

Select 1 from the following Major Concentrations (see below for Major Concentration requirements):

- Biotechnology and Bioengineering
- Computational Engineering
- Environmental Engineering
- Materials Science and Engineering
- Sustainability and Energy Engineering

**Engineering Breadth**

Total Credit Hours Required for the Major in Chemical Engineering

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<tr>
<th>Code</th>
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<td>CEVE 434</td>
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**Elective Requirements**

Select 3 from the following:

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<td>CEVE 307 / ENST 307 / ESCI 307</td>
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<td>CEVE 308</td>
<td>INTRODUCTION TO AIR POLLUTION CONTROL</td>
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<td>CEVE 314</td>
<td>SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD</td>
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<td>CEVE 323</td>
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<td>CEVE 401</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB</td>
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<td>CEVE 411</td>
<td>ATMOSPHERIC PROCESSES</td>
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<td>HYDROLOGY AND WATER RESOURCES ENGINEERING</td>
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<td>CEVE 420</td>
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<td>CEVE 484 / STAT 484</td>
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<td>CONTAMINANT HYDROGEOLOGY</td>
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<td>PHYSICAL CHEMICAL PROCESSES FOR WATER QUALITY CONTROL</td>
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<td>CEVE 536</td>
<td>ENVIRONMENTAL BIOTECHNOLOGY AND BIOREMEDIATION</td>
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<td>CHBE 455</td>
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</table>

Total Credit Hours: 15

**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

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2 MATH 221 and MATH 222 may substitute for MATH 212.

**Major Concentration: Environmental Engineering**

To fulfill the remaining requirements for the major in Chemical Engineering with a major concentration in Environmental Engineering, students must complete a total of 15 credit hours as listed below.

Please Note: The following list of courses can be used to satisfy the requirements of the major concentration. As noted above with major requirements, in certain instances, courses not on the official list may be substituted upon approval of the major's academic advisor. Students and their academic advisors should identify and clearly document the courses to be taken.

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<tr>
<td>ENGI 302</td>
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**Policies for the BSChE Degree with a Major Concentration in Environmental Engineering**

**Transfer Credit**

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- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Chemical and Biomolecular Engineering website: [https://chbe.rice.edu](https://chbe.rice.edu).
Opportunities for the BSChE Degree with a Major Concentration in Environmental Engineering

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/

Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Materials Science and Engineering

The program leading to the BSChE degree is accredited by the Engineering Accreditation Commission (EAC) of ABET, http://www.abet.org.

Program Learning Outcomes (Student Outcomes) for the BSChE Degree

Upon completing the BSChE degree, students will be able to demonstrate:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
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Program Educational Objectives for the BSChE Degree

Within 3-5 years of graduation, graduates with a Bachelor of Science in Chemical Engineering (BSChE) degree are expected to be:

1. Graduate students, professionals, and entrepreneurs who are moving towards leadership positions as exemplary members of the global workforce; and
2. Professionals who practice their societal, environmental, and ethical responsibilities.

Requirements for the BSChE Degree

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BSChE degree must complete:

- A minimum of 97-100 credit hours, depending on major concentration declared, to satisfy major requirements.
- A minimum of 132 credit hours to satisfy degree requirements.
- A minimum of 18 courses (53 credit hours), depending on major concentration declared, taken at the 300-level or above.
- The requirements of a major concentration. When students declare the major (p. 12) in Chemical Engineering, students must additionally identify and declare one of the major concentrations, either in:
  - Biotechnology and Bioengineering (p. 263), or
  - Computational Engineering (p. 265), or
  - Environmental Engineering (p. 270), or
  - Materials Science and Engineering (p. 272), or
  - Sustainability and Energy Engineering (p. 274), or
  - Engineering Breadth (p. 267) (Engineering Breadth is a major concentration comprised of electives from a mix of engineering disciplines).

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor. Students and their academic advisors should identify and clearly document the courses to be taken.

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Degree Requirements

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<td>CHEM 217</td>
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Core Requirements

Chemistry

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Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Materials Science and Engineering

Select 2 from the following:

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Chemical and Biomolecular Engineering Core Courses

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Mathematics

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<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
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<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS ²</td>
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<td>CAAM 336</td>
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Physics

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<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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Select 1 from the following:

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<th>Credit Hours</th>
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<td>PHYS 102 &amp; PHYS 104</td>
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<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
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Major Concentration

Select 1 from the following Major Concentrations (see below for 12-15 Major Concentration requirements):

- Biotechnology and Bioengineering
- Computational Engineering
- Environmental Engineering
- Materials Science and Engineering
- Sustainability and Energy Engineering

Engineering Breadth

<table>
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<tr>
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<td>University Graduation Requirements (p. 25)</td>
<td>* 32-35</td>
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<td>Total Credit Hours</td>
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Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Notes regarding the Chemistry course requirements: CHEM 121 and CHEM 123 can be satisfied by completing CHEM 151 and CHEM 153. CHEM 122 and CHEM 124 can be satisfied by completing CHEM 151 and CHEM 154. For students planning advanced studies in medicine or biotechnology, CHEM 217 can be satisfied by completing CHEM 215.

2 MATH 221 and MATH 222 may substitute for MATH 212.

Major Concentration: Materials Science and Engineering

To fulfill the remaining requirements for the major in Chemical Engineering with a major concentration in Materials Science and Engineering, students must complete a total of 15 credit hours as listed below.

Please Note: The following list of courses can be used to satisfy the requirements of the major concentration. As noted above with major requirements, in certain instances, courses not on the official list may be substituted upon approval of the major’s academic advisor. Students and their academic advisors should identify and clearly document the courses to be taken.

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Elective Requirements

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<tr>
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<td>BIOE 431</td>
<td>BIOMATERIALS APPLICATIONS</td>
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<tr>
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<td>COLLOIDAL AND INTERFACIAL PHENOMENA</td>
<td></td>
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<tr>
<td>CHBE 594 / MSNE 594</td>
<td>PROPERTIES OF POLYMERS</td>
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<tr>
<td>ELEC 361</td>
<td>QUANTUM MECHANICS FOR ENGINEERS</td>
<td></td>
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<tr>
<td>MSNE 302</td>
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Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Sustainability and Energy Engineering

The program leading to the BSChE degree is accredited by the Engineering Accreditation Commission (EAC) of ABET, http://www.abet.org.
Bachelor of Science in Chemical Engineering (BSChE) Degree and a Major Concentration in Sustainability and Energy Engineering

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#### Core Requirements

**Chemistry**

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<td>and ORGANIC CHEM DISCUSSION II</td>
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#### Chemical and Biomolecular Engineering Core Courses

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<td>SINGLE VARIABLE CALCULUS I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 336</td>
<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
<td>3</td>
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</table>

#### Physics

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 101</td>
<td>MECHANICS (WITH LAB)</td>
<td>3</td>
</tr>
<tr>
<td>&amp; PHYS 103</td>
<td>and MECHANICS DISCUSSION</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 102</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td>3</td>
</tr>
<tr>
<td>&amp; PHYS 104</td>
<td>and ELECTRICITY AND MAGNETISM DISCUSSION</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Major Concentration

Select 1 from the following Major Concentrations (see below for Major Concentration requirements):

- Biotechnology and Bioengineering
- Computational Engineering
- Environmental Engineering
- Materials Science and Engineering
- Sustainability and Energy Engineering
- Engineering Breadth

Total Credit Hours Required for the Major in Chemical Engineering: 97-100

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Notes regarding the Chemistry course requirements: CHEM 121 and CHEM 123 can be satisfied by completing CHEM 151 and CHEM 153. CHEM 122 and CHEM 124 can be satisfied by completing CHEM 151 and CHEM 154. For students planning advanced studies in medicine or biotechnology, CHEM 217 can be satisfied by completing CHEM 215.

2 MATH 221 and MATH 222 may substitute for MATH 212.

### Major Concentration: Sustainability and Energy Engineering

To fulfill the remaining requirements for the major in Chemical Engineering with a major concentration in Sustainability and Energy Engineering...
Engineering, students must complete a total of 15 credit hours as listed below.

**Please Note:** The following list of courses can be used to satisfy the requirements of the major concentration. As noted above with major requirements, in certain instances, courses not on the official list may be substituted upon approval of the major’s academic advisor. Students and their academic advisors should identify and clearly document the courses to be taken.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE and CHBE Courses</td>
<td><strong>Select 3 from the following:</strong></td>
<td>9-15</td>
</tr>
<tr>
<td>CEVE 307 / ENST 307 / ESCI 307</td>
<td>ENERGY AND THE ENVIRONMENT</td>
<td></td>
</tr>
<tr>
<td>CEVE 314 / BIOE 365 / GLHT 314</td>
<td>SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD</td>
<td></td>
</tr>
<tr>
<td>CEVE 401</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB</td>
<td></td>
</tr>
<tr>
<td>CEVE 434</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
<td></td>
</tr>
<tr>
<td>CEVE 518</td>
<td>CONTAMINANT HYDROGEOLOGY</td>
<td></td>
</tr>
<tr>
<td>CEVE 535</td>
<td>PHYSICAL CHEMICAL PROCESSES FOR WATER QUALITY CONTROL</td>
<td></td>
</tr>
<tr>
<td>CHBE 281 / ENST 281</td>
<td>ENGINEERING SUSTAINABLE COMMUNITIES</td>
<td></td>
</tr>
<tr>
<td>CHBE 450</td>
<td>PETROLEUM PHASE BEHAVIOR AND FLOW ASSURANCE</td>
<td></td>
</tr>
<tr>
<td>CHBE 455</td>
<td>TWO PHASE FLOW/MULTIPHASE FLOW IN PIPES</td>
<td></td>
</tr>
<tr>
<td>CHBE 571</td>
<td>FLOW AND TRANSPORT THROUGH POROUS MEDIA I</td>
<td></td>
</tr>
<tr>
<td>CHBE 671</td>
<td>FLOW AND TRANSPORT THROUGH POROUS MEDIA II</td>
<td></td>
</tr>
</tbody>
</table>

**Elective Requirements**

Select 2 from either the CEVE and CHBE course offerings listed above, or from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CEVE 302</td>
<td>SUSTAINABLE DESIGN</td>
<td>0-6</td>
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<tr>
<td>CEVE 310</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>CEVE 484</td>
<td>ENVIRONMENTAL RISK ASSESSMENT &amp; HUMAN HEALTH</td>
<td></td>
</tr>
<tr>
<td>CHBE 570</td>
<td>INDUSTRIAL CATALYSIS AND PETROCHEMICAL PROCESSES</td>
<td></td>
</tr>
<tr>
<td>CHEM 425 / ENST 425 / ESCI 425</td>
<td>ORGANIC GEOCHEMISTRY</td>
<td></td>
</tr>
<tr>
<td>ESCI 415</td>
<td>DECISION MAKING AND ECONOMICS IN THE ENERGY INDUSTRY</td>
<td></td>
</tr>
<tr>
<td>ESCI 417</td>
<td>PETROLEUM INDUSTRY ECONOMICS AND MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>ESCI 442</td>
<td>EXPLORATION GEOPHYSICS</td>
<td></td>
</tr>
</tbody>
</table>

**Policies for the BSChE Degree with a Major Concentration in Sustainability and Energy Engineering**

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the BSChE degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Chemical and Biomolecular Engineering website: [https://chbe.rice.edu/](https://chbe.rice.edu/)

**Opportunities for the BSChE Degree with a Major Concentration in Sustainability and Energy Engineering**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (**summa cum laude**, **magna cum laude**, and **cum laude**). Some departments have department-specific Honors awards or designations.

For additional information, please see the Chemical and Biomolecular Engineering website: [https://chbe.rice.edu/](https://chbe.rice.edu/)

**Doctor of Philosophy (PhD) Degree in the field of Chemical Engineering**

**Program Learning Outcomes for the PhD Degree in the field of Chemical Engineering**

Upon completing the PhD degree program in the field of Chemical Engineering, students will be able to:

1. Demonstrate a solid foundation in the fundamentals of chemical engineering in four areas: applied mathematics, kinetics and reaction engineering, thermodynamics, and transport phenomena.
2. Apply advanced knowledge from several major areas of modern chemical engineering.
3. Conduct independent research by working on research projects, individually and in interdisciplinary groups.
4. Demonstrate professional written and oral communication skills.

Requirements for the MS Degree in Chemical Engineering

The MS degree is a thesis masters degree. For general university requirements, please see Thesis Master’s Degrees (p. 67). Students pursuing the MS degree program in Chemical Engineering must:

• Obtain permission by the department to apply for the program. Accepted candidates will be advised of degree requirements.
• Complete at least 18 approved advanced course credit hours with high standing.
• Submit an original research thesis.
• Defend the thesis in a public oral examination.
• Complete a teaching requirement.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours for the MS Degree in Chemical Engineering</td>
</tr>
</tbody>
</table>

Requirements for the PhD Degree in Chemical Engineering

For general university requirements, please see Doctoral Degrees (p. 64). Students pursuing the PhD degree program in Chemical Engineering must:

• Satisfactorily complete 24 credit hours of advanced course work at the 500-level or above, including required core courses. Students who already have an MS degree in chemical engineering can request departmental approval to be excluded from the required core courses, but must satisfactorily complete the 24 required credit hours.
• Pass qualifying examinations demonstrating a general understanding of reaction engineering, thermodynamics, transport phenomena, and applied mathematics.
• Prepare and present a thesis proposal.
• Complete a publishable thesis representing research that is an original and significant contribution to the field of chemical and biomolecular engineering.
• Pass a public oral examination in defense of the thesis.
• Fulfill a residency requirement.
• Complete a teaching assignment.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours for the PhD Degree in Chemical Engineering</td>
</tr>
</tbody>
</table>

Policies for the PhD Degree in the field of Chemical Engineering

Department of Chemical and Biomolecular Engineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Chemical and Biomolecular Engineering publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Chemical_Biomolecular_Engineering_Graduate_Handbook.pdf

For additional information, please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/

Opportunities for the PhD Degree in the field of Chemical Engineering

For additional information, please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/

Master of Business Administration (MBA) Degree / Master of Chemical Engineering (MChE) Degree

Program Learning Outcomes for the MChE Degree

Upon completing the MChE degree, students will be able to:

1. Identify, formulate, and solve complex engineering problems that require synthesis of advanced knowledge in chemical engineering fundamentals.
2. Demonstrate broad advanced knowledge in science and math, and depth in one chemical engineering sub-discipline (energy engineering, biomolecular engineering, materials science).
3. Demonstrate knowledge of business policies and practices in the current business environment in identifying, formulating, and solving engineering challenges in a problem/engineering challenge they undertake to solve as part of independent study.
4. Demonstrate effective oral and written communication skills.

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.
Requirements for the MBA/MChE Coordinated Degree Program

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

For general university requirements, see Graduate Degrees (p. 49).

Candidates for the MChE degree in the MBA/MChE coordinated degree program must complete all requirements as listed above for the MChE degree, and must apply and be accepted in both degree programs.

Policies for the MBA/MChE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: [https://business.rice.edu/](https://business.rice.edu/)
2. Please see the Chemical and Biomolecular Engineering website: [https://chbe.rice.edu/](https://chbe.rice.edu/)

Opportunities for the MBA/MChE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: [https://business.rice.edu/](https://business.rice.edu/)
2. Please see the Chemical and Biomolecular Engineering website: [https://chbe.rice.edu/](https://chbe.rice.edu/)

Master of Chemical Engineering (MChE) Degree

Program Learning Outcomes for the MChE Degree

Upon completing the MChE degree, students will be able to:

1. Identify, formulate, and solve complex engineering problems that require synthesis of advanced knowledge in chemical engineering fundamentals.
2. Demonstrate broad advanced knowledge in science and math, and depth in one chemical engineering sub-discipline (energy engineering, biomolecular engineering, materials science).
3. Demonstrate knowledge of business policies and practices in the current business environment in identifying, formulating, and solving engineering challenges in a problem/engineering challenge they undertake to solve as part of independent study.
4. Demonstrate effective oral and written communication skills.

Requirements for the MChE Degree

The MChE degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MChE degree must complete:

- A minimum of 30 credit hours at the 500-level or above course to satisfy degree requirements.
- A minimum overall GPA of 2.67 in required coursework.
- A minimum grade of B- (2.67 grade points) or better in each course.
- A minimum of 24 credit hours at Rice.
- A minimum of 6 courses (18 credit hours) from departmental (CHBE) course offerings, which includes 5 CHBE core courses and 1 additional CHBE elective course.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>Total Credit Hours Required for the MChE Degree</td>
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Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHBE 501</td>
<td>FLUID MECHANICS AND TRANSPORT PROCESSES</td>
<td>3</td>
</tr>
<tr>
<td>CHBE 590</td>
<td>KINETICS, CATALYSIS, AND REACTION ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>CHBE 602</td>
<td>PHYSICOCHEMICAL HYDRODYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>CHBE 611</td>
<td>ADVANCED TOPICS-THERMODYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>CHBE 692</td>
<td>APPLIED MATHEMATICS FOR CHEMICAL ENGINEERING¹</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Requirements

Select 5 courses at the 500-level or above.² 15
Total Credit Hours 30
Footnotes and Additional Information

1 Upon approval of their advisor, students may substitute CHBE 692 with a comparable Math course offered by another department.
2 At least 1 of the elective courses must be completed from a departmental (CHBE) course offering.

Policies for the MChE Degree

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

For additional information, please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/

Opportunities for the MChE Degree

Professional Engineering Master's 5th Year Degree Option for Rice Undergraduates
Rice undergraduate students have the option to earn the Master of Chemical Engineering (MChE) degree by adding an additional year after completing their bachelor's degree. Advanced Rice undergraduate students in good academic standing may apply to the graduate program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may complete part of the course requirements for the MChE program during their senior year. A plan of study based on their particular focus area will need to be approved by the chair of the department graduate studies committee.

As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for their bachelor's degree and the MChE degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
• should be aware of the financial aid implications, if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).

For additional information, please see the Chemical and Biomolecular Engineering website: https://chbe.rice.edu/

Contact Information
Chemical Physics
Stan Dodds
Program Co-Director
dodds@rice.edu

R. Bruce Weisman
Program Co-Director
weisman@rice.edu

The Bachelor of Science (BS) degree in Chemical Physics is jointly managed by the Department of Chemistry and the Department of Physics and Astronomy. Students take upper-level courses in both chemistry and physics, focusing on the applications of physics to chemical systems.

For additional information regarding Chemical Physics, please see the following department websites:

• Chemistry: http://chemistry.rice.edu/
• Physics and Astronomy: http://www.physics.rice.edu/

Bachelor's Program

• Bachelor of Science (BS) Degree with a Major in Chemical Physics (p. 278)

Chemical Physics does not currently offer an academic program at the graduate level.

Co-directors
Stanley A. Dodds
R. Bruce Weisman

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: Courses from various subjects may apply towards the major.

Program Description and Code
• Chemical Physics: CPHY

Undergraduate Degree Description and Code
• Bachelor of Science degree: BS

Undergraduate Major Description and Code
• Major in Chemical Physics: CPHY

Bachelor of Science (BS) Degree with a Major in Chemical Physics

Program Learning Outcomes for the BS Degree with a Major in Chemical Physics

Upon completing the BS degree with a major in Chemical Physics, students will be able to:

1. Acquire and demonstrate a solid foundation of knowledge in chemical physics and deeper knowledge of subdivisions of the field related to their interests.
2. Develop the ability to identify, formulate, and solve challenging scientific and technical problems as encountered in chemical physics.
3. Learn to read scientific literature and communicate scientific results orally and in writing for scientists and the general public.
Requirements for the BS Degree with a Major in Chemical Physics

For general university requirements, see Graduation Requirements (p. 25).

Students pursuing the BS degree with a major in Chemical Physics must complete:

- A minimum of 73 credit hours to satisfy major requirements.
- A minimum of 133 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 33-35 credit hours, depending on course selection, taken at the 300-level or above.

The Chemical Physics major is offered jointly by the Department of Chemistry and the Department of Physics and Astronomy. Students take upper-level courses in both chemistry and physics, focusing on the applications of physics to chemical systems. Students may obtain credit for some courses by advanced placement, and the program's undergraduate committee can modify requirements to meet the needs of students with special backgrounds.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for Major in Chemical Physics</td>
<td>73</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BS Degree with a Major in Chemical Physics</td>
<td>133</td>
</tr>
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</table>

### Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Core Requirements</strong></td>
<td></td>
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<tr>
<td>CHEM 121 &amp; CHEM 123</td>
<td>GENERAL CHEMISTRY I and GENERAL CHEMISTRY LABORATORY I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 122 &amp; CHEM 124</td>
<td>GENERAL CHEMISTRY II and GENERAL CHEMISTRY LABORATORY II</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 211 &amp; CHEM 213</td>
<td>ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY DISCUSSION</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 215 or CHEM 365</td>
<td>ORGANIC CHEMISTRY LAB</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 311</td>
<td>PHYSICAL CHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 312</td>
<td>PHYSICAL CHEMISTRY II</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Select 1 from the following:</strong></td>
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<tr>
<td>PHYS 101 &amp; PHYS 103</td>
<td>MECHANICS (WITH LAB) and MECHANICS DISCUSSION</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Select 1 from the following:</strong></td>
<td></td>
</tr>
<tr>
<td>PHYS 102 &amp; PHYS 104</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Elective Requirements</strong></td>
<td></td>
</tr>
</tbody>
</table>

Advanced Coursework in Physics and Chemistry

Select 3 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>PHYS 311</td>
<td>INTRODUCTION TO QUANTUM PHYSICS I</td>
<td>9</td>
</tr>
<tr>
<td>PHYS 312</td>
<td>INTRODUCTION TO QUANTUM PHYSICS II</td>
<td></td>
</tr>
<tr>
<td>or CHEM 430</td>
<td>QUANTUM CHEMISTRY</td>
<td></td>
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<tr>
<td>CHEM 360</td>
<td>INORGANIC CHEMISTRY</td>
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<td>CHEM 415</td>
<td>CHEMICAL KINETICS AND DYNAMICS</td>
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</tr>
<tr>
<td>CHEM 420</td>
<td>CLASSICAL AND STATISTICAL THERMODYNAMICS</td>
<td></td>
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<tr>
<td>or PHYS 425</td>
<td>STATISTICAL &amp; THERMAL PHYSICS</td>
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Advanced Laboratories

Select 2 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>CHEM 366</td>
<td>INORGANIC CHEMISTRY LAB</td>
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<td>CHEM 367</td>
<td>MATERIALS CHEMISTRY LAB</td>
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<tr>
<td>CHEM 368</td>
<td>CHEMICAL MEASUREMENT LAB</td>
<td></td>
</tr>
<tr>
<td>CHEM 491</td>
<td>RESEARCH FOR UNDERGRADUATES</td>
<td></td>
</tr>
<tr>
<td>or PHYS 461</td>
<td>INDEPENDENT RESEARCH</td>
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</tr>
<tr>
<td>or PHYS 462</td>
<td>INDEPENDENT RESEARCH</td>
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</tr>
<tr>
<td>PHYS 332</td>
<td>JUNIOR PHYSICS LAB II</td>
<td></td>
</tr>
</tbody>
</table>

Select 2 courses from MATH or CAAM course offerings at the 300-level or above.

Total Credit Hours Required for the Major in Chemical Physics: 73

University Graduation Requirements (p. 25)

Total Credit Hours: 133

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 The CHEM 151 and CHEM 153 and CHEM 152 and CHEM 154 Honors sequence is an acceptable substitute for the CHEM 121 and CHEM 123 and CHEM 122 and CHEM 124 General Chemistry sequence.

2 A limit of 2 credit hours from CHEM 491 or PHYS 461 or PHYS 462 may count toward the Advanced Laboratories requirement.
Policies for the BS Degree with a Major in Chemical Physics

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the major in Chemical Physics should be aware of the following program-specific transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the following department websites:

• Chemistry: http://chemistry.rice.edu/
• Physics and Astronomy: http://www.physics.rice.edu/

Opportunities for the BS Degree with a Major in Chemical Physics

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the following department websites:

• Chemistry: http://chemistry.rice.edu/
• Physics and Astronomy: http://www.physics.rice.edu/

Chemistry

Contact Information

Chemistry
https://chemistry.rice.edu/
201 Space Science Building
713-348-4082

Matteo Pasquali
Department Chair
mp@rice.edu

Zachary Ball
Associate Chair for Undergraduate Studies
zb1@rice.edu

Anatoly Kolomeisky
Associate Chair for Graduate Studies
tolya@rice.edu

Stephan Link

Associate Chair for Graduate Studies
slink@rice.edu

The Department of Chemistry offers undergraduate chemistry majors leading to both the bachelor of science (BS) degree and the bachelor of arts (BA) degree. The BS program rigorously prepares students for advanced work in chemistry or a related discipline, and the degree requirements are consistent with the guidelines for certification by the American Chemical Society. This curriculum provides a broad and comprehensive introduction to core areas of chemistry while promoting depth of understanding in one or more specific fields. BS students complete a series of foundation courses in general chemistry, analytical chemistry, biological chemistry, inorganic chemistry, organic chemistry, and physical chemistry. Students then complete one or more specializations, or “tracks,” consisting of in-depth courses both in and out of the specialization. The BA degree is a more flexible program that provides a comprehensive overview of all areas of chemistry, including laboratory experiences, but can be coupled more easily with other majors or professional career paths. Both degree programs offer students a solid background in the fundamental principles of chemistry, the properties and reactions of chemical compounds, and their uses.

Graduate studies emphasize individual research together with a fundamental understanding of chemistry beyond the students’ specific interests. Faculty research interests include the synthesis and biosynthesis of organic natural products; supramolecular chemistry, molecular recognition and biological catalysis; bioinorganic and organometallic chemistry, main group element and transition metal chemistry; the design of nanophase solids; molecular photochemistry and photophysics; infrared kinetic spectroscopy, laser, and NMR spectroscopy; studies of electron transfer in crossed beams; theoretical and computational chemistry; the study of fullerene molecules, carbon nanotubes, and their derivatives; polymer synthesis and characterization; molecular electronics; molecular machines; and chemical-based nanotechnology.

Bachelor’s Programs

• Bachelor of Arts (BA) Degree with a Major in Chemistry (p. 281)
• Bachelor of Science (BS) Degree with a Major in Chemistry (p. 283)

Coordinated Program

Bachelor of Science (BS) Degree with a Major in Chemical Physics (p. 278)*

* This degree is jointly managed by the Department of Chemistry and the Department of Physics and Astronomy.
For more information, see Chemical Physics. (p. 278)

Master’s Program

• Master of Arts (MA) Degree in the field of Chemistry*

Doctoral Program

• Doctor of Philosophy (PhD) Degree in the field of Chemistry (p. 286)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.
Chair
Matteo Pasquali

Professors
Pulickel Ajayan
Pedro Alvarez
Enrique Barrera
Andrew Barron
Philip Brooks
Cecilia Clementi
Paul Engel
Jason Hafner
Naomi Halas
Jeffrey Hartgerink
John Hutchinson
Anatoly Kolomeisky
Christy Landes
Stephan Link
Jun Lou
Caroline Masiello
Seiichi Matsuda
Antonios Mikos
Emilia Morosan
K. C. Nicolaou
Jose Onuchic
George Phillips
Peter Rossky
Gustavo Scuseria
Edwin (Ned) Thomas
James Tour
R. Bruce Weisman
Kenton Whitmire
Lon Wilson
Peter Wolynes
Michael Wong
Boris Yakobson

Associate Professors
Zachary Ball
Michael Diehl
Laszlo Kurti
Angel Marti
Eugene Zubarev

Assistant Professors
Matthew Jones
Emilie Ringe
Isabell Thomann
Han Xiao

Professors Emeriti
W. Edward Billups
Vicki Colvin
Robert Curl
Graham Glass
George McLendon
Ronald Parry

Lecturers
Lawrence B. Alemany
Michelle Gilbertson
Kristi Kincaid
Caroline V. McNeil

Instructors
Lesa Tran
Julianne Yost

Research Professor
Bruce Johnson

Assistant Research Professor
Carolyn Nichol

Adjunct Faculty
Marco Ciufolini
Tohru Fukuyama
Scott Gilbertson
Kristen Kulinowski
Luz Maria Martinez Calderon
Michael Metzker
B. Montgomery Pettit
Corina Rogge
Yigong Shi
Yongcheng Song
Marcelo Videa Vargas
Damian Young

Department and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: CHEM

Department Description and Code
• Chemistry: CHEM

Undergraduate Degree Descriptions and Codes
• Bachelor of Arts degree: BA
• Bachelor of Science degree: BS

Undergraduate Major Description and Code
• Major in Chemistry: CHEM

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Chemistry: CHEM

Bachelor of Arts (BA) Degree with a Major in Chemistry
Program Learning Outcomes for the BA Degree with a Major in Chemistry

Upon completing the BA degree with a major in Chemistry, students will be able to:

1. Demonstrate understanding of and proficiency with:
   a. the structure, bonding, spectroscopy, and reactivity of organic compounds and functional groups;
   b. curved-arrow formalism to describe reaction mechanisms, and
   c. the synthesis of organic compounds.
2. Demonstrate understanding of and proficiency with:
   a. thermochemical principles, acid-base and redox reactions,
   b. structure of simple solids and construction of molecular orbital diagrams (group theory), and
   c. survey of main group chemistry.
3. Demonstrate understanding of:
   a. the principles of quantum mechanics and applications to atomic and molecular structure and spectroscopy,
   b. classical and basic statistical thermodynamics and applications to equilibrium physico-chemical systems, and
   c. kinetics of gas phase processes and chemical reactions.

Requirements for the BA Degree with a Major in Chemistry

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Chemistry must complete:

- A minimum of 21-23 courses (55 credit hours) depending on course selection to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 10 courses (27 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

**Code** | **Title** | **Credit Hours**
--- | --- | ---
Total Credit Hours Required for the Major in Chemistry | 55
Total Credit Hours Required for the BA Degree with a Major in Chemistry | 120

### Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 151</td>
<td>HONORS CHEMISTRY I</td>
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<tr>
<td>&amp; CHEM 153</td>
<td>and HONORS CHEMISTRY LABORATORY I</td>
<td></td>
</tr>
<tr>
<td>CHEM 152</td>
<td>HONORS CHEMISTRY II</td>
<td>4</td>
</tr>
<tr>
<td>&amp; CHEM 154</td>
<td>and HONORS CHEMISTRY LABORATORY II</td>
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</table>

### Chemistry Foundation Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 301</td>
<td>BIOCHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 211</td>
<td>ORGANIC CHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>&amp; CHEM 213</td>
<td>and ORGANIC CHEMISTRY DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>CHEM 330</td>
<td>ANALYTICAL CHEMISTRY</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 360</td>
<td>INORGANIC CHEMISTRY</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 2 from the following:

- BIOL 352 PHYSICAL CHEMISTRY FOR THE BIOSCIENCES
- CHEM 311 PHYSICAL CHEMISTRY I
- CHEM 312 PHYSICAL CHEMISTRY II

### Mathematics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
<td>4</td>
</tr>
</tbody>
</table>

### Physics

Select 1 from the following:

- PHYS 101 MECHANICS (WITH LAB)
- PHYS 103 and MECHANICS DISCUSSION
- PHYS 111 HONORS MECHANICS (WITH LAB)
- PHYS 125 GENERAL PHYSICS (WITH LAB)

Select 1 from the following:

- PHYS 102 ELECTRICITY & MAGNETISM (WITH LAB)
- PHYS 104 and ELECTRICITY AND MAGNETISM DISCUSSION
- PHYS 112 HONORS ELECTRICITY & MAGNETISM (WITH LAB)
- PHYS 126 GENERAL PHYSICS II (WITH LAB)

### Advanced Laboratories

Select 3 from the following:

- BIOL 311 ADVANCED EXPERIMENTAL BIOSCIENCES
- CHEM 365 ORGANIC CHEMISTRY LAB
- CHEM 366 INORGANIC CHEMISTRY LAB
- CHEM 367 MATERIALS CHEMISTRY LAB
- CHEM 368 CHEMICAL MEASUREMENT LAB

### Elective Requirements

Select 2 additional courses from the following:

- BIOL 302 BIOCHEMISTRY II
- CHEM 212 ORGANIC CHEMISTRY II
- CHEM 320 INORGANIC CHEMISTRY II

Any lecture course between CHEM 400 and CHEM 489

Any lecture course between CHEM 495 and CHEM 699

Total Credit Hours Required for the Major in Chemistry | 55

Additional Credit Hours to Complete BA Degree Requirements | 5

University Graduation Requirements (p. 25) | 60

Total Credit Hours | 120

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.
Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Chemistry website: https://chemistry.rice.edu/.

Bachelor of Science (BS) Degree with a Major in Chemistry
Program Learning Outcomes for the BS Degree with a Major in Chemistry
Upon completing the BS degree with a major in Chemistry, students will be able to:

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   a. the structure, bonding, spectroscopy, and reactivity of organic compounds and functional groups;
   b. curved-arrow formalism to describe reaction mechanisms, and
   c. the synthesis of organic compounds.

2. Demonstrate understanding of and proficiency with:
   a. thermochemical principles, acid-base and redox reactions,
   b. structure of simple solids and construction of molecular orbital diagrams (group theory), and
   c. survey of main group chemistry.

3. Demonstrate understanding of:
   a. the principles of quantum mechanics and applications to atomic and molecular structure and spectroscopy,
   b. classical and basic statistical thermodynamics and applications to equilibrium physico-chemical systems, and
   c. kinetics of gas phase processes and chemical reactions.

4. Design, conduct, record, and analyze chemical experiments, while practicing responsible and ethical scientific conduct.

Requirements for the BS Degree with a Major in Chemistry
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BS degree with a major in Chemistry must complete:

- A minimum of 24-28 courses depending on course selection (69 credit hours) to satisfy major requirements.
- A minimum of 129 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 14-16 courses depending on course selection (41 credit hours) at the 300-level or above.
- The requirements for at least one area of specialization. The areas of specialization for the BS degree with a major in Chemistry are:
  - Biological and Medicinal Chemistry (p. 285), or
  - Inorganic Chemistry and Inorganic Materials (p. 285), or
  - Organic Chemistry (p. 285), or
  - Physical and Theoretical Chemistry (p. 285)

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier).

1. The CHEM 121/CHEM 123 and CHEM 122/CHEM 124 General Chemistry sequence is an acceptable substitute for the CHEM 151/CHEM 153 and CHEM 152/CHEM 154 Honors sequence.
2. Chemistry students may enroll in BIOC 301 without the prerequisite BIOC 201. Requests to waive the prerequisite course are approved by the course instructor. Students should contact the course instructor for more information.
3. Though not required, MATH 211 is strongly recommended for students planning to specialize in Physical and Theoretical chemistry or planning to pursue graduate studies. Additionally, the Department of Mathematics may, after consultation with a student concerning his/her previous math preparation, recommend that a student be placed into a higher level math course than that for which the student has received official credit. The Department of Chemistry will accept this waiver of the math classes upon a written confirmation of the waiver from the Department of Mathematics and upon the student's successful completion of the higher level math course.
4. MATH 221 and MATH 222 may substitute for MATH 212.
5. For the purposes of this requirement, "advanced coursework" includes chemistry lecture courses at the 400-level or higher (courses in Rice's course catalog that have a course type listed as "lecture"). CHEM 212 or CHEM 320 or BIOC 302 counts as "advanced coursework" for purposes of this requirement. Courses in other departments with substantial chemistry content may count toward this requirement with approval of the Director of the Undergraduate Program.

Policies for the BA Degree with a Major in Chemistry
Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Chemistry should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

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Opportunities for the BA Degree with a Major in Chemistry
Academic Honors
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   a. thermochemical principles, acid-base and redox reactions,
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  - Biological and Medicinal Chemistry (p. 285), or
  - Inorganic Chemistry and Inorganic Materials (p. 285), or
  - Organic Chemistry (p. 285), or
  - Physical and Theoretical Chemistry (p. 285)

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier).
Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Total Credit Hours Required for the Major in Chemistry</strong></td>
<td>69</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credit Hours Required for the BS Degree with a Major in Chemistry</strong></td>
<td>129</td>
</tr>
</tbody>
</table>

**Degree Requirements**

<table>
<thead>
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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
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<td><strong>Core Requirements</strong></td>
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<td>General Chemistry</td>
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<td>CHEM 151</td>
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<td>and HONORS CHEMISTRY LAB 1</td>
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<td>CHEM 152</td>
<td>HONORS CHEMISTRY II</td>
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<td>&amp; CHEM 154</td>
<td>and HONORS CHEMISTRY LAB 2</td>
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<tr>
<td></td>
<td>Chemistry Foundation Courses</td>
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<td>BIOC 301</td>
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<td>CHEM 211</td>
<td>ORGANIC CHEMISTRY I</td>
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<td>and ORGANIC CHEMISTRY DISCUSSION</td>
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<td>CHEM 312</td>
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<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
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</tr>
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<td></td>
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<td>Select 1 from the following:</td>
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<tr>
<td>PHYS 101</td>
<td>MECHANICS (WITH LAB)</td>
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<td>and MECHANICS DISCUSSION</td>
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<td>PHYS 111</td>
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<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
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<tr>
<td>PHYS 102</td>
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<tr>
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<td>and ELECTRICITY AND MAGNETISM DISCUSSION</td>
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<td>PHYS 112</td>
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<td>PHYS 126</td>
<td>GENERAL PHYSICS II (WITH LAB)</td>
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<tr>
<td></td>
<td><strong>Advanced Laboratories</strong></td>
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<tr>
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<td>Select 3 from the following:</td>
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<td>CHEM 366</td>
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<td>CHEM 367</td>
<td>MATERIALS CHEMISTRY LAB</td>
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<td>CHEM 368</td>
<td>CHEMICAL MEASUREMENT LAB</td>
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<td></td>
<td><strong>Research</strong></td>
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<td>CHEM 391</td>
<td>RESEARCH FOR UNDERGRADUATES</td>
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<td>Select 5 credit hours from the following:</td>
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**Area of Specialization**

Select 1 from the following (see below for the requirements for each Area of Specialization):

- Biological and Medicinal Chemistry
- Inorganic Chemistry and Inorganic Materials
- Organic Chemistry
- Physical and Theoretical Chemistry

**Total Credit Hours Required for the Major in Chemistry**

- 69

**University Graduation Requirements (p. 25)**

- 60

**Total Credit Hours**

- 129

---

**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1. The CHEM 121/CHEM 123 and CHEM 122/CHEM 124 General Chemistry sequence is an acceptable substitute for the CHEM 151/CHEM 153 and CHEM 152/CHEM 154 Honors sequence.

2. Chemistry students may enroll in BIOC 301 without the prerequisite BIOC 201. Requests to waive the prerequisite course are approved by the course instructor. Students should contact the course instructor for more information.

3. Though not required, MATH 211 is strongly recommended for students planning to specialize in Physical and Theoretical chemistry or planning to pursue graduate studies. Additionally, the Department of Mathematics may, after consultation with a student concerning his/her previous math preparation, recommend that a student be placed into a higher level math course than that for which the student has received official credit. The Department of Chemistry will accept this waiver of the math classes upon a written confirmation of the waiver from the Department of Mathematics and upon the student’s successful completion of the higher level math course.

4. MATH 221 and MATH 222 may substitute for MATH 212.

5. CHEM 391 must be taken as part of the Research requirement and for at least 3 credit hours. Enrollment in CHEM 391 requires permission of the course instructor. Students are expected to complete CHEM 391 before the end of their junior year; permission will not normally be granted for students in their final year of undergraduate study.

6. If CHEM 700 is selected as a Research course, it may only be taken for up to 2 credit hours.

---

**Areas of Specialization**

To fulfill the remaining Chemistry major requirements, students must complete advanced work that satisfies the requirements of one specialization as listed below. A student may, working with his or her chemistry major advisor and with the approval of the Director of the Undergraduate Program, propose a track in another specialization. Such proposed tracks must have course and laboratory experiences comparable to those of the tracks listed below.
Additionally, a double specialization can be earned by completing the requirements for two specializations. For double specialization, only two advanced lecture courses may count towards both specializations. The remaining two advanced courses in each specialization must be unique (i.e., double specialization requires six advanced lecture courses, and triple specialization require eight). A NanoChemistry specialization can be added to any of the standard tracks by adding two nanoscience courses.

### Area of Specialization: Biological and Medicinal Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>CHEM 212</td>
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</tr>
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<td>and ORGANIC CHEM DISCUSSION II</td>
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<td>CHEM 320</td>
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<td>BIOC 302</td>
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</tbody>
</table>

**Advanced Coursework in Chemistry**

Select 2 from the following:

- Any lecture course between CHEM 400 and CHEM 489
- Any lecture course between CHEM 495 and CHEM 699

Total Credit Hours: 12

### Area of Specialization: Inorganic Chemistry and Inorganic Materials

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>CHEM 475</td>
<td>PHYSICAL METHODS IN INORGANIC CHEMISTRY</td>
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</tr>
<tr>
<td>CHEM 495</td>
<td>TRANSITION METAL CHEMISTRY</td>
<td>3</td>
</tr>
</tbody>
</table>

**Advanced Coursework in Chemistry**

Select 2 from the following:

- BIOC 302 BIOCHEMISTRY II
- Any lecture course between CHEM 400 and CHEM 489
- Any lecture course between CHEM 495 and CHEM 699

Total Credit Hours: 12

### Area of Specialization: Organic Chemistry

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 212</td>
<td>ORGANIC CHEMISTRY II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 214</td>
<td>and ORGANIC CHEM DISCUSSION II</td>
<td></td>
</tr>
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<td>CHEM 320</td>
<td>ORGANIC CHEMISTRY II</td>
<td>3</td>
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<tr>
<td>CHEM 401</td>
<td>ADVANCED ORGANIC CHEMISTRY</td>
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</tbody>
</table>

**Advanced Coursework in Chemistry**

Select 2 from the following:

- BIOC 302 BIOCHEMISTRY II
- Any lecture course between CHEM 400 and CHEM 489
- Any lecture course between CHEM 495 and CHEM 699

Total Credit Hours: 12

### Area of Specialization: Physical and Theoretical Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 430</td>
<td>QUANTUM CHEMISTRY</td>
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</tr>
<tr>
<td>CHEM 420</td>
<td>CLASSICAL AND STATISTICAL THERMODYNAMICS</td>
<td>3</td>
</tr>
</tbody>
</table>

**Footnotes and Additional Information**

1. For purposes of this requirement, “advanced coursework” includes chemistry lecture courses at the 400-level or higher (courses in Rice’s course catalog that have a course type listed as “lecture”). CHEM 212 or CHEM 320 or BIOC 302 count as “advanced coursework” for purposes of this requirement. Courses in other departments at the 400-level or higher with substantial chemistry content may count toward this requirement with approval of the Director of the Undergraduate Program.

### Policies for the BS Degree with a Major in Chemistry

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

Students pursuing the major in Chemistry should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Chemistry website: https://chemistry.rice.edu/.

### Opportunities for the BS Degree with a Major in Chemistry

#### Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

#### Honors Research Program in Chemistry

The Chemistry Honors Research Program is a suite of courses (CHEM 492/CHEM 493) offering the opportunity for a rigorous two-semester “capstone” individual research project in Chemistry. This immersive program is intended to give students a first-hand experience of a career in research. Students interested in graduate school are strongly encouraged to apply. Students having completed previous independent research (as CHEM 391 and/or CHEM 491) in an off-campus laboratory
in the Texas Medical Center are eligible to apply to perform honors research in that laboratory. The honors research courses (CHEM 492 and CHEM 493) function as a pair and must all be taken in the same academic year. Registration for CHEM 492 requires a commitment to register for CHEM 493.

Students who complete the Chemistry Honors Research Program are given primary consideration for the Distinction in Research and Creative Work, a university honor for select undergraduates, carefully selected by the department and granted at commencement, which appears on the transcript and diploma.

Chemistry Honors Research Program Components
• CHEM 492: Fall semester, 5 credit hours. For approved students only, requires a formal application and recommendation of a faculty research advisor. Requirements include at least 15 hours of laboratory research per week and regular written and/or oral progress reports.
• CHEM 493: Spring semester, 5 credit hours. Requirements include at least 15 hours of laboratory research per week and a formal thesis.
• Applications may be submitted to the course instructor, February 1 – August 1. Students are encouraged to apply early.

For additional information, please see the Chemistry website: https://chemistry.rice.edu/.

Doctor of Philosophy (PhD) Degree in the field of Chemistry

Program Learning Outcomes for the PhD Degree in the field of Chemistry
Upon completing PhD Degree in the field of Chemistry, students will:

1. Design and conduct independent and novel experimental and/or theoretical/computational chemical-based research that contributes to the existing body of knowledge in the field.
2. Locate, retrieve, read, and interpret current chemical literature using modern literature search methods.
3. Demonstrate an awareness of the ethical, societal, and environmental impact of chemistry.
4. Effectively communicate to both the scientific community and the general public the results of their work both orally and in writing.

Requirements for the PhD Degree in the field of Chemistry

For general university requirements, please see Doctoral Degrees (p. 64). Students who have completed course work equivalent to that required for a BA or BS in chemistry may apply for admission to the PhD degree program. For more information, see Admission to Graduate Study (p. 55). Students are not normally admitted to study for an MA degree.

Research
The PhD in chemistry is awarded for original research in chemistry. During the first semester of residence, students select a research advisor from among the members of the faculty. In some cases, students may choose research advisors outside of the department. Approval of the department chair is required to formalize these advising relationships. The research advisor will guide the student in the choice of an appropriate research topic and in the detailed training required to complete that project. Students must successfully complete CHEM 800 and CHEM 600 every semester of residence. Candidates earn a PhD after successfully completing at least 90 semester hours of advanced study in chemistry and related fields, culminating in a thesis that describes an original and significant investigation in chemistry. The thesis must be satisfactorily defended in a public oral examination. The student must pass the thesis defense before the end of the 16th semester of residency.

Coursework
Within the first two years, the student must complete six 3-semester-hour graduate-level lecture courses at Rice University, or their approved equivalent. In order to satisfy this requirement, each of these courses must satisfy the following criteria:

• They must be approved by the department’s graduate advising committee.
• Chemistry graduate courses must be at the 500 level or higher. Certain 300-level and 400-level courses in other departments may be acceptable with prior approval by the department’s graduate advising committee, but a maximum of three lower-level courses in other departments can count towards the six-class requirement, and these do not count towards the university-wide requirement of 90 credits at the 500-level. Courses must be in technical subjects in science or engineering. Courses in teaching, presentation, or management will not be counted toward the six-class requirement.
• Each course must be passed with a grade of B- or higher. It is possible to repeat or replace a course, upon approval of the department’s graduate advising committee. A maximum of two courses can be repeated/replaced.
• Students who pursue both the BS and the PhD at Rice need not duplicate course work for the two degrees. However, teaching as an undergraduate does not substitute for the teaching requirements in the PhD program.

Responsible Conduct of Research
Each graduate student must successfully complete the ethics course UNIV 594.

Teaching
Each graduate student must participate in teaching (CHEM 700) for the equivalent of three semesters. Assignments are determined by departmental needs.

Qualifying Examination
The qualifying exam has written and oral components, and the expectations for these are available in the department office. The examination committee will be composed of three faculty members, excluding the research advisor. The written document must be submitted to the committee at least one week before the date of the oral examination. The examination must be taken by the last day of class at the end of the student’s fourth semester in residency. Any follow-up work

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Chemistry</td>
<td>90</td>
</tr>
</tbody>
</table>
required by the committee must be completed by the assigned date, and the exam must be passed by the end of the sixth semester.

**Advancement to Candidacy for the PhD**

After completing the required coursework, teaching, and qualifying examination, a student must petition to be advanced to candidacy for the PhD degree. Upon advancement to candidacy, a student chooses a thesis committee of at least three faculty members with the guidance and approval of the research advisor and department chair. The thesis committee must include one faculty member whose primary appointment is outside of the chemistry department.

**Requirements for the MA Degree in the field of Chemistry**

**MA Degree Program**

The MA degree is a thesis master's degree. For general university requirements, please see Thesis Master's Degrees (p. 67). Although students are not normally admitted to study for the MA degree, graduate students may earn the MA degree after obtaining approval of their candidacy for the PhD. The MA degree may also be earned by students who do not achieve PhD candidacy by:

- Completing the six one-semester courses required for PhD candidacy
- Producing a master's thesis that presents the results of a program of research approved by the department
- Passing a final master's thesis defense and submitting the thesis to the Office of Graduate and Postdoctoral Studies.

**Summary**

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
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<td>30</td>
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</table>

**Policies for the PhD Degree in the field of Chemistry**

**Appeals**

Students may petition the Chemistry Department Graduate Advising Committee for variances on these academic regulations.

**Satisfactory Performance**

To remain in good academic standing, a student must maintain a GPA of 3.00 (B) or higher in all lecture courses, a GPA of 3.00 (B) or higher in all semesters of CHEM 700, and a grade of B or higher in every semester of CHEM 600 and CHEM 800. Failure to maintain satisfactory grades and sufficient progress in research will result in probation and possible dismissal. The student must be enrolled full time in a departmentally approved research group beginning the second semester, and every semester thereafter. All graduate students are evaluated annually to ensure that they are making appropriate progress towards the degree. The student, advisor, or department may request a meeting between the student and a faculty committee at any time to evaluate progress or to determine a course of action. If progress is unsatisfactory, the committee may recommend a semester of probation, which could result in dismissal from the program if progress remains unsatisfactory in the probationary semester.

For additional information, please see the Chemistry website: [https://chemistry.rice.edu/](https://chemistry.rice.edu/)

**Opportunities for the PhD Degree in the field of Chemistry**

For additional information, please see the Chemistry website: [https://chemistry.rice.edu/](https://chemistry.rice.edu/)

**Cinema and Media Studies**

**Contact Information**

Cinema and Media Studies  
http://arthistory.rice.edu/cinema-and-media-studies-minor  
116 Humanities Building  
713-348-4274  
  
Gordon Hughes  
Program Co-Director  
Gordon.A.Hughes@rice.edu  
  
Lida Oukaderova  
Program Co-Director  
Lida.Oukaderova@rice.edu  

Cinema and Media Studies is an interdisciplinary program that focuses on the history, analysis, and theorization of film and other technologically driven visual media, including television, video art, the Internet, and expanded cinema.

Broader survey courses introduce students to the history of moving images and to the fundamentals of cinematic and media analysis, while advanced seminars focus on particular movements, concepts, and themes across specific periods and geographic areas.

**Minor**

- Minor in Cinema and Media Studies (p. 288)

Cinema and Media Studies does not currently offer an academic program at the graduate level.

**Co-Directors and Advisors**

Gordon Hughes  
Lida Oukaderova  

**Professors**

Marcia Brennan  
Kirsten Ostherr  
Judith Roof  
Edward Snow  

**Associate Professors**

Graham Bader  
Martin Blumenthal-Barby  
Luis Duno-Gottberg  
Gordon Hughes  
Philip Wood
Assistant Professor
Lida Oukaderova

Professor in the Practice
Charles Dove

Steering Committee
Martin Blumenthal-Barby
Charles Dove
Gordon Hughes
Kirsten Ostherr
Lida Oukaderova

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: CMST

Program Description and Code
• Cinema and Media Studies: CMST

Undergraduate Minor Description and Code
• Minor in Cinema and Media Studies: CMST

Minor in Cinema and Media Studies
Program Learning Outcomes for the Minor in Cinema and Media Studies
Upon completing the minor in Cinema and Media Studies, students will be able to:

1. Develop an understanding of film and media history in the context of cultural, economic, political, and national developments.
2. Utilize specialized disciplinary vocabulary and methodologies effectively, and communicate the function and meaning of film and media works both verbally and in writing.
3. Develop an understanding of modes of theoretical inquiry relevant to film and media studies.
4. Understand major film movements, trends, and genres across regional, national, and global contexts.
5. Develop analytical thinking skills to generate and answer original research questions and produce independent research.

Requirements for the Minor in Cinema and Media Studies
Students pursuing the minor in Cinema and Media Studies must complete:

• A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
• A minimum of 2 courses (6 credit hours) taken at the 300-level or above.

• A maximum of 2 courses (6 credit hours) from the same subject code (i.e., ENGL, GERM, etc.) may be used to meet the Elective Requirements.
• A maximum of 3 courses (9 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

Students who pursue the minor in Cinema and Media Studies are encouraged to meet with a program co-director before the end of the winter semester of their third year to declare their intention to complete the minor.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Minor Requirements

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Core Requirements
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<td>CMST 201 / GERM 280</td>
<td>HISTORY OF CINEMA AND MEDIA I: INVENTION TO 1945</td>
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<tr>
<td>CMST 202</td>
<td>HISTORY OF CINEMA AND MEDIA PART II: 1945-PRESENT</td>
<td>9</td>
</tr>
<tr>
<td>CMST 203</td>
<td>INTRODUCTION TO FILM AND MEDIA ANALYSIS</td>
<td>9</td>
</tr>
<tr>
<td>FILM 280 / ARTS 280 / HART 280</td>
<td>HISTORY &amp; AESTHETICS OF FILM</td>
<td>9</td>
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</table>

Elective Requirements
Select 3 from the following: 1

<table>
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<tr>
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<td>ENGL 273 / SWGS 273</td>
<td>MEDICINE AND MEDIA</td>
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<tr>
<td>ENGL 374</td>
<td>CINEMA STUDIES</td>
<td>9</td>
</tr>
<tr>
<td>ENGL 375</td>
<td>FILM AND LITERATURE</td>
<td>9</td>
</tr>
<tr>
<td>ENGL 386 / FILM 381</td>
<td>MEDICAL MEDIA ARTS LAB</td>
<td>9</td>
</tr>
<tr>
<td>FILM 382 / HART 382</td>
<td>MODALITIES OF CINEMA</td>
<td>9</td>
</tr>
<tr>
<td>FILM 383 / HART 383</td>
<td>GLOBAL CINEMA</td>
<td>9</td>
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<tr>
<td>FILM 432 / ARTS 432</td>
<td>FILM GENRE: THE WESTERN</td>
<td>9</td>
</tr>
<tr>
<td>FILM 433</td>
<td>FILM GENRE: SCIENCE FICTION CINEMA</td>
<td>9</td>
</tr>
<tr>
<td>FILM 435 / ARTS 435 / HART 480</td>
<td>SEMINAR ON FILM AUTHORSHIP: THE NEW HOLLYWOOD</td>
<td>9</td>
</tr>
<tr>
<td>FREN 407</td>
<td>INTRODUCTION TO CINEMA IN FRENCH</td>
<td>9</td>
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GERM 122 / FSEM 122  HISTORY THROUGH GERMAN CINEMA
GERM 132 / FSEM 132  NATIONAL SOCIALISM AND FILM
GERM 134 / FSEM 134  MODERN MEDIA
GERM 136 / FSEM 136  GERMAN FILM
GERM 328 / HUMA 328  GERMAN ADAPTATIONS: TEXT TO FILM
GERM 338 / HUMA 373 / SWGS 361  NEW GERMAN FILM: HITLER'S CINEMATIC CHILDREN
HART 250 / FILM 250  CONTEMPORARY EUROPEAN CINEMA
HART 336 / ASIA 355 / FILM 336  CINEMA AND THE CITY
HART 359 / ARCH 359 / FILM 359  CINEMAS OF URBAN ALIENATION
HART 388 / FILM 388  POST WAR EUROPEAN CINEMA
HART 391 / ANTH 378 / FILM 378  PLACE AND MEMORY IN MIDDLE EASTERN AND EUROPEAN CINEMA
HART 457 / FILM 455  VIDEO AND EXPANDED CINEMA
SPPO 422  LATIN AMERICAN CINEMA

Total Credit Hours 18

Footnotes and Additional Information
1 At least 2 elective courses must be numbered at the 300-level or above. With the exception of core courses, no more than 2 courses (6 credit hours) from the same subject code (i.e. ENGL, GERM, etc.) may be used to fulfill the Electives Requirement.
2 Only approved topics (course sections) will apply toward the minor.

Policies for the Minor in Cinema and Media Studies
Program Restrictions and Exclusions
Students pursuing the minor in Cinema and Media Studies should be aware of the following program restriction:

• As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the minor in Cinema and Media Studies should be aware of the following program-specific transfer credit guidelines:

• No more than 3 courses (9 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
• Request for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Cinema and Media Studies website:
http://arthistory.rice.edu/cinema-and-media-studies-minor

Opportunities for the Minor in Cinema and Media Studies
Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this minor.

Civic Leadership
Contact Information
Civic Leadership
https://ccl.rice.edu/
208 Rice Memorial Center
713-348-2223

Caroline Quenemoen
Executive Director
ckq@rice.edu

Madalina Akli
Associate Director
madalina@rice.edu

In support of Rice’s mission of providing a distinctive undergraduate experience, the Center for Civic Leadership (CCL) helps undergraduate students develop the knowledge, skills, and values to address the problems of the 21st century and to lead in a variety of community environments. The focus on civic leadership reflects not only Rice’s mission but a broader trend that recognizes the civic purpose of 21st century institutions of higher education to cultivate social responsibility and active citizenship. The CCL’s approach to leadership education stresses the development of knowledge to understand the complex challenges facing today’s society, skills to motivate and collaborate with
diverse stakeholders to take informed action, and values to effect positive change.

All students begin the program by completing a CCL Immersion Program, which introduces them to problems facing the city of Houston (through lectures, community tours, and short-term service) and develops skills in reflective practice critical to leadership development.

Additionally, students will complete a minimum of 3 credit hours of social issues electives and a minimum of 3 credit hours of leadership electives chosen from a list of courses covering relevant topics. Timely, personalized advising will play an important role in the selection of the electives in order to ensure that students follow an academically coherent path to the certificate. The purpose of this element of the certificate pathway is to provide foundational knowledge directly pertinent to a student’s capstone project.

Subsequently, students will apply to participate in a CCL Action Program that allows them to work in collaboration with a community partner to address a problem or need. To be selected to one of these programs, students must demonstrate relevant academic preparation.

Upon completion of the above listed requirements, students with a minimum overall GPA of 3.3 may apply in the spring of their sophomore or junior year for admittance to the Certificate in Civic Leadership.

To receive the certificate, students must complete a substantial civic leadership project in partnership with a community organization under the guidance of one faculty and one CCL advisor. In the fall semester, all admitted certificate students take UNIV 402, in which they prepare for their capstone projects by researching a community need or problem, designing a sustainable response, developing a project proposal, and reflecting on leadership challenges and solutions. Students subsequently carry out their projects independently in the spring semester under the direction of their faculty advisor and the capstone instructor (UNIV 403).

To register for UNIV 403, students must have successfully completed UNIV 402 and received approval for their CCL capstone project proposal from their advisors, their community partner, and the UNIV 402 course instructor. UNIV 403 students must present their project results to the community partner through a formal presentation and written report before the conclusion of the course. Additionally, students are encouraged to present at a formal venue, such as a conference or symposium, within one year of course completion.

Consideration for receipt of the certificate requires submission of a portfolio that includes the capstone project and description of its outcomes, a reflection essay on civic leadership, and a public presentation to the campus and community. Upon recommendation of the capstone instructor and faculty advisor, the certificate will be awarded by vote of the faculty advisory board and recognized on the student’s official transcript upon graduation.

Certificate

- Certificate in Civic Leadership (p. 290)

Civic Leadership does not currently offer an academic program at the graduate level.

Executive Director

Caroline Quenemoen

Faculty Director

Robert Stein, Political Science

Director of Programs and Partnerships

Libby Vann

Director of Curriculum and Fellowships

Danika Burgess

Associate Directors

Madalina Akli
Michael S. Domeracki
Alan Steinberg
Marcia Walker-McWilliams

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

- Course offerings/subject code: LEAD

Center Description and Code

- Center for Civic Leadership: LEAD

Undergraduate Certificate Description and Code

- Certificate in Civic Leadership: CCL

Certificate in Civic Leadership

Program Learning Outcomes for the Certificate in Civic Leadership

Upon completing the Certificate in Civic Leadership, students will be able to:

1. Integrate academic and experiential knowledge in new settings and be able to identify, frame, and analyze issues.
2. Address real world issues through interaction and collaboration with diverse community partners.
3. Communicate with and present their work effectively to a range of audiences both within and beyond the academic community.
4. Identify and express their individual values and goals and be able to act on them.
5. Demonstrate motivation to make a positive impact on society.

Requirements for the Certificate in Civic Leadership

Students pursuing the Certificate in Civic Leadership must complete:

- A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.
- A minimum of 1 Experiential Learning Immersion Program.
- A minimum of 1 Experiential Learning Action Program.
- A Civic Leadership Portfolio.
- A minimum overall GPA of 2.0 in certificate requirements.
- All required coursework associated with the student's corresponding degree program.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student’s Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>

Total Credit Hours Required for the Certificate in Civic Leadership 12

**Certificate Requirements**

### Required Courses

Select at least 1 course (minimum of 3 credit hours) from the Leadership Electives course list below

Select at least 1 course (minimum of 3 credit hours) from the Social Issues Electives course list below

### Required Experiential Learning Programs

**Select 1 Immersion Program from the following:**
- Urban Immersion
- Beyond the Sallyport
- Alternative Spring Break Participant
- Group International Service Project Participant

**Select 1 Action Program from the following:**
- Urban Immersion Coordinator
- Alternative Spring Break Site Leader
- Group International Service Project Site Leader
- Houston Action Research Team (HART)
- Leadership Rice Summer Mentorship Experience
- Loewenstern Fellowship
- Houston Internship Program

### Required Portfolio

Civic Leadership Portfolio

### Capstone

UNIV 402 CIVIC LEADERSHIP CAPSTONE I 3
UNIV 403 CIVIC LEADERSHIP CAPSTONE II 3

**Footnotes and Additional Information**

1 Portfolio must be submitted by the last day of the semester in which the student completes UNIV 403. The Portfolio must include work samples completed for the certificate and a reflection essay that addresses how these experiences contributed to civic leadership development.

**Leadership Electives**

Students must complete at least 1 course (minimum of 3 credit hours) from the following:

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</table>

**Social Issues Electives**

Students must complete at least 1 course (minimum of 3 credit hours) from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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</table>

**2017-2018 General Announcements**
CEVE 307 / ENST 307 / ESCI 307  
ENERGY AND THE ENVIRONMENT 3  

CHBE 281 / ENST 281  
ENGINEERING SUSTAINABLE COMMUNITIES 3  

EBIO 204 / ENST 204  
ENVIRONMENTAL SUSTAINABILITY: THE DESIGN & PRACTICE OF COMMUNITY AGRICULTURE 1  

ECON 432  
POLITICAL ECONOMY 3  

ECON 450  
ECONOMIC DEVELOPMENT 3  

ECON 460  
ADVANCED TOPICS IN ECONOMIC DEVELOPMENT 3  

ECON 462  
ECONOMICS OF HUMAN CAPITAL 4  

ECON 479  
ECONOMIC MODELING AND PUBLIC POLICY 3  

ECON 480 / ENST 480  
ENVIRONMENTAL ECONOMICS 3  

EDUC 335  
URBAN EDUCATION: ISSUES, POLICY, AND PRACTICE 3  

EDUC 350  
EDUCATION POLICY: FROM LEGISLATURES TO CLASSROOMS 3  

ELEC 419 / BIOE 419  
INNOVATION LAB FOR MOBILE HEALTH 3  

ENGL 278  
MEDICINE IN THE AGE OF NETWORKED INTELLIGENCE 3  

ENGL 367 / SWGS 367  
LITERATURE AND CULTURE OF THE U.S.-MEXICO BORDERLANDS 3  

GLHT 201  
INTRODUCTION TO GLOBAL HEALTH 3  

HEAL 360  
VIOLENCE IN AMERICA: A PUBLIC HEALTH PERSPECTIVE 3  

HEAL 460  
PLANNING AND EVALUATION OF HEALTH PROMOTION AND EDUCATION 3  

HIST 268  
MODERN SLAVERY 3  

HIST 328  
POVERTY AND SOCIAL JUSTICE IN LATIN AMERICA 3  

HIST 421  
RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH 3  

HUMA 202 / ENST 202  
CULTURE, ENERGY AND THE ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES 3  

HUMA 320  
FROM PHYSICS LABS TO OIL FUTURES: SOCIAL STUDIES OF ENERGY 3  

LASR 375 / SWGS 375  
LATINA AND AFRICAN AMERICAN WOMEN'S ACTIVISM IN THE URBAN METROPOLIS 3  

LASR 376 / SWGS 376  
CHICANA AND LATINA EXPERIENCE THRU FILM 3  

PHIL 315  
ETHICS, MEDICINE, AND PUBLIC POLICY 3  

POLI 315  
ELECTIONS AND VOTING BEHAVIOR 3  

POLI 320 / RELI 320  
THE LEGAL FRAMEWORK OF RELIGIOUS TOLERANCE 2  

POLI 362  
COMPARATIVE URBAN POLITICS AND POLICY 3  

PSYC 341  
HUMAN-COMPUTER INTERACTION 3  

PSYC 345  
HEALTH PSYCHOLOGY 3  

PSYC 435  
POLLUTION AND PSYCHOLOGICAL DEVELOPMENT 3  

SOCI 301  
SOCIAL INEQUALITY 3  

SOCI 306 / SWGS 324  
SOCIOLOGY OF GENDER 3  

SOCI 308  
HOUSTON: THE SOCIOLOGY OF A CITY 3  

SOCI 314  
SCIENCE AT RISK? OUT OF THE LAB AND INTO PUBLIC SPHERE 3  

SOCI 340  
SOCIOLOGY OF IMMIGRATION 3  

SOCI 343  
RACE, SOCIETY AND POPULATION CHANGE 3  

SOSC 330  
HEALTH CARE REFORM IN THE 50 STATES 3  

Policies for the Certificate in Civic Leadership  

Admissions  
Upon completion of the Required Electives and Experiential Learning Programs, students with a minimum overall GPA of 3.3 or higher may apply in the spring of their sophomore or junior year for admittance to the Certificate in Civic Leadership.  

To apply, students must submit the following:  

• A transcript demonstrating successful completion of required electives and eligible minimum GPA of 3.3.  
• Curriculum Choice Statement  
• 3 Supplemental Questions (complete instructions are available at https://ccl.rice.edu/students/students-subpage/steps-to-complete-certificate/).  

Only students who propose a feasible project and demonstrate a coherent path of preparation will be admitted to the certificate program.  

Program Restrictions and Exclusions  
Students pursuing the Certificate in Civic Leadership should be aware of the following program restriction:  

• As noted in Majors, Minors, and Certificates (p. 12), "Students may declare their intent to pursue a university certificate only after they have first declared a major."  

Transfer Credit  
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.  

Program Transfer Credit Guidelines  
Students pursuing the Certificate in Civic Leadership should be aware of the following program-specific transfer credit guidelines:  

• Request for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
Opportunities for the Certificate in Civic Leadership

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Center for Civic Leadership website: https://ccl.rice.edu/

Civil and Environmental Engineering

Contact Information
Civil and Environmental Engineering
http://ceve.rice.edu/
116 Keck Hall, MS 519
713-348-4949

Robert Griffin
Department Chair
rjg6@rice.edu

Civil and Environmental Engineering (CEE) is a broad and diverse field of study that offers students an education with several degree options. The most flexible degree options are at the bachelor's level, where students can pursue either the Bachelor of Science in Civil Engineering (BSCE) degree or the Bachelor of Arts (BA) degree. The more scientific BSCE includes four areas of specialization while the BA, with its two distinct major concentrations, affords students more flexibility, including the possibility to complete a double major with any other Rice University major.

At the graduate level, the department offers one non-thesis graduate degree, the Master of Civil and Environmental Engineering (MCEE), to students who desire additional education and specialization in the practice of civil engineering or environmental sciences and engineering. Students admitted for graduate study leading to a Master of Science (MS) or Doctor of Philosophy (PhD) degree must complete a rigorous course of study that combines advanced coursework with scholarly research culminating in the public defense of a written thesis. Graduate research is carried out in a range of areas reflecting the interests of the department's faculty. Examples include environmental engineering, geotechnical engineering, structural engineering and mechanics, infrastructure reliability, hydrology, water resources and water quality management, air pollution and its control, and hazardous waste treatment.

Bachelor's Programs
- Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering
- and a Major Concentration in Civil Engineering (p. 294)
- and a Major Concentration in Environmental Engineering (p. 297)
- Bachelor of Science in Civil Engineering (BSCE) Degree (p. 300)

Minor
- Minor in Energy and Water Sustainability (p. 379)

Master's Programs
- Master of Civil and Environmental Engineering (MCEE) Degree in the field of Civil Engineering (p. 308)
- Master of Civil and Environmental Engineering (MCEE) Degree in the field of Environmental Engineering (p. 309)
- Master of Science (MS) Degree in the field of Civil Engineering (p. 311)
- Master of Science (MS) Degree in the field of Environmental Engineering (p. 312)

Doctoral Programs
- Doctor of Philosophy (PhD) Degree in the field of Civil Engineering (p. 303)
- Doctor of Philosophy (PhD) Degree in the field of Environmental Engineering (p. 305)

Coordinated Programs
- Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree in the field of Civil Engineering (p. 306)
- Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree in the field of Environmental Engineering (p. 307)

Chair
Robert J. Griffin

Professors
Pedro J. J. Alvarez
Philip B. Bedient
Reginald DesRoches
Qilin Li
Satish Nagarajaiah
Pol D. Spanos
Mason B. Tomson

Associate Professors
Daniel S. Cohan
Leonardo A. Duenas-Osorio
Jamie E. Padgett
Ilinca Stanciulescu

Assistant Professors
Rouzbeh Shahsavari
Lauren Stadler

Professors Emeriti
Ahmad J. Durrani
John E. Merwin
Ronald P. Nordgren
Anestis S. Veletsos
Calvin H. Ward

Professor in the Practice of Environmental Law
James B. Blackburn

Professors in the Practice in Civil Engineering
Edmund P. Segner III

Lecturers
David T. Adamson
Mandi Chapa
Philip C. deBlanc
Travis McGuire
Charles M. Penland
Nestor Rubiano-Benavides
Christof Spieler
Bob Stevens

Joint Appointments
William T. Cannady
Michael S. Wong

Adjunct Professors
Jean-Yves Bottero
Wei Chen
Joe Gibor
Nick Fang
Jorge Loyo
Charles J. Newell
Carroll L. Oubre
Javier Rojo
Jerome Rose
Baxter E. Vieux
Steven Wilkerson

Adjunct Lecturer
Richard Johnson

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
  • Course offerings/subject code: CEVE

Department Description and Code
  • Civil and Environmental Engineering: CEEG

Undergraduate Degree Descriptions and Codes
  • Bachelor of Arts degree: BA
  • Bachelor of Science in Civil Engineering degree: BSCE

Undergraduate Major Descriptions and Codes
  • Major in Civil Engineering (offered to students pursuing the BSCE degree): CIVI
  • Major in Civil and Environmental Engineering (offered to students pursuing the BA degree): CEEG

Undergraduate Major Concentration Descriptions and Codes
  • Major Concentration in Civil Engineering (attached to the BA degree): CIEG
  • Major Concentration in Environmental Engineering (attached to the BA degree): ENEG

Graduate Degree Descriptions and Codes
  • Master of Civil and Environmental Engineering degree: MCEE
  • Master of Science degree: MS
  • Doctor of Philosophy degree: PhD

Graduate Degree Program Descriptions and Codes
  • Degree Program in Civil Engineering: CIVI
  • Degree Program in Environmental Engineering: ENVI

Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Civil Engineering

Program Learning Outcomes for the BA Degree with a Major in Civil and Environmental Engineering and a Major Concentration Civil Engineering

Upon completing the BA degree with a major in Civil and Environmental Engineering and a major concentration in Civil Engineering, students will demonstrate the ability to:

1. Apply basic knowledge of mathematics or science or both.
2. Function on multidisciplinary and ethical responsibility.
3. Understand professional and ethical responsibility.
4. Communicate effectively.
5. Understand global, economic, environmental and societal impacts of engineering problems and solutions.
6. Recognize the need for and engage in life-long learning.
7. Comprehend contemporary issues.

Requirements for the Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Civil and Environmental Engineering must complete:

• A minimum of 122 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
A minimum of 8 courses (22-25 credit hours, depending on declared major concentration) taken at the 300-level or above.

- 9-11 courses (25 credit hours) of General Math and Science courses.
- 5-6 courses (16 credit hours) as Major Concentration Core courses.
- 7 courses (21 credit hours) in a focused specialty area of study.
- The requirements of a major concentration. When students declare the major (p. 12) in Civil and Environmental Engineering, students must additionally identify and declare one of two major concentrations, either in:
  - Civil Engineering (p. 295), or
  - Environmental Engineering (p. 298)

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

Each major concentration is to be tailored to the specific needs of the student by discussions with, and approval by, the Civil and Environmental Engineering departmental major concentration advisor. Although not required, students are encouraged to double major when pursuing the BA degree.

The coherent and complete core curriculum is designed to give Rice undergraduate students a consistent technological literacy through the lens of Civil and Environmental Engineering and to prepare students for graduate school in engineering, various sciences (depending upon focus), economics, business MBA, political science, law, or medicine. Select students will be invited to finish an accelerated MS/PhD degree in the CEVE Department (see your advisor or department chair for details). Those students who want to obtain an engineering degree from a program accredited by the Engineering Accreditation Commission (EAC) of ABET must follow one of the Bachelor of Science programs the EAC has accredited at Rice, like the Bachelor of Science in Civil Engineering (BSCE). Students pursuing professional engineering licensure should also consider our BS in Civil and Environmental Engineering (BSCE).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for General Math and Science courses</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for Major Concentration Core courses</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for Specialty Focus Area courses</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Civil and Environmental Engineering</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>University Degree Requirements</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Civil and Environmental Engineering</td>
<td>122</td>
</tr>
</tbody>
</table>

### Degree Requirements

<table>
<thead>
<tr>
<th>Core Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Math and Science Courses:</td>
</tr>
<tr>
<td>Select 1 from the following:</td>
</tr>
<tr>
<td>CAAM 210</td>
</tr>
<tr>
<td>CAAM 335</td>
</tr>
<tr>
<td>COMP 110 / NSCI 230</td>
</tr>
<tr>
<td>CHEM 121 &amp; CHEM 123</td>
</tr>
<tr>
<td>CHEM 122 &amp; CHEM 124</td>
</tr>
<tr>
<td>MATH 101</td>
</tr>
<tr>
<td>MATH 102</td>
</tr>
<tr>
<td>PHYS 101 &amp; PHYS 103</td>
</tr>
<tr>
<td>PHYS 102 &amp; PHYS 104</td>
</tr>
</tbody>
</table>

**Major Concentration**

Select 7 courses from approved electives selected with the Civil Engineering (CIEG) major concentration requirements:

- **Environmental Engineering (ENEG)**
- **Civil Engineering (CIEG)**

**Specialty Focus Area**

Select 7 courses from approved electives selected with the Civil and Environmental Engineering advisor (see below for more information, including course requirements).

**Total Credit Hours Required for the Major in Civil and Environmental Engineering**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 101</td>
<td>FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 211 / MECH 211</td>
<td>ENGINEERING MECHANICS</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 304</td>
<td>STRUCTURAL ANALYSIS I</td>
<td>3</td>
</tr>
</tbody>
</table>

**Footnotes and Additional Information**

- Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

**Major Concentration: Civil Engineering**

Students must complete the following 6 courses (16 credit hours) to satisfy the requirements for the major concentration in Civil Engineering.
CEVE 310 PRINCIPLES OF ENVIRONMENTAL ENGINEERING 3
CEVE 311 / MECHANICS OF SOLIDS AND STRUCUTRES 3
CEVE 312 STRENGTH OF MATERIALS LAB 1

Total Credit Hours 16

Specialty Focus Area
To satisfy the remaining Specialty Focus Area of the BA degree with a major in Civil and Environmental Engineering, students must complete a total of 7 courses (21 credit hours) from approved electives selected with the Civil and Environmental Engineering advisor. Course selection must meet the following requirements:

• A minimum of 4 courses (12 credit hours) must be within one Specialty Focus Area (See examples below).
• A minimum of 4 courses (12 credit hours) from the 300-level or above; 2 of these 4 courses (6 credit hours) must also be selected from departmental (CEVE) course offerings.

Example Specialty Focus areas are suggested below; however students are encouraged to prepare their own specialty related to their career objectives in consultation with, and approval by, their Civil and Environmental Engineering advisor.

1. Biology
2. Chemical Engineering
3. Chemistry
4. Civil Engineering
5. Economics
6. Environmental Science and Engineering
7. Management

Policies for the BA Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Civil Engineering

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Civil and Environmental Engineering should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Civil and Environmental Engineering website: http://ceve.rice.edu/

Opportunities for the BA Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Civil Engineering

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honor, Award, and Scholarship Opportunities

• Distinction in Research and Creative Work: The Department of Civil and Environmental Engineering will recognize graduating seniors for outstanding creative contributions with the award of Distinction in Research and Creative Work. The Department recognizes this award as being a significant honor. As such, it will be awarded to no more than 20% of a graduating class (rounded up to next whole number). This award shall be given for significant contributions in research, design, and creative projects beyond class assignments (except CEVE 499). Generally, it is expected that the student recipients will have performed research/design for a minimum of two academic segments (one segment = one academic year or one summer) during their undergraduate career (either for credit or pay). It may be given for one outstanding piece of work for consistent meaningful contributions made over the course of an undergraduate career.

All majors (BA and BS) with a GPA of 3.30 or higher in all courses completed at Rice are eligible and will be considered for this distinction in the spring prior to their graduation.

• Rice Global Forum: Rice Global Forum (RGF) is an engineering and construction industry funded center which is in its second decade of operation. It was founded by Ahmad Durrani, past chair of Civil and Environmental Engineering at Rice. RGF funds and facilitates interaction with the engineering and construction industry, particularly oil and gas related work. RGF funds $25,000 worth of scholarships every year. In addition, RGF also consistently supports Engineers Without Borders (EWB) and has donated to other student clubs as well in addition to holding an engineering design competition every year in February during National Engineers Week.

Student Organizations and Clubs

• American Society of Civil Engineers Student (ASCE): http://www.asce.org/membership/student/. ASCE seeks to promote civil and environmental engineering, expose students to real world engineering, and connect students to alumni and professionals. Throughout the year we invite speakers from the industry, visit plants and sites, and organize social events. The objectives of this Chapter are to encourage the development of a professional consciousness, to afford an opportunity for civil engineering students to become acquainted and to practice working together effectively, to promote a spirit of congeniality among them, and to provide friendly contact with the engineering profession. We also support the Concrete Canoe competition (see below) and the Seismic Design Competition of the Earthquake Engineering Research Institute (EERI).
Chi Epsilon: [http://www.chi-epsilon.org/xewebgeneral2/](http://www.chi-epsilon.org/xewebgeneral2/). Chi Epsilon is dedicated to maintaining and promoting the status of civil engineering as an ideal profession. Chi Epsilon was organized to recognize the characteristics of the individual civil engineering deemed to be fundamental to the successful pursuit of an engineering career, and to aid in the development of those characteristics in the civil engineering student.

- **Engineers Without Borders (EWB): [http://ewb.rice.edu/](http://ewb.rice.edu/).** EWB partners with developing communities worldwide to design engineering solutions that will improve their standards of living. It is an important component of the Civil and Environmental Engineering program. BA students with their flexible curriculum are encouraged to participate. This exciting endeavor allows undergraduates to have an experience in a developing country, where they are able to design and build a project to help society. Students have been attracted to the EWB program in large numbers and our local chapter is one of the most successful in the United States. Some CEVE courses are EWB-related, providing the opportunity to also obtain credit hours.

- **Concrete Canoe: [http://concretecanoe.rice.edu/](http://concretecanoe.rice.edu/).** Rice Concrete Canoe is a student-run club that creates a functional concrete canoe to race and present at the yearly ASCE sponsored competition. Through the year, members gain engineering experience through the research, planning and constructing of a concrete canoe. By offerings members exposure to the engineering design process, small-group work, software such as Matlab and Adobe Illustrator (and possibly more starting this year), and laser cutters, Concrete Canoe offers a unique experience to students regardless of whether or not they want to become engineers.

- **Society of Women Engineers: [http://swe.rice.edu](http://swe.rice.edu).** The Society of Women Engineers aims to empower women to pursue and achieve their full potential in science and engineering related fields. We provide opportunities in professional development, academic and post-graduate planning, community outreach, and social events.

For additional information, please see the Civil and Environmental Engineering website: [http://ceve.rice.edu/](http://ceve.rice.edu/)

### Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Environmental Engineering

#### Program Learning Outcomes for the BA Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Environmental Engineering

Upon completing the BA with a major in Civil and Environmental Engineering and a major concentration in Environmental Engineering, students will demonstrate the ability to:

1. Apply basic knowledge of mathematics or science or both.
2. Function on multidisciplinary and diverse teams.
3. Understand professional and ethical responsibility.
4. Communicate effectively.
5. Understand global, economic, environmental and societal impacts of engineering problems and solutions.
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#### Requirements for the Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Civil and Environmental Engineering must complete:

- A minimum of 122 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 8 courses (22-25 credit hours, depending on declared major concentration) taken at the 300-level or above.
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  - Civil Engineering (p. 295), or
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Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar ([registrar@rice.edu](mailto:registrar@rice.edu)).

Each major concentration is to be tailored to the specific needs of the student by discussions with, and approval by, the Civil and Environmental Engineering departmental major concentration advisor. Although not required, students are encouraged to double major when pursuing the BA degree.

The coherent and complete core curriculum is designed to give Rice undergraduate students a consistent technological literacy through the lens of Civil and Environmental Engineering and to prepare students for graduate school in engineering, various sciences (depending upon focus), economics, business MBA, political science, law, or medicine. Select students will be invited to finish an accelerated MS/PhD degree in the CEVE Department (see your advisor or department chair for details). Those students who want to obtain an engineering degree from a program accredited by the Engineering Accreditation Commission (EAC) of ABET must follow one of the Bachelor of Science programs the EAC has accredited at Rice, like the Bachelor of Science in Civil Engineering (BSCE). Students pursuing professional engineering licensure should also consider our BS in Civil and Environmental Engineering (BSCE).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor. Students and their
Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Environmental Engineering

academic advisors should identify and clearly document the courses to be taken.

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Degree Requirements

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<tr>
<td></td>
<td>General Math and Science Courses:</td>
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<td></td>
<td>Select 1 from the following:</td>
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<td></td>
<td>CAAM 210</td>
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<td></td>
<td>CAAM 335</td>
<td>MATRIX ANALYSIS</td>
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<td>COMP 110 / NSCI 230</td>
<td>COMPUTATION IN SCIENCE AND ENGINEERING</td>
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<td>CHEM 121 &amp; CHEM 123</td>
<td>GENERAL CHEMISTRY I and GENERAL CHEMISTRY LABORATORY I</td>
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<td>CHEM 122 &amp; CHEM 124</td>
<td>GENERAL CHEMISTRY II and GENERAL CHEMISTRY LABORATORY II</td>
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<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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<td>PHYS 101 &amp; PHYS 103</td>
<td>MECHANICS (WITH LAB) and MECHANICS DISCUSSION</td>
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<td>PHYS 102 &amp; PHYS 104</td>
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<td>Select 1 of the following major concentrations (see below for major concentration requirements):</td>
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<tr>
<td></td>
<td>Civil Engineering (CIEG)</td>
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<td></td>
<td>Environmental Engineering (ENEG)</td>
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<td></td>
<td>Specialty Focus Area</td>
<td></td>
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<tr>
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<td>Select 7 courses from approved electives selected with the Civil and Environmental Engineering advisor (see below for more information, including course requirements).</td>
<td>21</td>
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<td>Total Credit Hours Required for the Major in Civil and Environmental Engineering</td>
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<td>University Graduation Requirements (p. 25) *</td>
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<td>Total Credit Hours</td>
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Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

Major Concentration: Environmental Engineering

Students must complete the following 5 courses (16 credit hours) to satisfy the requirements for the major concentration in Environmental Engineering.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Required Courses for the Major Concentration in Environmental Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CEVE 101</td>
<td>FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING</td>
</tr>
<tr>
<td></td>
<td>CEVE 307 / ENST 307 / ESCI 307</td>
<td>ENERGY AND THE ENVIRONMENT</td>
</tr>
<tr>
<td></td>
<td>CEVE 310</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
</tr>
<tr>
<td></td>
<td>CEVE 401</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB</td>
</tr>
<tr>
<td></td>
<td>CEVE 412</td>
<td>HYDROLOGY AND WATER RESOURCES ENGINEERING</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>16</td>
</tr>
</tbody>
</table>

Specialty Focus Area

To satisfy the remaining Specialty Focus Area of the BA degree with a major in Civil and Environmental Engineering, students must complete a total of 7 courses (21 credit hours) from approved electives selected with the Civil and Environmental Engineering advisor. Course selection must meet the following requirements:

- A minimum of 4 courses (12 credit hours) must be within one Specialty Focus Area (See examples below).
- A minimum of 4 courses (12 credit hours) from the 300-level or above; 2 of these 4 courses (6 credit hours) must also be selected from departmental (CEVE) course offerings.

Example Specialty Focus areas are suggested below; however students are encouraged to prepare their own specialty related to their career objectives in consultation with, and approval by, their Civil and Environmental Engineering advisor.

1. Biology
2. Chemical Engineering
3. Chemistry
4. Civil Engineering
5. Economics
6. Environmental Science and Engineering
7. Management

2017-2018 General Announcements
Policies for the BA Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Environmental Engineering

Transfer Credit

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Students pursuing the major in Civil and Environmental Engineering should be aware of the following departmental transfer credit guidelines:

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Opportunities for the BA Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Environmental Engineering

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honor, Award, and Scholarship Opportunities

- Distinction in Research and Creative Work: The Department of Civil and Environmental Engineering will recognize graduating seniors for outstanding creative contributions with the award of Distinction in Research and Creative Work. The Department recognizes this award as being a significant honor. As such, it will be awarded to no more than 20% of a graduating class (rounded up to next whole number). This award shall be given for significant contributions in research, design, and creative projects beyond class assignments (except CEVE 499). Generally, it is expected that the student recipients will have performed research/design for a minimum of two academic segments (one segment = one academic year or one summer) during their undergraduate career (either for credit or pay). It may be given for one outstanding piece of work for consistent meaningful contributions made over the course of an undergraduate career. All majors (BA and BS) with a GPA of 3.30 or higher in all courses completed at Rice are eligible and will be considered for this distinction in the spring prior to their graduation.

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Student Organizations and Clubs

- American Society of Civil Engineers Student (ASCE): http://www.asce.org/membership/student/. ASCE seeks to promote civil and environmental engineering, expose students to real world engineering, and connect students to alumni and professionals. Throughout the year we invite speakers from the industry, visit plants and sites, and organize social events. The objectives of this Chapter are to encourage the development of a professional consciousness, to afford an opportunity for civil engineering students to become acquainted and to practice working together effectively, to promote a spirit of congeniality among them, and to provide friendly contact with the engineering profession. We also support the Concrete Canoe competition (see below) and the Seismic Design Competition of the Earthquake Engineering Research Institute (EERI).

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- Society of Women Engineers: http://swe.rice.edu. The Society of Women Engineers aims to empower women to pursue and achieve their full potential in science and engineering related fields. We provide opportunities in professional development,
Bachelor of Science in Civil Engineering (BSCE) Degree

The program leading to the BSCE degree is accredited by the Engineering Accreditation Commission (EAC) of ABET, http://www.abet.org.

Program Learning Outcomes (Student Outcomes) for the BSCE Degree

Upon completing the BSCE degree, students will be able to demonstrate:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Program Educational Objectives for the BSCE Degree

Within 3 to 5 years of graduation, graduates with a Bachelor of Science in Civil Engineering (BSCE) degree are expected to attain the following program educational objectives:

1. Demonstrate strong problem-solving and communication skills.
2. Achieve leadership position in technical or managerial areas.
3. Demonstrate initiative and innovative thinking in project work.
4. Demonstrate keen awareness of ethical, social, environmental, and global concerns.
5. Remain engaged in continuing learning, including advanced degrees.
6. Obtain a Professional Engineering license.

Requirements for the BSCE Degree

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BSCE degree must complete a minimum of 133 credit hours to complete the degree to include the following:

- A minimum of 35 courses (94-95 credit hours depending on course section) to satisfy major requirements. This includes:
  - 16 courses (40-41 credit hours) from General Math and Science courses.
  - 9 courses (24 credit hours) from core coursework.
  - 4 courses (12 credit hours) from 1 Area of Specialization (see below).
  - 2 courses in each of the 3 remaining Areas of Specialization (see below) for a total of 6 courses (18 credit hours).
- A minimum of 133-134 credit hours to satisfy degree requirements.
- A minimum of 19 courses (54 credit hours) taken at the 300-level or above.

The four Areas of Specialization and their key topics within the BSCE degree are listed below:

- Environmental Engineering (p. ): Air and water quality, transport theory, modeling, and energy.
- Hydrology and Water Resources (p. ): Watershed and aquifer management, flood prediction, data analysis, GIS, and hydrologic modeling.
- Structural Engineering and Mechanics (p. ): Structural analysis, mechanics, design, dynamics, and matrix method.
- Urban Infrastructure, Reliability, and Management (p. ): Transportation systems, complex urban systems, system reliability, soil mechanics, decision theory, engineering economics, and project management.

Civil and Environmental Engineering’s innovative and challenging BSCE degree’s engineering curriculum is designed to provide significant flexibility to the student. Specific details and typical course layouts by semester can be found on the departmental website (http://ceve.rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Total Credit Hours Required for the Major in Civil Engineering</strong></td>
<td><strong>94-95</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credit Hours Required for the BSCE Degree</strong></td>
<td><strong>133-134</strong></td>
</tr>
</tbody>
</table>

### Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>General Math and Science Requirements</strong></td>
<td></td>
</tr>
<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td>3</td>
</tr>
<tr>
<td>Select 1 from the following:</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CAAM 335</td>
<td>MATRIX ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>MATH 354</td>
<td>HONORS LINEAR ALGEBRA</td>
<td></td>
</tr>
<tr>
<td>MATH 355</td>
<td>LINEAR ALGEBRA</td>
<td></td>
</tr>
<tr>
<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
<td>4</td>
</tr>
<tr>
<td>&amp; CHEM 123</td>
<td>and GENERAL CHEMISTRY LABORATORY I</td>
<td></td>
</tr>
</tbody>
</table>
Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Or an equivalent approved course

2 It is preferred that students complete ESCI 324 to satisfy this requirement.

3 Please note: For students pursuing an area of specialization in Environmental Engineering (Area I) or Hydrology and Water Resources (Area II), CEVE 401 is required, and CEVE 470 is an Urban Infrastructure, Reliability, and Management (Area IV) elective. For students pursuing an area of specialization in Structural Engineering and Mechanics (Area III) or Urban Infrastructure, Reliability, and Management (Area IV), CEVE 470 is required and CEVE 401 is an Environmental Engineering (Area I) elective.

4 Courses that introduce fundamentals of civil and environmental engineering primarily targeted at students with diverse science, engineering, and humanities backgrounds (CEVE 101, CEVE 211, CEVE 310, CEVE 311, CEVE 312)

5 See also the University Graduation Requirements footnote above denoted with an *.

Areas of Specialization

To fulfill the remaining BSCE degree requirements, students must complete a total of 10 courses (30 credit hours) as listed below in the 4 areas of specialization:

- 4 courses (12 credit hours) from 1 area of specialization.
- 6 courses (18 credit hours), consisting of a minimum of 2 courses (6 credit hours) from each of the remaining 3 areas of specialization found below.

**Area of Specialization: Area I - Environmental Engineering**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 302 / ENGI 302</td>
<td>SUSTAINABLE DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 307 / ENST 307 / ESCI 307</td>
<td>ENERGY AND THE ENVIRONMENT</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 308</td>
<td>INTRODUCTION TO AIR POLLUTION CONTROL ¹</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 404</td>
<td>ATMOSPHERIC PARTICULATE MATTER ¹</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 406 / ENST 406</td>
<td>INTRODUCTION TO ENVIRONMENTAL LAW ¹</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 411</td>
<td>ATMOSPHERIC PROCESSES</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 434</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 442</td>
<td>WATER REUSE AND RESOURCE RECOVERY</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 444</td>
<td>ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY</td>
<td>3</td>
</tr>
</tbody>
</table>

Or any approved (Area I - Environmental Engineering) course from CEVE course offerings
### Bachelor of Science in Civil Engineering (BSCE) Degree

#### Area of Specialization: Area II - Hydrology and Water Resources

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 314</td>
<td>SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 412</td>
<td>HYDROLOGY AND WATER RESOURCES ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 418 / ESCI 418</td>
<td>QUANTITATIVE HYDROGEOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 420</td>
<td>ENVIRONMENTAL REMEDIATION RESTORATION</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 512</td>
<td>ADVANCED HYDROLOGY AND HYDRAULICS</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 518</td>
<td>CONTAMINANT HYDROGEOLOGY</td>
<td>3</td>
</tr>
</tbody>
</table>

Or any approved (Area II - Hydrology or Water Resources) course from CEVE course offerings

#### Area of Specialization: Area III - Structural Engineering and Mechanics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 304</td>
<td>STRUCTURAL ANALYSIS I</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 400 / MECH 400</td>
<td>ADVANCED MECHANICS OF MATERIALS</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 405</td>
<td>STEEL DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 407</td>
<td>REINFORCED CONCRETE DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 408</td>
<td>CONCRETE AND STEEL STRUCTURES LABORATORY</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 427 / MECH 427</td>
<td>COMPUTATIONAL STRUCTURAL MECHANICS AND FEM</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 476</td>
<td>STRUCTURAL DYNAMIC SYSTEMS ¹</td>
<td>3</td>
</tr>
</tbody>
</table>

Or any approved (Area III Structural Engineering and Mechanics) course from CEVE/MECH course offerings

#### Area of Specialization: Area IV - Urban Infrastructure, Reliability and Management

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 313 / STAT 313</td>
<td>UNCERTAINTY AND RISK IN URBAN INFRASTRUCTURES</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 424</td>
<td>TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS ¹</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 452</td>
<td>URBAN TRANSPORTATION SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 460</td>
<td>BRIDGE ENGINEERING AND EXTREME EVENTS ¹</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 479</td>
<td>ENGINEERING PROJECT MANAGEMENT AND ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 492</td>
<td>MODELING AND ANALYSIS OF NETWORKED SYSTEMS ¹</td>
<td>3</td>
</tr>
</tbody>
</table>

Or any approved (Area IV - Urban Infrastructure, Reliability and Management) course from CEVE/MGMT/ECON/CAAM/STAT course offerings

#### Suggested Electives for the BSCE Degree

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 314 / BIOE 365 / GLHT 314</td>
<td>SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 320 / ENGI 320</td>
<td>ETHICS AND ENGINEERING LEADERSHIP</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 417 / MECH 417</td>
<td>TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS ³</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 454 / BIOE 454 / MECH 454</td>
<td>COMPUTATIONAL FLUID MECHANICS</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 499</td>
<td>SPECIAL PROBLEMS</td>
<td>1-12</td>
</tr>
</tbody>
</table>

ARCH 317     | LANDSCAPE AND SITE STRATEGIES FOR HOUSTON       | 3            |

CHEM 211     | ORGANIC CHEMISTRY I                            | 3            |
CHEM 213     | ORGANIC CHEMISTRY DISCUSSION                   | 3            |
ECON 100     | PRINCIPLES OF ECONOMICS                        | 3            |
ECON 445     | MANAGERIAL ECONOMICS                           | 3            |
STAT 385     | METHODS OF DATA ANALYSIS AND SYSTEM OPTIMIZATION | 4            |
CAAM 336     | DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING | 3            |
CAAM 378     | INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION | 3            |
CAAM 453     | NUMERICAL ANALYSIS I                           | 3            |
CAAM 471     | LINEAR AND INTEGER PROGRAMMING                 | 3            |
MECH 343     | MODELING OF DYNAMIC SYSTEMS                    | 3            |
MECH 412     | VIBRATIONS                                     | 3            |

#### Policies for the BSCE Degree

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Professional Engineering Master’s 5th Year Degree Option for Rice Undergraduates

Rice undergraduate students have the option to earn the Master of Civil and Environmental Engineering (MCEE) degree by adding an additional year after completing their bachelor’s degree. Advanced Rice undergraduate students in good academic standing may apply to the graduate program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may complete part of the course requirements for the MCEE program during their senior year. A plan of study based on their particular focus area will need to be approved by the chair of the department graduate studies committee.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for their bachelor’s degree and the MCEE degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware of the financial aid implications, if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).

For additional information, please see the Civil and Environmental Engineering website: http://ceve.rice.edu/.

Doctor of Philosophy (PhD) Degree in the field of Civil Engineering
Program Learning Outcomes for the PhD Degree in the field of Civil Engineering

Upon completing the PhD degree in the field of Civil Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
2. Acquire advanced knowledge of the principles of civil and environmental engineering and apply them to advanced technical problems.
3. Conduct an independent research program.
4. Demonstrate professional written and oral communication skills.

Requirements for the PhD Degree in Civil Engineering

For general university requirements, please see Doctoral Degrees (p. 64). Students pursuing the PhD degree program in Civil Engineering must:

- Complete 90 credit hours of approved courses past BS degree (60 credit hours past MS degree) with high standing (see guidelines on the department website [http://www.ceve.rice.edu])
- Spend at least four semesters in full time study at Rice and successfully accomplish the following:
  - Pass a preliminary examination in civil engineering (see guidelines on the department website [http://www.ceve.rice.edu])
  - Pass a qualifying examination on course work, proposed research, and related topics
  - Complete a dissertation indicating an ability to conduct original and scholarly research
  - Pass a formal public oral examination on the thesis and related topics

PhD students in the EES track take the preliminary exam, administered by department faculty, after two semesters of course work. Civil engineering graduate students will be required to take their written preliminary exam on Friday before the start of the spring semester, 1.5 years from the fall semester they enter into the program, and take the oral exam on Friday of the first week of classes. If a student enters in the spring semester, he/she needs to take the exam in the following spring semester along with other students. Students who pass this exam then from a doctoral committee according to department requirements.

The qualifying examination is administered by the doctoral committee after students develop a research proposal to demonstrate their preparation for the proposed research and identify any areas requiring additional course work or study. As part of the advanced degree training, we also may require students to assist the faculty in undergraduate courses and laboratory instructions.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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</table>

Total Credit Hours Required for the PhD Degree in the field of Civil Engineering

Policies for the PhD Degree in the field of Civil Engineering

Department of Civil and Environmental Engineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Civil and Environmental Engineering publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Civil_Environmental_Engineering_Graduate_Handbook.pdf]

Admission

Applicants pursuing graduate education in structural engineering, structural mechanics, and geotechnical engineering should have a BS in Civil Engineering with a significant emphasis on structural engineering, but students with other undergraduate degrees may apply if they have adequate preparation in mathematics, mechanics, and structural analysis and design.

Applicants pursuing graduate education in environmental engineering or hydrology should have a BS or BA in related areas of science and engineering and preparation in mathematics, science, and engineering or related courses. A BS degree in Engineering or a degree in natural science is preferred.

Successful applicants typically have at least a 3.00 (B) grade point average in undergraduate work and high Graduate Record Examination (GRE) scores. For general university requirements, see Graduate Degrees (p. 49) and Admission to Graduate Study (p. 55).

For additional information, please see the Civil and Environmental Engineering website: [http://ceve.rice.edu]

Opportunities for the PhD Degree in the field of Civil Engineering

Fellowships and Opportunities

- NASA Internships: multiple opportunities are available for undergraduate and graduate students for spring and fall semesters, as well as year-long appointments.
- NRC Research Associateship Program: the National Academies of Sciences, Engineering, and Medicine offer paid postdoctoral, senior, and graduate fellowships.
- NASA Fellowships and other opportunities: NASA offers several internships, fellowships, and scholarships for both undergraduate and graduate students.
- NSF Graduate Research Fellowship Program (NSF-GRFP): provides fellowships to individuals selected early in their graduate careers based on their demonstrated potential for significant achievements in science and engineering.
- Fulbright-Hays Doctoral Dissertation Research Abroad Program (DDRA): provides grants to fund individual doctoral students to conduct research in other countries in modern foreign languages and area studies for periods of 6 to 12 months.
- DOE Computational Science Graduate Fellowship: The Department of Energy Computational Science Graduate Fellowship (DOE CSGF) program provides outstanding benefits and opportunities to students pursuing doctoral degrees in fields of study that utilize high
performance computing to solve complex problems in science and engineering.

- **DOD National Defense Science and Engineering Graduate Fellowship (NDSEG)**: It is a highly competitive portable fellowship that is awarded to US citizens and nationals who intend to pursue a doctoral degree in one of fifteen supported disciplines.

- **Pathways to Science**: it is a project of the Institute for Broadening Participation. The organization places emphasis on connecting underrepresented groups with STEM programs, funding, mentoring, and resources. Fellowships for masters and doctoral students are available, as is funding for travel and summer institutes.

**Student Clubs**

- **Civil and Environmental Department Graduate Student Association**: The main purpose of the club is to 1) foster better professional and personal relationships among students and between students and faculty members 2) provide a forum for concerns, both professional and personal, about graduate student life and 3) foster professional growth through mentoring, recruitment, and affiliate/internship relationships.

- **Earthquake Engineering Research Institute**: [http://eeri.rice.edu](http://eeri.rice.edu). The objective of this student chapter is to encourage, facilitate, and promote learning and interest among students in the field of earthquake engineering through interaction with professionals and experts and through interdisciplinary involvement.

For additional information, please see the Civil and Environmental Engineering website: [http://ceve.rice.edu/](http://ceve.rice.edu/)

**Doctor of Philosophy (PhD) Degree in the field of Environmental Engineering**

**Program Learning Outcomes for the PhD Degree in the field of Environmental Engineering**

Upon completing the PhD degree in the field of Environmental Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
2. Acquire advanced knowledge of the principles of civil and environmental engineering and apply them to advanced technical problems.
3. Conduct an independent research program.
4. Demonstrate professional written and oral communication skills.

**Requirements for the PhD Degree in the field of Environmental Engineering**

For general university requirements, please see Doctoral Degrees (p. 64). Students pursuing the PhD degree program in the field of Environmental Engineering must:

- Complete 90 credit hours of approved courses past BS degree (60 credit hours past MS degree) with high standing (see guidelines on the department website [http://www.ceve.rice.edu/](http://www.ceve.rice.edu/))

- Spend at least four semesters in full time study at Rice and successfully accomplish the following:
  - Pass a preliminary examination in environmental engineering (see guidelines on the department website [http://www.ceve.rice.edu/](http://www.ceve.rice.edu/))
  - Pass a qualifying examination on course work, proposed research, and related topics
  - Complete a dissertation indicating an ability to conduct original and scholarly research
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PhD students in the EES track take the preliminary exam, administered by department faculty, after two semesters of course work. Civil engineering graduate students will be required to take their written preliminary exam on Friday before the start of the spring semester, 1.5 years from the fall semester they enter into the program, and take the oral exam on Friday of the first week of classes. If a student enters in the spring semester, he/she needs to take the exam in the following spring semester along with other students. Students who pass this exam then from a doctoral committee according to department requirements.

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**Summary**

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For additional information, please see the Civil and Environmental Engineering website: http://ceve.rice.edu/

**Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree in the field of Civil Engineering**

**Program Learning Outcomes for the MCEE Degree in the field of Civil Engineering**

Upon completing the MCEE degree in the field of Civil Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
2. Demonstrate professional written and oral communication skills.

**Program Learning Outcomes for the MBA Degree Programs**

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

**Requirements for the MBA/MCEE Coordinated Degree Program**

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:
• A minimum of 2 academic years in residence at Rice
• A minimum of 69 semester hours in approved coursework, including:
  • A minimum of 24 credit hours in an engineering discipline
  • A minimum of 45 credit hours in business
• At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

Policies for the MBA/MCEE Coordinated Degree Program
For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Civil and Environmental Engineering website: https://ceve.rice.edu/

Opportunities for the MBA/MCEE Coordinated Degree Program
For additional information on these two degrees:

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Master of Business Administration (MBA) Degree / Master of Civil and Environmental Engineering (MCEE) Degree in the field of Environmental Engineering

Program Learning Outcomes for the MCEE Degree in the field of Environmental Engineering

Upon completing the MCEE degree in the field of Environmental Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
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Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

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Students may earn this non-thesis Master of Engineering degree in the following fields:

• Bioengineering
• Chemical Engineering
• Civil and Environmental Engineering
• Computational and Applied Mathematics
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Master of Civil and Environmental Engineering (MCEE) Degree in the field of Civil Engineering

Program Learning Outcomes for the MCEE Degree in the field of Civil Engineering

Upon completing the MCEE degree in the field of Civil Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
2. Demonstrate professional written and oral communication skills.

Requirements for the MCEE in the field of Civil Engineering

The MCEE degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MCEE degree in the field of Civil Engineering must complete:

- A minimum of 30 credit hours of graduate-level courses in one area of specialization: Civil Engineering or Sustainable Environmental Engineering and Design, including one semester of graduate seminar (CEVE 601/CEVE 602) and a final project (CEVE 590). All courses must be in the relevant field.
- A minimum of 24 credit hours at Rice.
- A minimum overall GPA of 3.0 in required coursework.
- A maximum of 6 credit hours of graduate-level coursework from transfer credit. For additional guidelines regarding transfer credit, see the Policies tab.
- The minimum residency, which is one fall or spring semester in full-time or part-time graduate study.

The Master of Civil and Environmental Engineering (MCEE) degree is a professional non-thesis degree requiring 30 credit hours of approved courses at the 500-level or above, including a final project of 2 credit hours. Students who have a BS or BA degree in any field of engineering or related study may apply. Depending on their background, some students may need to fulfill prerequisites or take remedial engineering courses to earn the MCEE degree. For more information, see the department website (http://www.ceve.rice.edu).

Summary

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<td>ADVANCED MECHANICS OF MATERIALS</td>
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<td>CEVE 505</td>
<td>NONLINEAR FINITE ELEMENT ANALYSIS</td>
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<td>ENGI 505</td>
<td>ENGINEERING PROJECT MANAGEMENT AND ECONOMICS</td>
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<td>CEVE 519</td>
<td>ELASTICITY, PLASTICITY AND DAMAGE MECHANICS</td>
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<td>MECH 519</td>
<td></td>
<td>3</td>
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<tr>
<td>CEVE 524</td>
<td>TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS</td>
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<td>CEVE 527</td>
<td>COMPUTATIONAL STRUCTURAL MECHANICS AND FEM</td>
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<td>COMPUTATIONAL FLUID MECHANICS</td>
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<td>MECH 554</td>
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<td>CEVE 560</td>
<td>BRIDGE ENGINEERING AND EXTREME EVENTS</td>
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<td>CEVE 570</td>
<td>FOUNDATION ENGINEERING</td>
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<td>CEVE 576</td>
<td>STRUCTURAL DYNAMIC SYSTEMS</td>
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<td>MECH 576</td>
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<td>CEVE 578</td>
<td>EARTHQUAKE ENGINEERING</td>
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<td>CEVE 592</td>
<td>MODELING AND ANALYSIS OF NETWORKED SYSTEMS</td>
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<td>CEVE 596</td>
<td>OFFSHORE AND MARINE SYSTEMS</td>
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<td>ADVANCED STOCHASTIC MECHANICS</td>
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<td>MECH 679</td>
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Seminar

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<tr>
<td>CEVE 601</td>
<td>SEMINAR</td>
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<tr>
<td>CEVE 602</td>
<td>SEMINAR</td>
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Elective Requirements

Directed Civil Engineering Electives

Select 2 from the Core Requirements or from the following:

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>CAAM 453</td>
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<tr>
<td>CAAM 536</td>
<td>NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS</td>
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</tr>
<tr>
<td>MECH 502</td>
<td>VIBRATIONS</td>
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<td>MECH 517</td>
<td>FINITE ELEMENT ANALYSIS</td>
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</tr>
<tr>
<td>MECH 665</td>
<td>ANALYSIS OF VIBRATIONS IN NONLINEAR SYSTEMS</td>
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Professional Development Electives

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<tr>
<td>ANTH 532</td>
<td>THE SOCIAL LIFE OF CLEAN ENERGY</td>
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<tr>
<td>CEVE 406</td>
<td>INTRODUCTION TO ENVIRONMENTAL LAW</td>
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<td>CEVE 507</td>
<td>ENERGY AND THE ENVIRONMENT</td>
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<tr>
<td>CEVE 528</td>
<td>ENGINEERING ECONOMICS</td>
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<td>ENGI 528</td>
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<td>ECON 437</td>
<td>ENERGY ECONOMICS</td>
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<td>ENST 437</td>
<td></td>
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</table>

2017-2018 General Announcements
Opportunities for the MCEE Degree in the field of Civil Engineering

- Rice Global Forum (RGF): is a group of industry professionals plus Rice faculty who gather regularly to discuss topics that define their interests. They sponsor the Engineering Competition each year and give out scholarships that are derived from membership dues. The scholarships are geared toward professional master’s and terminal research master’s (MS) students.

- George R. Brown School of Engineering Scholarships for Professional Master’s Degrees in Engineering: was established by the Dean of the School of Engineering to encourage outstanding Rice undergraduate engineering students to pursue a professional master’s degree at Rice.

For additional information, please see the Civil and Environmental Engineering website: [http://ceve.rice.edu/](http://ceve.rice.edu/)

Master of Civil and Environmental Engineering (MCEE) Degree in the field of Environmental Engineering

Program Learning Outcomes for the MCEE Degree in the field of Environmental Engineering

Upon completing the MCEE degree in the field of Environmental Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
2. Demonstrate professional written and oral communication skills.

Requirements for the MCEE Degree in the field of Environmental Engineering

The MCEE degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MCEE degree in the field of Environmental Engineering must complete:

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Footnotes and Additional Information

1 The professional masters final project is overseen by a Civil and Environmental department faculty member.

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Admission into a professional program is granted separately from admission into a research and thesis program. Professional degree programs terminate when the degree is awarded. Students who wish to continue graduate study after completing a professional program must apply for admission into a research program.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the MCEE degree in the field of Civil Engineering or Environmental Engineering should be aware of the following departmental transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.
- Request for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Civil and Environmental Engineering website: [http://ceve.rice.edu/](http://ceve.rice.edu/)
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Degree Requirements

Core Requirements

Advanced Coursework

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<td>CEVE 502</td>
<td>SUSTAINABLE DESIGN</td>
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<td>CEVE 509</td>
<td>HYDROLOGY AND WATER RESOURCES ENGINEERING</td>
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<td>CEVE 511</td>
<td>ATMOSPHERIC PROCESSES</td>
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<td>CEVE 534</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
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<td>CEVE 536</td>
<td>ENVIRONMENTAL BIOTECHNOLOGY AND BIOREMEDIATION</td>
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Seminar

Select 1 from the following: 1

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Elective Requirements

Engineering Science and Technology

Select 2 from the following: 6

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<td>CEVE 450 / ESCI 450</td>
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<td>CEVE 504</td>
<td>ATMOSPHERIC PARTICULATE MATTER</td>
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<td>CEVE 505 / ENGI 505</td>
<td>ENGINEERING PROJECT MANAGEMENT AND ECONOMICS</td>
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<tr>
<td>CEVE 508</td>
<td>INTRODUCTION TO AIR POLLUTION CONTROL</td>
<td></td>
</tr>
<tr>
<td>CEVE 510</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
<td></td>
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<tr>
<td>CEVE 518</td>
<td>CONTAMINANT HYDROGEOLOGY</td>
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<tr>
<td>CEVE 520</td>
<td>ENVIRONMENTAL REMEDIATION RESTORATION</td>
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<tr>
<td>CEVE 533 / CHEM 533</td>
<td>NANOSCIENCE AND NANOTECHNOLOGY</td>
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<tr>
<td>CEVE 535</td>
<td>PHYSICAL CHEMICAL PROCESSES FOR WATER QUALITY CONTROL</td>
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<tr>
<td>CEVE 544</td>
<td>ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY</td>
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<tr>
<td>CEVE 550</td>
<td>ENVIRONMENTAL ORGANIC CHEMISTRY</td>
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<tr>
<td>CEVE 592</td>
<td>MODELING AND ANALYSIS OF NETWORKED SYSTEMS</td>
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</tr>
<tr>
<td>STAT 485</td>
<td>ENVIRONMENTAL STATISTICS AND DECISION MAKING</td>
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Sustainable Resource Management

Select 1 from the following:

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<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>ANTH 532</td>
<td>THE SOCIAL LIFE OF CLEAN ENERGY</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 406 / ENST 406</td>
<td>INTRODUCTION TO ENVIRONMENTAL LAW</td>
<td></td>
</tr>
<tr>
<td>CEVE 507</td>
<td>ENERGY AND THE ENVIRONMENT</td>
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<tr>
<td>CEVE 528 / ENGI 528</td>
<td>ENGINEERING ECONOMICS</td>
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<tr>
<td>CEVE 529 / ENGI 529</td>
<td>ETHICS AND ENGINEERING LEADERSHIP</td>
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<tr>
<td>ECON 437 / ENST 437</td>
<td>ENERGY DEVELOPMENT AND REPORTING</td>
<td></td>
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<tr>
<td>NSCI 511</td>
<td>SCIENCE POLICY, AND ETHICS</td>
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<tr>
<td>NSCI 610 / ENGI 610</td>
<td>MANAGEMENT FOR SCIENCE AND ENGINEERING</td>
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MCEE Final Project

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>CEVE 590</td>
<td>MCEE SPECIAL STUDY 1</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Credit Hours 30

Footnotes and Additional Information

1. The professional masters final project is overseen by a Civil and Environmental department faculty member.

Policies for the MCEE Degree in the field of Environmental Engineering

Department of Civil and Environmental Engineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Civil and Environmental Engineering publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Civil_Environmental_Engineering_Graduate_Handbook.pdf.

Admission

Applicants pursuing graduate education in environmental engineering or hydrology should have a BS or BA in related areas of science and engineering and preparation in mathematics, science, and engineering or related courses. A BS degree in engineering or a degree in natural science is preferred.

Admission into a professional program is granted separately from admission in a research and thesis program. Professional degree programs terminate when the degree is awarded. Students who wish to continue graduate study after completing a professional program must apply for admission into a research program.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the MCEE degree in the field of Civil Engineering or Environmental Engineering should be aware of the following departmental transfer credit guidelines:
• No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.
• Request for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Civil and Environmental Engineering website: http://ceve.rice.edu/

Opportunities for the MCEE Degree in the field of Environmental Engineering
• Rice Global Forum (RGF): is a group of industry professionals plus Rice faculty who gather regularly to discuss topics that define their interests. They sponsor the Engineering Competition each year and give out scholarships that are derived from membership dues. The scholarships are geared toward professional master’s and terminal research master’s (MS) students.
• George R. Brown School of Engineering Scholarships for Professional Master's Degrees in Engineering: was established by the Dean of the School of Engineering to encourage outstanding Rice undergraduate engineering students to pursue a professional master's degree at Rice.

For additional information, please see the Civil and Environmental Engineering website: http://ceve.rice.edu/

Master of Science (MS) Degree in the field of Civil Engineering
Program Learning Outcomes for the MS Degree in the field of Civil Engineering
Upon completing the MS degree in the field of Civil Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
2. Acquire advanced knowledge of the principles of civil and environmental engineering and apply them to advanced technical problems.
3. Conduct an independent research program.
4. Demonstrate professional written and oral communication skills.

Requirements for the MS Degree in the field of Civil Engineering
The MS degree is a thesis master's degree. For general university requirements, please see Thesis Master's Degrees (p. 67). Students pursuing the MS degree program in the field of Civil Engineering must:

• Complete a minimum of 30 credit hours to satisfy degree requirements.
• Complete a maximum of 6 credit hours of graduate-level courses as transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.
• Select a thesis committee according to department requirements and conduct original research in consultation with the committee.
• Present and defend in oral examination an approved research thesis.

Students take the oral exam only after the committee determines the thesis to be in a written format acceptable for public defense. Normally, students take two academic years and the intervening summer to complete the degree.

Students intending to extend their studies into the PhD degree program should note that the department does not grant an automatic MS degree to candidates who have not written a satisfactory master's thesis.

Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>30</td>
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</tbody>
</table>

Total Credit Hours Required for the MS Degree in the field of Civil Engineering

Policies for the MS Degree in the field of Civil Engineering
Department of Civil and Environmental Engineering Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Civil and Environmental Engineering publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Civil_Environmental_Engineering_Graduate_Handbook.pdf

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the MS degree in the field of Civil Engineering should be aware of the following departmental transfer credit guidelines:

• No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.

For additional information, please see the Civil and Environmental Engineering website: http://ceve.rice.edu/

Opportunities for the MS Degree in the field of Civil Engineering
Fellowships and Opportunities
• NASA Internships: multiple opportunities are available for undergraduate and graduate students for spring and fall semesters, as well as year-long appointments.
• NRC Research Associateship Program: the National Academies of Sciences, Engineering, and Medicine offer paid postdoctoral, senior, and graduate fellowships.

• NASA Fellowships and other opportunities: NASA offers several internships, fellowships, and scholarships for both undergraduate and graduate students.

• NSF Graduate Research Fellowship Program (NSF-GRFP): provides fellowships to individuals selected early in their graduate careers based on their demonstrated potential for significant achievements in science and engineering.

• Fulbright-Hays Doctoral Dissertation Research Abroad Program (DDRA): provides grants to fund individual doctoral students to conduct research in other countries in modern foreign languages and area studies for periods of 6 to 12 months.

• DOE Computational Science Graduate Fellowship: The Department of Energy Computational Science Graduate Fellowship (DOE CSGF) program provides outstanding benefits and opportunities to students pursuing doctoral degrees in fields of study that utilize high performance computing to solve complex problems in science and engineering.

• DOD National Defense Science and Engineering Graduate Fellowship (NDSEG): it is a highly competitive portable fellowship that is awarded to US citizens and nationals who intend to pursue a doctoral degree in one of fifteen supported disciplines.

• Pathways to Science: it is a project of the Institute for Broadening Participation. The organization places emphasis on connecting underrepresented groups with STEM programs, funding, mentoring, and resources. Fellowships for masters and doctoral students are available, as is funding for travel and summer institutes.

Student Clubs

• Civil and Environmental Department Graduate Student Association: The main purpose of the club is to 1) foster better professional and personal relationships among students and between students and faculty members 2) provide a forum for concerns, both professional and personal, about graduate student life and 3) foster professional growth through mentoring, recruitment, and affiliate/internship relationships.

• Earthquake Engineering Research Institute: http://eeri.rice.edu. The objective of this student chapter is to encourage, facilitate, and promote learning and interest among students in the field of earthquake engineering through interaction with professionals and experts and through interdisciplinary involvement.

For additional information, please see the Civil and Environmental Engineering website: http://ceve.rice.edu/

Master of Science (MS) Degree in the field of Environmental Engineering

Program Learning Outcomes for the MS Degree in the field of Environmental Engineering

Upon completing the MS degree in the field of Civil Engineering, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.

2. Acquire advanced knowledge of the principles of civil and environmental engineering and apply them to advanced technical problems.

3. Conduct an independent research program.

4. Demonstrate professional written and oral communication skills.

Requirements for the MS Degree in the field of Environmental Engineering

The MS degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 67). Students pursuing the MS degree in the field of Environmental Engineering must:

• Complete a minimum of 30 credit hours to satisfy degree requirements.

• Complete a minimum of 24 credit hours at Rice from approved graduate-level courses and 6 credit hours of thesis research.

• For students studying environmental engineering, this must include 1 course each in environmental chemistry, water treatment, hydrology, and air quality.

• For students studying civil, structural engineering, and mechanics, this must include 1 course each in structural engineering, mechanics, applied mathematics, structural dynamic systems, systems reliability, and earthquake engineering.

• Complete a maximum of 6 credit hours of graduate-level courses as transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

• Select a thesis committee according to department requirements and conduct original research in consultation with the committee.

• Present and defend in oral examination an approved research thesis.

Students take the oral exam only after the committee determines the thesis to be in a written format acceptable for public defense. Normally, students take 2 academic years and the intervening summer to complete the degree.

Students intending to extend their studies into the PhD degree program should note that the department does not grant an automatic (candidacy) MS degree to candidates who have not written a satisfactory master’s thesis.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MS Degree in the field of Environmental Engineering</td>
<td>30</td>
</tr>
</tbody>
</table>

Policies for the MS Degree in the field of Environmental Engineering

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Transfer Credit

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Departmental Transfer Credit Guidelines

Students pursuing the MS degree in the field of Environmental Engineering should be aware of the following departmental transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.

For additional information, please see the Civil and Environmental Engineering website: http://ceve.rice.edu/

Opportunities for the MS Degree in the field of Environmental Engineering

Fellowships and Opportunities

- NASA Internships: multiple opportunities are available for undergraduate and graduate students for spring and fall semesters, as well as year-long appointments.
- NRC Research Associateship Program: the National Academies of Sciences, Engineering, and Medicine offer paid postdoctoral, senior, and graduate fellowships.
- NASA Fellowships and other opportunities: NASA offers several internships, fellowships, and scholarships for both undergraduate and graduate students.
- NSF Graduate Research Fellowship Program (NSF-GRFP): provides fellowships to individuals selected early in their graduate careers based on their demonstrated potential for significant achievements in science and engineering.
- Fulbright-Hays Doctoral Dissertation Research Abroad Program (DDRA): provides grants to fund individual doctoral students to conduct research in other countries in modern foreign languages and area studies for periods of 6 to 12 months.
- DOE Computational Science Graduate Fellowship: The Department of Energy Computational Science Graduate Fellowship (DOE CSGF) program provides outstanding benefits and opportunities to students pursuing doctoral degrees in fields of study that utilize high performance computing to solve complex problems in science and engineering.
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Student Clubs

- Civil and Environmental Department Graduate Student Association: The main purpose of the club is to 1) foster better professional and personal relationships among students and between students and faculty members; 2) provide a forum for concerns, both professional and personal, about graduate student life; and 3) foster professional growth through mentoring, recruitment, and affiliate/internship relationships.
- Earthquake Engineering Research Institute: http://eeri.rice.edu. The objective of this student chapter is to encourage, facilitate, and promote learning and interest among students in the field of earthquake engineering through interaction with professionals and experts and through interdisciplinary involvement.

For additional information, please see the Civil and Environmental Engineering website: http://ceve.rice.edu/

Classical and European Studies

Contact Information

Classical and European Studies
http://ces.rice.edu/
Rayzor Hall 207
713-348-4151
Scott McGill
Department Chair
smcgill@rice.edu

The Classical and European Studies (CES) department houses the programs of Classical Studies, French Studies, and German Studies. Each program offers its own major.

Additionally, the department oversees the minor in Politics, Law, and Social Thought (p. 675).

The programs that comprise the department offer instruction in the literature, cultures, and languages in the European tradition.

Bachelor’s Programs

- Bachelor of Arts (BA) Degree with a Major in Classical Studies (p. 314)
- Bachelor of Arts (BA) Degree with a Major in French Studies (p. 316)
- Bachelor of Arts (BA) Degree with a Major in German Studies (p. 317)

Minor

- Minor in Politics, Law and Social Thought (p. 675)

Classical and European Studies does not currently offer an academic program at the graduate level.
Bachelor of Arts (BA) Degree with a Major in Classical Studies

Program Learning Outcomes for the BA Degree with a Major in Classical Studies

Upon completing the BA degree with a major in Classical Studies, students will:

1. If they pursue the Classical Languages specialization, be proficient at reading Greek and Latin and have articulate knowledge of the grammar and style of both languages.
2. Understand texts, artifacts, institutions, events, personalities, and places that are integral to ancient Greek and Roman culture.
3. Be able to analyze, interpret, and think critically about those texts, artifacts, institutions, events, personalities, and places.
4. Be able to situate those texts, artifacts, institutions, events, personalities, and places in their historical and cultural contexts.
5. Be able to relate classical civilization to the world around them, and to appreciate the profound influence classical civilization had on later Western civilization.

Requirements for the BA Degree with a Major in Classical Studies

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Classical Studies must complete:

- A minimum of 10 courses (30 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 2 courses (6 credit hours) at the 300-level or above.
- The requirements for one area of specialization (see list below). The Classical Studies major offers two areas of specialization:
  - Classical Languages (p. ), or
  - Classical Civilizations (p. )

The Classical Studies program offers instruction in the Greek and Latin languages, in Greek and Roman literature (studied in the original and in translation), in the classical civilizations surveyed as a whole, and in particular themes, genres, and periods of classical culture and their influence through subsequent ages. We cater to students who wish to prepare for graduate school in classics and also to students who are interested in Greek and Roman culture for other reasons and wish to take a less specialized approach. The program provides maximum flexibility without sacrifice of focus. Students will be able to explore ancient Greece and Rome from a variety of different angles and with whatever emphasis best suits their individual needs and goals.
The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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<th>Code</th>
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**Total Credit Hours Required for the Major in Classical Studies** 30

**Total Credit Hours Required for the BA Degree with a Major in Classical Studies** 120

**Degree Requirements**

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**Core Requirements**

Select 2 from the following:

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<th>Code</th>
<th>Title</th>
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<tr>
<td>CLAS 107 / HUMA 107</td>
<td>GREEK CIVILIZATION AND ITS LEGACY</td>
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</tr>
<tr>
<td>CLAS 108 / HUMA 111</td>
<td>ROMAN CIVILIZATION AND ITS LEGACY</td>
<td>3</td>
</tr>
<tr>
<td>CLAS 235</td>
<td>CLASSICAL MYTHOLOGY: INTERPRETATION, ORIGINS, AND INFLUENCE</td>
<td>3</td>
</tr>
<tr>
<td>CLAS 336</td>
<td>INTRO TO INDO-EUROPEAN</td>
<td>3</td>
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</table>

**Areas of Specialization**

Select 1 from the following (see Areas of Specialization below):

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</table>

**Total Credit Hours Required for the Major in Classical Studies** 30

**Additional Credit Hours to Complete BA Degree Requirements** 30

**University Graduation Requirements (p. 25)** 60

**Total Credit Hours** 120

**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 A minimum of 2 courses (6 credit hours) must be taken at the 300-level or above.

**Areas of Specialization**

To fulfill the remaining Classical Studies major requirements, students must complete the requirements for one area of specialization as listed below. Some courses in ancient philosophy, history, art history, and religion offered by the departments of Philosophy, History, Art History, and Religion also satisfy requirements for either specialization of the Classical Studies major. For advice about which courses do this, consult the program director.

**Area of Specialization: Classical Languages**

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</tbody>
</table>

Select 1 course from Greek (GREE) course offerings at the 200-level or higher 3

Select 1 course from Latin (LATI) course offerings at the 200-level or higher 3

Select 1 from the following:

Select 1 course from Greek (GREE) at the 300-level or higher 3

Select 1 course from Latin (LATI) course offerings at the 300-level or higher 3

Select 5 courses from Classical Studies (CLAS), GREE, or LATI course offerings 15

**Total Credit Hours** 24

**Area of Specialization: Classical Civilizations**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</table>

Select a total of 8 courses from CLAS, GREE, or LATI course offerings 1

**Total Credit Hours** 24

**Footnotes and Additional Information**

1 A minimum of 2 courses (6 credit hours) must be taken at the 300-level or above.

**Policies for the BA Degree with a Major in Classical Studies**

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the major in Classical Studies should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Classical and European Studies website: [http://ces.rice.edu](http://ces.rice.edu/).

**Opportunities for the BA Degree with a Major in Classical Studies**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work.
Bachelor of Arts (BA) Degree with a Major in French Studies

Program Learning Outcomes for the BA Degree with a Major in French Studies

Upon completing the BA degree with a major in French Studies, students will be able to:

1. Communicate fluently in spoken and written French at an advanced level, as indicated by the ability to: understand spoken French, converse in French, critically read and translate French texts, and write in multiple genres in French.

2. Achieve the cultural literacy necessary for studying abroad or practicing internationally-based professions by demonstrating an understanding of the major social, cultural, and political stakes of the French and Francophone world, past and present.

3. Demonstrate an interdisciplinary understanding of French studies through critical investigations of French literature, art, film, and other cultural forms.

4. Understand French language and culture not as isolated geographic phenomena, but in the wider context of multicultural exchange and globalization.

5. Learn and apply various research skills, including critical thinking and reading skills, theory, and criticism, to French texts (broadly construed) in order to produce new critical insights verbally or in writing.

Requirements for the BA Degree with a Major in French Studies

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in French Studies must complete:

- A minimum of 10 courses (30 credit hours) from departmental (FREN) course offerings to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- All courses at the 300-level or above.

Students who are pursuing two majors (i.e., are double majors) and have declared the French Studies major must complete:

- A minimum of 8 courses (24 credit hours) from departmental (FREN) course offerings to satisfy major requirements
- All courses at the 300-level or above.

Double majors who drop the other major are required to meet the requirements listed for single majors.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in French Studies (for single majors)</td>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in French Studies (for double majors)</td>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in French Studies</td>
<td>120</td>
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</table>

**Degree Requirements**

<table>
<thead>
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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td></td>
<td>Core Requirements 2</td>
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<td></td>
<td>Major Literary Works and Artifacts</td>
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<td>Select 2 from the following:</td>
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<tr>
<td>FREN 311</td>
<td>MAJOR LITERARY WORKS AND ARTIFACTS OF PRE-REVOLUTIONARY FRANCE</td>
<td></td>
</tr>
<tr>
<td>FREN 312</td>
<td>MAJOR LITERARY WORKS AND ARTIFACTS OF POST-REVOLUTIONARY FRANCE</td>
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<tr>
<td>FREN 313</td>
<td>MAJOR LITERARY WORKS AND ARTIFACTS OF THE FRANCOPHONE WORLD</td>
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<td></td>
<td>Writing Workshop</td>
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<td>FREN 302</td>
<td>WRITING WORKSHOP</td>
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<td></td>
<td>Elective Requirements</td>
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<td>Select 7 elective courses from departmental (FREN) course offerings. 1</td>
<td>21</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the Major in French Studies (for single majors)</td>
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<td>Additional Credit Hours to Complete BA Degree Requirements</td>
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<td></td>
<td>University Graduation Requirements (p. 25) 1</td>
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<tr>
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</table>

**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Double majors who drop the other major are required to meet the requirements listed for single majors.

2 The courses taken to satisfy the Core Requirements must be taken at Rice University. It is strongly suggested that these courses be taken as early as possible.
To fulfill the remaining French Studies major requirements, single majors must complete a total of 7 additional courses (21 credit hours) from departmental (FREN) course offerings at the 300-level or above, including at least 3 courses (9 credit hours) at the 400-level. Double majors must complete a total of 5 additional courses (15 credit hours) from FREN course offerings, including at least 2 courses (6 credit hours) at the 400-level. Students are required, with rare exceptions, to take 2 of their 400-level courses in the department.

**Policies for the BA Degree with a Major in French Studies**

**Enrollment**

As many as two French courses taught in English may count toward a major in French Studies. Students who have taken French courses at the 300 and 400 level (except those taught in English) cannot enroll simultaneously or afterward in 200-level French courses for credit. Students with diplomas from French-speaking institutions must consult with the department before enrolling in courses, and all majors and prospective majors must have their programs of study approved by an undergraduate advisor.

Students who arrive at Rice with AP credit in French of ’4’ or ’5’, or who have passed the International Baccalaureate with a ’6’ or ’7’ in French, can immediately enroll in all courses at the 300 or 400 level without taking a placement exam. All other students are required to take the placement exam administered by CLIC and will be assigned to courses in accordance with their level.

**Transfer Credit**

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the major in French Studies should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Classical and European Studies website: http://ces.rice.edu/.

**Opportunities for the BA Degree with a Major in French Studies**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

**Honors Program**

The Honors Program in French Studies is meant to recognize outstanding French majors and to offer an opportunity to complete a senior thesis in close collaboration with a French Studies faculty member. The program provides seniors with the opportunity to develop individual research projects culminating in the Honors thesis.

**Study Abroad Opportunities**

The program in French Studies offers a wide range of courses in literatures and cultures from France, Africa north and south of the Sahara, the Caribbean, and Québec. It covers major chronological periods while simultaneously anchoring the study of French cultures in a broad spectrum of disciplines that include literary, film, art, and historical studies. The program also offers advanced French language instruction focusing on writing, translation, and literary analysis. We strongly encourage students to spend time studying in a francophone country, and to that end the faculty and the Rice Study Abroad Office will help them select an appropriate program.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

**Bachelor of Arts (BA) Degree with a Major in German Studies**

**Program Learning Outcomes for the BA Degree with a Major in German Studies**

Upon completing the BA degree with a major in German Studies, students will be able to:

1. Develop an understanding of the main lines of cultural, political, and social thought in German history from early modern times to the present in the European context based on original sources.
2. Acquire skills in analyzing and evaluating key texts and documents of German cultural and political history such as literature, philosophy, art, and electronic media by way of close reading, critical interpretation and an awareness of the document's rhetorical and media-specific features.
3. Identify and compare different authors and texts within the different traditions they form a part of as well as their impact and legacy within both the national and international context.
4. Conduct research in the field of German Studies on topics chosen independently and to represent and communicate their findings clearly and coherently both in writing and oral presentation.

**Requirements for the BA Degree with a Major in German Studies**

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in German Studies must complete:

- A minimum of 10 courses (30 credit hours) from departmental (GERM) course offerings to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- 24 credit hours at the 300-level or above.
• A maximum of 4 courses (12 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

Students who are pursuing two majors (i.e., are double majors) and have declared the German Studies major must complete:

• A minimum of 8 courses (24 credit hours) from departmental (GERM) course offerings to satisfy major requirements.
• 18 credit hours at the 300-level or above.
• A maximum of 3 courses (9 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

Double majors who drop the other major are required to meet the requirements listed for single majors.

German Studies at Rice is a research-centered and undergraduate-focused program with internationally renowned faculty. Courses are offered in both German and English. The program covers German history, literature, and culture, from the seventeenth century to the present, with a strong emphasis on Germany’s role in a wider European and transatlantic context. Particular departmental strengths are in the areas of modern intellectual history, 18th- to 20th-century literature and philosophy, film and media studies, as well as political theory. The close connection between research and teaching lies at the core of the curriculum. For more information please see the German Studies website (http://german.rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<th>Code</th>
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<td>Total Credit Hours Required for the BA Degree with a Major in German Studies</td>
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Degree Requirements

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<td>SECOND YEAR GERMAN I ²</td>
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<td>SECOND YEAR GERMAN II ²</td>
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<td>Select 6 electives from departmental (GERM) course offerings. ⁴</td>
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Footnotes and Additional Information

¹ Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements. All courses must be completed at the 300-level or above, and no more than 4 courses (12 credit hours) for single majors, or 3 courses (9 credit hours) for double majors, can be completed through transfer work. Students who drop the other major are required to complete the requirements listed for single majors.

² Both GERM 263 and GERM 264 may be replaced by an eight-week intensive summer language course at the University of Leipzig, Germany. The Leipzig Summer Program course counts toward the German Studies major at Rice with 6 credit hours. For more information, see the Opportunities tab.

³ GERM 301 and GERM 302 may be replaced by two four-week summer language courses at the University of Leipzig, Germany.

⁴ To fulfill the remaining German Studies major requirements, single majors must complete a total of 6 additional courses (18 credit hours) from departmental (GERM) course offerings at the 300-level or above, including at least 3 courses (9 credit hours) at the 400-level. Up to 2 courses (6 credit hours) may be completed from the program’s offerings in English. Double majors must complete a total of 4 additional courses (12 credit hours) from GERM course offerings, including at least 2 courses (6 credit hours) at the 400-level. A maximum of 1 course (3 credit hours) may be completed from the program’s offerings in English (see below for course list).

Courses Offered in English

Please Note: A maximum of 2 courses (6 credit hours) for single majors, or a maximum of 1 course (3 credit hours) for double majors, may be completed from the program’s offerings in English and applied towards the major’s Elective Requirements (see below for course list).

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<td>GERM 324 / HUMA 324</td>
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<td>GERM 325 / HUMA 325</td>
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<td>GERM 326 / HUMA 372</td>
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Additional Credit Hours to Complete BA Degree Requirements 24-30

University Graduation Requirements (p. 25) * 60

Total Credit Hours 120
Policies for the BA Degree with a Major in German Studies

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in German Studies should be aware of the following departmental transfer credit guidelines:

- For single majors, no more than 4 courses (12 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major. For double majors, no more than 3 courses (9 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Classical and European Studies website: http://ces.rice.edu/.

Opportunities for the BA Degree with a Major in German Studies

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Honors Program
German Studies offers an honors program for majors excelling in their studies. Honors work consists of two semesters of independent research under faculty supervision on a topic proposed by the student leading to a substantial essay (GERM 493 in fall, GERM 494 in spring). Outstanding students are presented annually with the Max Freund Prize.

The Leipzig Summer Program
The Department of German Studies strongly encourages intermediate-level students of German to attend an eight-week, intensive language course at the University of Leipzig's renowned Herder Institute. The Leipzig course replaces GERM 301 and GERM 302 and counts toward the German Studies major at Rice with 6 credit hours. Through several generous endowments, the department offers the Leipzig Fellowships that can be used for travel, housing, and tuition expenses in Leipzig.

Details about the Leipzig Summer Program, including information about housing, can be found at http://ces.rice.edu/ and http://www.interdaf.uni-leipzig.de/. Students must apply directly to Leipzig-interDaF for course admission. For further information, contact the Program Advisor for German Studies, Astrid Oesmann, astrid.oesmann@rice.edu.

Cognitive Sciences

Contact Information
Cognitive Sciences
https://cogsci.rice.edu/
Herring Hall 209
713-348-3770
Michael Byrne
Program Director
byrne@rice.edu

Researchers in this interdisciplinary field seek to understand such mental phenomena as perception, thought, memory, the acquisition and use of language, learning, concept formation, and consciousness. Some investigators focus on relations between brain structures and behavior, some work with computer simulation, some use experimental methodology, and others work at more abstract theoretical levels.

Bachelor's Program
- Bachelor of Arts (BA) Degree with a Major in Cognitive Sciences (p. 320)

Cognitive Sciences does not currently offer an academic program at the graduate level.

Director
Mike Byrne

Professors
Michel Achard
Michael Byrne
John W. Clark, Jr.
Steven J. Cox
Program Learning Outcomes for the BA Degree with a Major in Cognitive Sciences

Upon completing the BA degree with a major in Cognitive Sciences, students will be able to:

1. Understand cognitive science as an interdisciplinary field and demonstrate the ability to synthesize key knowledge, theories, methods, research, and other elements from many related disciplines and bring these interdisciplinary elements to bear on problems or questions in the cognitive sciences.

2. Demonstrate a breadth of knowledge of the key issues, questions, and perspectives at stake in the multiple disciplines that contribute to the study of cognitive science.

3. Achieve a depth of knowledge in one core area of cognitive science – linguistics, neuroscience, psychology, or philosophy – and develop a knowledge base in that discipline, as well as an understanding of the theories, methods, and research approaches in that discipline.

4. Demonstrate the advanced critical thinking skills necessary to evaluate multiple theories or methods from a variety of related disciplines and choose which to apply to a particular problem or question in the cognitive sciences, as well as the advanced critical thinking ability necessary to evaluate the validity of research results that purport to address the same problem or question, but with different results.

5. Demonstrate the ability to communicate original research or research by other scholars effectively and at a college level in written and oral formats.

Requirements for the BA Degree with a Major in Cognitive Sciences

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Cognitive Sciences must complete:

- A minimum of 14 courses (42-45 credit hours depending on course selection) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 6 courses (18 credit hours) taken at the 300-level or above.
- The requirements for one area of specialization (see list below). The Cognitive Science major offers the following areas of specialization:
  - Linguistics (p. 322), or
  - Neuroscience (p. 322), or
  - Philosophy (p. 323), or
  - Psychology (p. 323)

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.
### Summary

<table>
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<th>Code</th>
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### Degree Requirements

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<td>COMP 130</td>
<td>ELEMENTS OF ALGORITHMS AND COMPUTATION</td>
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<td>COMP 140</td>
<td>COMPUTATIONAL THINKING</td>
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<td>COMP 160</td>
<td>INTRODUCTION TO GAME PROGRAMMING IN PYTHON</td>
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<td>PSYC 342</td>
<td>COMPUTER APPLICATIONS IN PSYCHOLOGY</td>
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<td>Advanced Computing Core Course</td>
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<td>COMP 182</td>
<td>ALGORITHMIC THINKING</td>
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<td>PHIL 357</td>
<td>INCOMPLETENESS, UNDECIDABILITY, AND COMPUTABILITY</td>
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<td>PSYC 430</td>
<td>COMPUTATIONAL MODELING OF COGNITIVE PROCESSES</td>
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<td>LING 200 / ANTH 200</td>
<td>INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE</td>
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<td>LING 306</td>
<td>LANGUAGE, THOUGHT, AND MIND</td>
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<td>LING 315 / PSYC 315</td>
<td>INTRODUCTION TO SEMANTICS</td>
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<td>Neuroscience Core Course</td>
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<td>NEUR 301</td>
<td>ADVANCED COGNITIVE NEUROSCIENCE: ATTENTION AND PERCEPTION</td>
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<td>NEUR 302</td>
<td>ADVANCED COGNITIVE NEUROSCIENCE: HIGHER MENTAL FUNCTIONS</td>
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<td>NEUR 306</td>
<td>CONCEPTS OF LEARNING AND MEMORY</td>
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<td>NEUR 308</td>
<td>INTRODUCTION TO COGNITIVE NEUROSCIENCE</td>
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<td>NEUR 362 / PSYC 362</td>
<td>COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN</td>
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<td>COGNITIVE NEUROSCIENCE LAB</td>
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<td>NEUR 380 / BIOL 380 / PSYC 380</td>
<td>FUNDAMENTAL NEUROSCIENCE SYSTEMS</td>
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<td>PHIL 103</td>
<td>PHILOSOPHICAL ASPECTS OF COGNITIVE SCIENCE</td>
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<td>PHIL 305</td>
<td>MATHEMATICAL LOGIC</td>
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<td>PHILOSOPHY OF MIND</td>
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<td>PSYC 308</td>
<td>MEMORY</td>
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<td>PSYCHOLOGY OF LANGUAGE</td>
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<td>PSYC 351</td>
<td>PSYCHOLOGY OF PERCEPTION</td>
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<td>PSYC 461</td>
<td>REASONING, DECISION MAKING, PROBLEM SOLVING</td>
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<td>STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
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<td>STAT 310 / ECON 307</td>
<td>PROBABILITY AND STATISTICS</td>
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<td>PSYC 339</td>
<td>STATISTICAL METHODS-PSYCHOLOGY</td>
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<td>Select 1 from the following Areas of Specialization:</td>
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<td>Linguistics</td>
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<tr>
<td>Neuroscience</td>
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<td>Philosophy</td>
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<td>Select 2-3 elective courses from the other Areas of Specialization or from the following additional electives:</td>
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<td>ANTH 406 / LING 406</td>
<td>COGNITIVE STUDIES</td>
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<tr>
<td>COMP 180</td>
<td>PRINCIPLES OF COMPUTING</td>
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Area of Specialization: Linguistics

To fulfill the remaining Cognitive Sciences major requirements, students pursuing the Linguistics area of specialization must complete a total of 9-12 credit hours from the following:

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<td>PHONETICS</td>
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<td>LING 304</td>
<td>INTRODUCTION TO SYNTAX</td>
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<td>LING 306</td>
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<td>LING 309</td>
<td>PSYCHOLOGY OF LANGUAGE</td>
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<td>LING 311</td>
<td>INTRODUCTION TO PHONOLOGY</td>
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<td>LING 315</td>
<td>INTRODUCTION TO SEMANTICS</td>
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<td>ORIGINS AND EVOLUTION OF HUMAN LANGUAGE</td>
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<td>LING 325</td>
<td>LANGUAGE ACQUISITION</td>
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<td>SPEECH AND HEARING SCIENCE</td>
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<tr>
<td>LING 404</td>
<td>RESEARCH METHODOLOGY AND LINGUISTIC THEORIES</td>
<td>3</td>
</tr>
<tr>
<td>LING 405</td>
<td>DISCOURSE</td>
<td>3</td>
</tr>
<tr>
<td>LING 409</td>
<td>SPECIAL TOPICS</td>
<td>3</td>
</tr>
<tr>
<td>LING 411</td>
<td>NEUROLINGUISTICS</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 411</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LING 419</td>
<td>MULTILINGUALISM</td>
<td>3</td>
</tr>
<tr>
<td>LING 427</td>
<td>ADVANCED PHONOLOGY</td>
<td>3</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

*LING 409 only counts toward the Cognitive Sciences major when the topic is related to Cognitive Science. For example, "Computational Linguistics" and "Gesture, Cognition, and Communication" count but "Variation in U.S. Hip Hop" does not. For questions regarding a specific instance of LING 409, consult a CSCI major advisor.

Area of Specialization: Neuroscience

To fulfill the remaining Cognitive Sciences major requirements, students pursuing the Neuroscience area of specialization must complete a total of 9-12 credit hours from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEUR 362</td>
<td>COGNITIVE NEUROSCIENCE: EXPLORING</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 362</td>
<td>THE LIVING BRAIN</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 380</td>
<td>FUNDAMENTAL NEUROSCIENCE SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 380</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYC 380</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

* Only one of COMP 180 and COMP 182 may be counted toward the Cognitive Sciences major. For example, if COMP 180 was used to satisfy the Advanced Computing Core requirement, COMP 182 cannot be used as an Elective course.
Rice University

NEUR 385 / BIOC 385
FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE 3
NEUR 411 / ANTH 411 / LING 411
NEUROLINGUISTICS 3
NEUR 415 / CAAM 415 / ELEC 488
THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS 3
NEUR 481 / BIOE 481 / ELEC 481
COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING 3
NEUR 525
NEUROSCIENCE AND LAW 3
PSYC 375
NEUROPYSYCHOLOGY OF LANGUAGE AND MEMORY 3
PSYC 432
BRAIN AND BEHAVIOR 3

Footnotes and Additional Information
1 Many of the neuroscience courses are taught by Baylor College of Medicine faculty. For more information, see http://neuroscience.rice.edu/. Rice - Baylor College of Medicine neuroscience course offerings change frequently. Baylor courses not on the list below may be counted at the discretion of the steering committee. The most up-to-date listing of courses counting as additional courses is found at cogsci.rice.edu.

Area of Specialization: Philosophy
To fulfill the remaining Cognitive Sciences major requirements, students pursuing the Philosophy area of specialization must complete a total of 9-12 credit hours from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL 103</td>
<td>PHILOSOPHICAL ASPECTS OF COGNITIVE SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 303</td>
<td>THEORY OF KNOWLEDGE</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 305</td>
<td>MATHEMATICAL LOGIC</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 312</td>
<td>PHILOSOPHY OF MIND</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 352</td>
<td>PHILOSOPHY OF PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 353</td>
<td>PHILOSOPHY OF LANGUAGE</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 357</td>
<td>INCOMPLETENESS, UNDECIDABILITY, AND COMPUTABILITY</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 358</td>
<td>PHILOSOPHY OF NEUROSCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 359</td>
<td>ANIMAL MINDS</td>
<td>3</td>
</tr>
</tbody>
</table>

Area of Specialization: Psychology
To fulfill the remaining Cognitive Sciences major requirements, students pursuing the Psychology area of specialization must complete a total of 9-12 credit hours from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC 308</td>
<td>MEMORY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 309 / LING 309</td>
<td>PSYCHOLOGY OF LANGUAGE</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 321</td>
<td>DEVELOPMENTAL PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 325 / LING 325</td>
<td>LANGUAGE ACQUISITION</td>
<td>3</td>
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<tr>
<td>PSYC 340</td>
<td>RESEARCH METHODS - PSYCHOLOGY</td>
<td>4</td>
</tr>
<tr>
<td>PSYC 351</td>
<td>PSYCHOLOGY OF PERCEPTION</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 362 / NEUR 362</td>
<td>COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 370</td>
<td>INTRODUCTION TO HUMAN FACTORS AND ERGONOMICS</td>
<td>3</td>
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<tr>
<td>PSYC 375</td>
<td>NEUROPYSYCHOLOGY OF LANGUAGE AND MEMORY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 380 / NEUR 380 / BIOC 380</td>
<td>FUNDAMENTAL NEUROSCIENCE SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 409</td>
<td>METHODS IN HUMAN-COMPUTER INTERACTION</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 411</td>
<td>HISTORY OF PSYCHOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 430</td>
<td>COMPUTATIONAL MODELING OF COGNITIVE PROCESSES</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 432</td>
<td>BRAIN AND BEHAVIOR</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 441</td>
<td>HUMAN-COMPUTER INTERACTION</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 461</td>
<td>REASONING, DECISION MAKING, PROBLEM SOLVING</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 480</td>
<td>ADVANCED TOPICS 1</td>
<td>3</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information
1 PSYC 480 only counts toward the Cognitive Sciences major when the topic is related to Cognitive Science. For example, “Genes and Cognition” and “Medical Human Factors” count, but “Topics in Clinical Psychology” does not. For questions regarding a specific instance of PSYC 480, consult a CSCI major advisor.

Policies for the BA Degree with a Major in Cognitive Sciences

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the major in Cognitive Sciences should be aware of the following program-specific transfer credit guidelines:

- Request for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Cognitive Sciences website: http://cogsci.rice.edu/.

Opportunities for the BA Degree with a Major in Cognitive Sciences

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work.
Undergraduate Requirements

College Courses are taught and overseen by Residential Colleges. Many of these are Student Taught Courses (STC). These courses can be found at the 100-199 level in Rice's Course Catalog [https://courses.rice.edu/admweb/SWKSCAT.cat?p_acyr_code=2017&p_action=CATASRCH&p_onebar=&p_mode=AND&p_subj_cd=COLL&p_subj=COLL&p_dept=&p_school=&p_df=&p_submit=].

Student-taught courses became part of the Rice curriculum in 2006. These courses provide undergraduates a chance to teach fellow students about subjects in which they consider themselves to be an expert. Since then, hundreds of undergraduates have instructed their peers on a diverse set of topics. Student-taught courses allow undergraduates to teach and to take courses in non-traditional subjects, and to thereby supplement the Rice curriculum. These courses are labeled COLL (College Courses) and are offered for 1 credit hour on a satisfactory/unsatisfactory basis. A student may only count up to 3 hours of credit for student-taught courses towards graduation, including teaching practicum courses.

Guidelines for Student Taught Courses

Students are invited to propose student-taught courses to the Dean of Undergraduates. Guidelines for student-taught courses are listed below:

1. The courses must be graded on a satisfactory/unsatisfactory scale—this is functionally equivalent to pass/fail, but does not count against a student's quota for pass/fail courses.
2. All student-taught courses are offered for 1 credit hour.
3. A student instructor cannot be paid a salary, but is awarded 1 credit hour. Colleges have the student instructor register in a teaching practicum that is overseen by their master. The faculty sponsor of the student taught courses would be responsible for the course including involvement in its planning, operations, and grading. The sponsor is expected to attend at least 1 class and meet with the student instructor.
4. A student may have a GPA of 2.5 or higher and be enrolled at Rice for at least 2 semesters before teaching a course. Students must be enrolled at Rice for at least 1 full semester before proposing a class.
5. A student may take as many student-taught courses as they like. Courses are listed on the transcript, but no more than 3 resulting credit hours can be applied towards the satisfaction of his/her graduation requirements.
6. Student-taught courses must have an enrollment cap of 19 or fewer.
7. Completing COLL 300 is required of all students who wish to teach an STC and have not already taught an STC.

For more information regarding Student Taught Courses, including the procedures for STC proposals, and evaluation criteria, please see the Center for Teaching Excellence [http://cte.rice.edu/stc/].

There are no College Courses (COLL) offered at the graduate-level (500-level or above).

Dean of Undergraduates

John Hutchinson

Descriptions and Codes Legend

Note: Internally, the university uses the following descriptions, codes and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

Course offerings/subject code: COLL
Computational and Applied Mathematics

Contact Information
Computational and Applied Mathematics
http://www.caam.rice.edu/
2117 Duncan Hall
713-348-4805
Beatrice Riviere
Department Chair
riviere@rice.edu

The coursework within the Computational and Applied Mathematics (CAAM) major provide foundations applicable to the many fields of engineering, physical sciences, life sciences, behavioral and social sciences, and computer science. CAAM students receive training in foundational mathematics for newly developed algorithms and training in all aspects of computation from algorithmic analysis to cost-accuracy performance. CAAM majors can plan a course of study consistent with their particular interests.

The professional Masters of Computational and Applied Mathematics (MCAAM) is an advanced professional degree program designed for students interested in a technical career path in industry or business. The PhD and MA program concentrate on research. Faculty research interests fall in the four general areas of numerical analysis and scientific computing; partial differential equations; operations research and optimization; and mathematical modeling in physical, biological, or behavioral sciences.

A further advanced interdisciplinary degree program in computational science and engineering (CSE) addresses the current need for sophisticated computation in both engineering and the sciences. For more information, see Computational Science and Engineering (p. 331).

A coordinated MBA/MCAAM degree program also is available in conjunction with the Jesse H. Jones Graduate School of Management.

Bachelor’s Program
• Bachelor of Arts (BA) Degree with a Major in Computational and Applied Mathematics (p. 326)

Minor
• Minor in Computational and Applied Mathematics (p. 330)

Master’s Programs
• Master of Computational and Applied Mathematics (MCAAM) Degree (p. 329)
• Master of Arts (MA) Degree in the field of Computational and Applied Mathematics*.

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Computational and Applied Mathematics (p. 328)

Coordinated Program
• Master of Business Administration (MBA) Degree/Master of Computational and Applied Mathematics (MCAAM) Degree (p. 328)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Chair
Beatrice Riviere

Professors
Matthias Heinkenschloss
Illya V. Hicks
Maarten V. de Hoop
Andrew J. Schaefer
Richard A. Tapia
Yin Zhang

Assistant Professors
Jesse Chan
Adrianna Gillman
Paul Hand
Matthew G. Knepley

Professors Emeriti
Robert E. Bixby
John E. Dennis
Henry Rachford
Danny C. Sorenson
William W. Symes

Lecturer
Anastasiya Protasov

Instructor
Wen Huang

Professors, Joint Appointments
John Edward Akin

Professors Emeriti, Joint Appointments
Sam H. Davis
Chao-Cheng Wang

Adjunct Professors
J. Bee Bednar
Richard Carter
Steven J. Cox
Amr El-Bakry
Roland Glowinski
Detlef Hohl
Tim Warburton

Adjunct Associate Professors
F. Omer Alpak
Bachelor of Arts (BA) Degree with a Major in Computational and Applied Mathematics

Program Learning Outcomes for the BA Degree with a Major in Computational and Applied Mathematics

Upon completing the BA degree with a major in Computational and Applied Mathematics, students will be able to:

1. Use modern numerical methods to analyze and solve typical problems in linear systems.
2. Design and test a mathematical model, following a multi-stage process.

Requirements for the BA Degree with a Major in Computational and Applied Mathematics

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Computational and Applied Mathematics must complete:

- A minimum of 17-18 courses (49-54 credit hours) depending on course selection to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 13 courses (37-39 credit hours), depending on course selection, at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Computational and Applied Mathematics</td>
<td>49-54</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Computational and Applied Mathematics</td>
<td>120</td>
</tr>
</tbody>
</table>

Degree Requirements

<table>
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<tr>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Introductory Courses 1</td>
<td></td>
</tr>
<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 335</td>
<td>MATRIX ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I 2</td>
<td>3</td>
</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>Select 1 from the following:</td>
<td>3-6</td>
<td></td>
</tr>
<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
<td></td>
</tr>
<tr>
<td>MATH 221 &amp; MATH 222</td>
<td>HONORS CALCULUS III and HONORS CALCULUS IV</td>
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</tr>
<tr>
<td>Intermediate Courses 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAAM 336</td>
<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 378</td>
<td>INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION</td>
<td>3</td>
</tr>
<tr>
<td>MATH 321</td>
<td>INTRODUCTION TO ANALYSIS I 4</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 302</td>
<td>ELEMENTS OF ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>STAT 310 / ECON 307</td>
<td>PROBABILITY AND STATISTICS</td>
<td>3</td>
</tr>
<tr>
<td>Advanced Courses 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAAM 453</td>
<td>NUMERICAL ANALYSIS I</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 454</td>
<td>NUMERICAL ANALYSIS II</td>
<td>3</td>
</tr>
<tr>
<td>or CAAM 471</td>
<td>LINEAR AND INTEGER PROGRAMMING</td>
<td></td>
</tr>
</tbody>
</table>
Policies for the BA Degree with a Major in Computational and Applied Mathematics

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Computational and Applied Mathematics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Computational and Applied Mathematics website: [http://www.caam.rice.edu/](http://www.caam.rice.edu/).

Opportunities for the BA Degree with a Major in Computational and Applied Mathematics

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) ([summa cum laude](http://www.caam.rice.edu/), [magna cum laude](http://www.caam.rice.edu/), and [cum laude](http://www.caam.rice.edu/)) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Professional Master’s 5th Year Degree Option for Rice Undergraduates
Rice students have an option to achieve the Master of Computational and Applied Mathematics (MCAAM) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies. Advanced Rice undergraduate students in good academic standing may apply during their junior year to the MCAAM professional degree program. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking required core courses of the MCAAM degree program during their senior year. A plan of study based on their particular focus area will need to be approved by the program director. Students should be aware there could be financial aid implications, if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).

For additional information, please see the [Computational and Applied Mathematics website](http://www.caam.rice.edu/).
Doctor of Philosophy (PhD) Degree in the field of Computational and Applied Mathematics

Program Learning Outcomes for the PhD Degree in the field of Computational and Applied Mathematics

Upon completing the PhD degree in the field of Computational and Applied Mathematics, students will be able to:

1. Solve problems using advanced foundational knowledge.
2. Conduct an independent research program.
3. Communicate professionally and effectively in writing and when speaking.

Requirements for the PhD Degree in Computational and Applied Mathematics

For general university requirements, please see Doctoral Degrees (p. 64). Students pursuing the PhD degree programs in Computational and Applied Mathematics must:

• Complete a course of study approved by the department to establish a broad foundation in applied mathematics.
• Perform satisfactorily on qualifying examinations and reviews.
• Produce an original thesis acceptable to the department.
• Perform satisfactorily on a final public oral examination on the thesis.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>90</td>
</tr>
</tbody>
</table>

Total Credit Hours Required for the PhD Degree in the field of Computational and Applied Mathematics

Policies for the PhD Degree in the field of Computational and Applied Mathematics

Department of Computational and Applied Mathematics Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Computational and Applied Mathematics publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Computational_Applied_Mathematics_Gradient_Handbook.pdf.

Admission

Admission to graduate study in computational and applied mathematics is open to qualified students holding bachelor’s or master’s degrees (or their equivalent) in engineering; mathematics; or the physical, biological, mathematical, or behavioral sciences. Department faculty evaluate the previous academic record and credentials of each applicant individually. For general information and university requirements, see Graduate Degrees (p. 49) and Admission to Graduate Study (p. 55).

Applicants should be aware that it normally takes two years to obtain a master’s degree and an additional two to four years for the doctoral degree.

Financial Assistance

Graduate fellowships, research assistantships, and graduate scholarships are available and are awarded on the basis of merit to qualified students. Current practice in the department is for most doctoral students in good academic standing to receive some financial aid.

For additional information, please see the Computational and Applied Mathematics website: http://www.caam.rice.edu/

Opportunities for the PhD Degree in the field of Computational and Applied Mathematics

For additional information, please see the Computational and Applied Mathematics website: http://www.caam.rice.edu/

Master of Business Administration (MBA) Degree / Master of Computational and Applied Mathematics (MCAAM) Degree

Program Learning Outcomes for the MCAAM Degree

Upon completing the MCAAM degree, students will be able to:

1. Acquire broad, advanced knowledge in Computational and Applied Mathematics that is also deep within a major sub-discipline.
2. Demonstrate an ability to gain employment or advancement in a technical field related to Computational and Applied Mathematics

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA/MCAAM Coordinated Degree

Students may earn this non-thesis Master of Engineering degree in the following fields:
• Bioengineering
• Chemical Engineering
• Civil and Environmental Engineering
• Computational and Applied Mathematics
• Computational Science and Engineering
• Computer Science
• Electrical Engineering
• Materials Science and Nanoengineering
• Mechanical Engineering
• Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

• A minimum of 2 academic years in residence at Rice
• A minimum of 69 semester hours in approved coursework, including:
  • A minimum of 24 credit hours in an engineering discipline
  • A minimum of 45 credit hours in business
• At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

Policies for the MBA/MCAAM Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Computational and Applied Mathematics website: http://www.caam.rice.edu/.

Opportunities for the MBA/MCAAM Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Computational and Applied Mathematics website: http://www.caam.rice.edu/.

Master of Computational and Applied Mathematics (MCAAM) Degree

Program Learning Outcomes for the MCAAM Degree

Upon completing the MCAAM degree, students will be able to:

1. Acquire broad, advanced knowledge in Computational and Applied Mathematics that is also deep within a major sub-discipline.
2. Demonstrate an ability to gain employment or advancement in a technical field related to Computational and Applied Mathematics

Requirements for the MCAAM Degree

The MCAAM degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MCAAM degree must complete:

• A minimum of 10 courses (30 credit hours) to satisfy degree requirements.

This professional degree program emphasizes the applied aspects of mathematics, and requires satisfactory completion of at least 30 credit hours of graduate level course work approved by the department.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<td>Total Credit Hours Required for the MCAAM Degree</td>
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Degree Requirements

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<td>Core Requirements</td>
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<td>CAAM 519</td>
<td>COMPUTATIONAL SCIENCE I</td>
<td></td>
</tr>
<tr>
<td>CAAM 550</td>
<td>NUMERICAL ANALYSIS I</td>
<td></td>
</tr>
<tr>
<td>CAAM 554</td>
<td>NUMERICAL ANALYSIS II</td>
<td></td>
</tr>
<tr>
<td>CAAM 571</td>
<td>LINEAR AND INTEGER PROGRAMMING</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elective Requirements</td>
<td>24</td>
</tr>
<tr>
<td>select</td>
<td>8 elective courses.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>30</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1. To fulfill the remaining MCAAM degree program requirements, students must complete a total of 8 additional courses (24 credit hours) at the 500-level or above. At least 5 of these courses must be from the departmental (CAAM) course offerings at the 500-level or above. CAAM 600, CAAM 698, CAAM 699, and CAAM 800 may not be applied toward the Elective requirement. Thesis, seminar, or independent study courses cannot be applied towards the Elective Requirements. Students may take up to 3 courses (9 credit hours) from course offerings outside of CAAM, with the approval of the student’s mentor.

Policies for the MCAAM Degree

Department of Computational and Applied Mathematics Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Computational and Applied Mathematics publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Computational_Applied_Mathematics_Graduate_Handbook.pdf.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions.
on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

For additional information, please see the Computational and Applied Mathematics website: http://www.caam.rice.edu/

**Opportunities for the MCAAM Degree**

For additional information, please see the Computational and Applied Mathematics website: http://www.caam.rice.edu/

**Minor in Computational and Applied Mathematics**

**Program Learning Outcomes for the Minor in Computational and Applied Mathematics**

Upon completing the minor in Computational and Applied Mathematics, students will be able to:

**Requirements for the Minor in Computational and Applied Mathematics**

Students pursuing the minor in Computational and Applied Mathematics must complete:

- A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
- A minimum of 3 departmental (CAAM) courses (9 credit hours) at the 300-level or above, of which at least 2 of these courses (6 credit hours) must be at the 400-level or above.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Minor in Computational and Applied Mathematics</td>
<td>18</td>
</tr>
</tbody>
</table>

**Minor Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td></td>
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<tr>
<td></td>
<td>CAAM 210 INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td>3</td>
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<tr>
<td></td>
<td>CAAM 335 MATRIX ANALYSIS</td>
<td>3</td>
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<tr>
<td></td>
<td>CAAM 336 DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>or CAAM 378 INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective Requirements</td>
<td></td>
</tr>
</tbody>
</table>

Select 3 elective courses.  

Total Credit Hours 18

**Footnotes and Additional Information**

1 To fulfill the remaining Computational and Applied Mathematics minor requirements, students must complete a total of 3 additional courses (9 credit hours) at the 300-level or above from Computational and Applied Mathematics (CAAM) departmental course offerings. The elective courses completed must be taken for a minimum of 3 credit hours each. At least 2 elective courses (6 credit hours) must be completed at the 400-level or above.

**Policies for the Minor in Computational and Applied Mathematics**

**Program Restrictions and Exclusions**

Students pursuing the minor in Computational and Applied Mathematics should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the minor in Computational and Applied Mathematics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Computational and Applied Mathematics website: http://www.caam.rice.edu/

**Opportunities for the Minor in Computational and Applied Mathematics**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Computational and Applied Mathematics website: http://www.caam.rice.edu/
Computational Science and Engineering

Contact Information
Computational Science and Engineering
https://engrprofmasters.rice.edu/

Jan Odegard
Program Director
odegard@rice.edu

The advanced degree program in Computational Science and Engineering addresses the current need for sophisticated computation in both engineering and the sciences. Such computation requires an understanding of parallel and vector capabilities and a range of subjects including visualization, networking, and programming environments. An awareness of a variety of new algorithms and analytic techniques also is essential to maximizing the power of the new computational tools.

The Master of Computational Science and Engineering (MCSE) professional master's degree is for persons interested in practicing within this field, while the PhD program concentrates more specifically on research.

Computational Science and Engineering does not currently offer an academic program at the undergraduate level.

Master’s Programs
• Master of Computational Science and Engineering (MCSE) Degree (p. 333)
• Master of Arts (MA) Degree in the field of Computational Science and Engineering*

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Computational Science and Engineering (p. 331)

Coordinated Program
• Master of Business Administration (MBA) Degree / Master of Computational Science and Engineering (MCSE) Degree (p. 332)
* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Director
Jan Odegard, Kennedy Institute

Advisory Committee
John Dobelman, Statistics
Matthias Heinkenschloss, Computational and Applied Mathematics
Eugene Ng, Computer Science
Micheal Orchard, Electrical and Computer Engineering

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: Courses from various subjects can be applied towards this program

Department (or Program) Description and Code
• Computational Science and Engineering: CSCE

Graduate Degree Descriptions and Codes
• Master of Computational Science and Engineering degree: MCSE
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Computational Science and Engineering: CSCE

Doctor of Philosophy (PhD) Degree in the field of Computational Science and Engineering

Program Learning Outcomes for the PhD Degree in the field of Computational Science and Engineering
Upon completing the PhD degree program in the field of Computational Science and Engineering, students will be able to:

1. Acquire broad, advanced knowledge in Computational and Applied Mathematics, Computer Science, or Statistics that is also deep in one major area within one of the three disciplines.
2. Conduct independent research that demonstrates advanced mastery of a sub-discipline within one of the three disciplines.
3. Communicate advanced technical ideas effectively.

Requirements for the PhD Degree in the field of Computational Science and Engineering
For general university requirements, please see Doctoral Degrees (p. 64). Students pursuing the PhD in the field of computational science and engineering, students must:

• Complete a course of study approved by the Computational Science Committee, including at least 2 courses outside the major area.
• Perform satisfactorily on preliminary and qualifying examinations and reviews.
• Produce an original thesis acceptable to the Computational Science Committee.
• Perform satisfactorily on a final public oral examination on the thesis.
Recognizing the increasing reliance of modern science and engineering on computation as an aid to research, development, and design, the Department of Computational and Applied Mathematics, in conjunction with the Departments of Biochemistry and Cell Biology, Earth Science, Computer Science, Chemical and Biomolecular Engineering, Electrical and Computer Engineering, Civil and Environmental Engineering, and Statistics, has established an advanced degree program in computational science and engineering (CSE). The program focuses on modern computational techniques and provides a resource for training and expertise in this area.

The program is administered by a faculty committee chosen by the deans of engineering and natural sciences. The Computational Science Committee (CSC) helps students design an appropriate course of study and sets the examination requirements.

Students may enter the Computational Science and Engineering program either directly or indirectly through one of the participating departments (see list above). In all cases, however, students must fulfill the admissions requirements of their associated department. Students then meet the normal requirements for graduate study within that department in every way (including teaching and other duties), except that the curriculum and examination requirements are set by the Computational Science Committee.

**Policies for the PhD Degree in the field of Computational Science and Engineering**

**Opportunities for the PhD Degree in the field of Computational Science and Engineering**

**Master of Business Administration (MBA) Degree / Master of Computational Science and Engineering (MCSE) Degree**

**Program Learning Outcomes for the MCSE Degree**

Upon completing the MCSE degree, students will be able to:

1. Acquire broad, advanced knowledge in modern computational techniques.
2. Possess skills to identify, formulate, and solve advance technical problems related to one of the three focus areas.
3. Communicate technical ideas effectively.

**Program Learning Outcomes for the MBA Degree Programs**

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

**Requirements for the MBA/MCSE Coordinated Degree Program**

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

**Policies for the MBA/MCSE Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: [https://business.rice.edu/](https://business.rice.edu/)
2. Please see the Computational Science and Engineering website: [https://engrprofmasters.rice.edu/](https://engrprofmasters.rice.edu/)
Opportunities for the MBA/MCSE Coordinated Degree Program
For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Computational Science and Engineering website: https://engrprofmasters.rice.edu/

Master of Computational Science and Engineering (MCSE) Degree

Program Learning Outcomes for the MCSE Degree
Upon completing the MCSE degree, students will be able to:

1. Acquire broad, advanced knowledge in modern computational techniques.
2. Possess skills to identify, formulate, and solve advance technical problems related to one of the three focus areas.
3. Communicate technical ideas effectively.

Requirements for the MCSE Degree
The MCSE degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MCSE degree must complete:

- A minimum of 30 credit hours to satisfy degree requirements.

The Master in Computational Science and Engineering (MCSE) degree in the School of Engineering is a non-thesis degree program designed to provide training and expertise in computational science and engineering and in data analytics. The MCSE degree program is intended for students interested in technical and managerial positions such as computational scientist, computational engineering, and data analyst. The program offers students opportunities to specialize in areas such as high-performance computing, data analytics, data science, machine learning, software engineering, and distributed systems.

The departments of Computational and Applied Mathematics, Computer Science, Electrical and Computer Engineering, and Statistics jointly offer the MCSE degree program. Based on preferences indicated in their applications, MCSE students are admitted to one of the following home departments: Computational and Applied Mathematics (CAAM), Computer Science (COMP), Electrical and Computer Engineering (ELEC), or Statistics (STAT).

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MCSE Degree</td>
<td>30</td>
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Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>

Core Distribution Requirements

Select 1 course from 3 of the following 4 groups:

Group 1 (CAAM) 1

Group 2 (COMP) 2

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>COMP 504</td>
<td>GRADUATE OBJECT-ORIENTED PROGRAMMING AND DESIGN</td>
<td>3-4</td>
</tr>
<tr>
<td>COMP 506</td>
<td>COMPILER CONSTRUCTION FOR GRADUATE STUDENTS</td>
<td></td>
</tr>
<tr>
<td>COMP 520</td>
<td>DISTRIBUTED SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>COMP 521 / ELEC 552</td>
<td>OPERATING SYSTEMS AND CONCURRENT PROGRAMMING</td>
<td></td>
</tr>
<tr>
<td>COMP 522</td>
<td>MULTI-CORE COMPUTING</td>
<td></td>
</tr>
<tr>
<td>COMP 529</td>
<td>ADVANCED COMPUTER NETWORKS</td>
<td></td>
</tr>
<tr>
<td>COMP 530</td>
<td>DATABASE SYSTEM IMPLEMENTATION</td>
<td></td>
</tr>
<tr>
<td>COMP 533</td>
<td>INTRODUCTION TO DATABASE SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>COMP 540</td>
<td>STATISTICAL MACHINE LEARNING</td>
<td></td>
</tr>
<tr>
<td>COMP 541</td>
<td>INTRODUCTION TO COMPUTER SECURITY</td>
<td></td>
</tr>
<tr>
<td>COMP 542</td>
<td>LARGE-SCALE MACHINE LEARNING</td>
<td></td>
</tr>
<tr>
<td>COMP 557 / ELEC 557</td>
<td>ARTIFICIAL INTELLIGENCE</td>
<td></td>
</tr>
<tr>
<td>COMP 582</td>
<td>GRADUATE DESIGN AND ANALYSIS OF ALGORITHMS</td>
<td></td>
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</table>

Group 3 (ELEC) 3

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>ELEC 513</td>
<td>COMPLEXITY IN MODERN SYSTEMS</td>
<td>3-4</td>
</tr>
<tr>
<td>ELEC 525</td>
<td>VIRTUALIZATION AND CLOUD RESOURCE MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>ELEC 526</td>
<td>HIGH PERFORMANCE COMPUTER ARCHITECTURE</td>
<td></td>
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<tr>
<td>ELEC 531</td>
<td>STATISTICAL SIGNAL PROCESSING</td>
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<tr>
<td>ELEC 533</td>
<td>INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS</td>
<td></td>
</tr>
<tr>
<td>ELEC 546</td>
<td>INTRODUCTION TO COMPUTER VISION</td>
<td></td>
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<tr>
<td>ELEC 547</td>
<td>COMPUTER VISION</td>
<td></td>
</tr>
<tr>
<td>ELEC 549</td>
<td>COMPUTATIONAL PHOTOGRAPHY</td>
<td></td>
</tr>
<tr>
<td>ELEC 553</td>
<td>MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION</td>
<td></td>
</tr>
<tr>
<td>ELEC 554</td>
<td>COMPUTER SYSTEMS ARCHITECTURE</td>
<td></td>
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<td>ELEC 558</td>
<td>DIGITAL SIGNAL PROCESSING</td>
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<tr>
<td>ELEC 575</td>
<td>LEARNING FROM SENSOR DATA</td>
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<tr>
<td>ELEC 576</td>
<td>A PRACTICAL INTRODUCTION TO DEEP MACHINE LEARNING</td>
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</tr>
<tr>
<td>ELEC 585</td>
<td>FUNDAMENTALS OF MEDICAL IMAGING</td>
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</table>

Group 4 (STAT) 4

Select 1 from the following:

<table>
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<th>Code</th>
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</thead>
<tbody>
<tr>
<td>ELEC 585</td>
<td>FUNDAMENTALS OF MEDICAL IMAGING</td>
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</table>
Statistical Mathematics and Computational Science

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<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>STAT 502</td>
<td>NEURAL MACHINE LEARNING I</td>
</tr>
<tr>
<td>COMP 502</td>
<td>PROBABILITY</td>
</tr>
<tr>
<td>ELEC 502</td>
<td>STATISTICAL INFERENCE</td>
</tr>
<tr>
<td>STAT 518</td>
<td>MULTIVARIATE ANALYSIS</td>
</tr>
<tr>
<td>STAT 519</td>
<td>NEURAL MACHINE LEARNING AND DATA MINING II</td>
</tr>
<tr>
<td>STAT 602</td>
<td>R FOR DATA SCIENCE</td>
</tr>
<tr>
<td>STAT 615</td>
<td>REGRESSION AND LINEAR MODELS</td>
</tr>
<tr>
<td>STAT 616</td>
<td>ADVANCED STATISTICAL METHODS</td>
</tr>
<tr>
<td>STAT 648</td>
<td>GRAPHICAL MODELS AND NETWORKS</td>
</tr>
</tbody>
</table>

**Elective Requirements**

Communication, Leadership, Management and Ethics

Select up to 6 credit hours from the following:

- ENGI 505 / CEVE 505 - ENGINEERING PROJECT MANAGEMENT AND ECONOMICS
- ENGI 510 - TECHNICAL AND MANAGERIAL COMMUNICATIONS
- ENGI 515 - LEADING TEAMS AND INNOVATION
- ENGI 528 / CEVE 528 - ENGINEERING ECONOMICS
- ENGI 529 / CEVE 529 - ETHICS AND ENGINEERING LEADERSHIP
- ENGI 542 - COMMUNICATION FOR ENGINEERS: BUILDING A PRACTICAL TOOLBOX
- ENGI 545 / LEAD 545 - STRATEGIC THINKING FOR COMPLEX PROBLEM SOLVING
- ENGI 610 / NSCI 610 - MANAGEMENT FOR SCIENCE AND ENGINEERING
- ENGI 614 - LEARNING HOW TO INNOVATE?
- ENGI 615 - LEADERSHIP COACHING FOR ENGINEERS

**Additional Electives**

Select additional courses from departmental CAAM, COMP, or STAT course offerings at the 500-level or above.

**Total Credit Hours**

30

**Footnotes and Additional Information**

1. A student whose home department is COMP, ELEC, or STAT has the option of satisfying Group 1 requirements by completing exactly one course from the following list:
   - CAAM 436
   - CAAM 437
   - CAAM 471

2. A student whose home department is CAAM, ELEC, or STAT has the option of satisfying Group 2 requirements by completing exactly one course from the following list:
   - COMP 322
   - COMP 330
   - COMP 430

3. A student whose home department is COMP, ELEC, or STAT has the option of satisfying Group 3 requirements by completing exactly one course from the following list:
   - ELEC 425
   - ELEC 431

4. A student whose home department is COMP, ELEC, or STAT has the option of satisfying Group 4 requirements by completing exactly one course from the following list:
   - STAT 310
   - STAT 405
   - STAT 410

5. Other courses may satisfy the Communication, Management, and Ethics group requirement. See advisor for more details.

6. Credit hours earned for ENGI 530 Engineering Practicum may not be applied toward MCSE degree requirements.

**Policies for the MCSE Degree**

**Application Information**

Students must have completed a BA or BS degree in an engineering or science discipline, with training in engineering mathematics, statistical foundations, and programming methodology to be admitted to the program.

- Fall admission deadline — February 15
- To apply to the program go to MSCE application (https://mcsegradapps.rice.edu)
- For additional information about the program contact mcse@rice.edu
- Enrollments and degrees awarded for degree programs in the Engineering School are available at: https://engineering.rice.edu/about/enrollment-degrees-awarded.

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

For additional information, please see the Computational Science and Engineering website: https://engrprofmasters.rice.edu/

**Opportunities for the MCSE Degree**

For additional information, please see the Computational Science and Engineering website: https://engrprofmasters.rice.edu/

**Computer Science Contact Information**

Luay Nakhleh
Department Chair & Undergraduate Committee Chair
Computer science is concerned with the study of computers and computing, focusing on algorithms, programs and programming, and computational systems. The main goal of the discipline is to build a systematic body of knowledge, theories, and models that explain the properties of computational systems and to show how this body of knowledge can be used to produce solutions to real-world computational problems.

Computer science is the intellectual discipline underlying information technology, which is widely accepted now as the ascendant technology of the next century. Students in computer science at Rice benefit from the latest in equipment and ideas as well as the flexibility of the educational programs. The research interests of the faculty include algorithms and complexity, artificial intelligence and robotics, compilers, distributed and parallel computation, graphics and visualization, operating systems, and programming languages.

The department offers two undergraduate degrees: the Bachelor of Arts (BA) degree and the Bachelor of Science in Computer Science (BSCS) degree. The department offers two master’s degrees: the professional Master of Computer Science (MCS) degree and the research-oriented Master of Science (MS) degree. The MS degree is a research degree requiring a thesis in addition to course work. The MS degree is primarily for students pursuing their PhD. Typically students are not admitted directly into the MS program.

Students wishing to pursue a terminal Masters Degree should apply to the MCS program. Students wishing to pursue a PhD should apply directly to the PhD program, which the department offers.

A coordinated MBA/MCS degree program is available in conjunction with the Jesse H. Jones Graduate School of Business.

**Bachelor’s Programs**
- Bachelor of Arts (BA) Degree with a Major in Computer Science (p. 336)
- Bachelor of Science in Computer Science (BSCS) Degree (p. 338)

**Master’s Programs**
- Master of Computer Science (MCS) Degree (p. 341)
- Master of Science (MS) Degree in the field of Computer Science (p. 344)

**Doctoral Program**
- Doctor of Philosophy (PhD) Degree in the field of Computer Science (p. 339)

**Coordinated Program**
- Master of Business Administration (MBA) Degree / Master of Computer Science (MCS) Degree (p. 340)
Adjunct Professors
Eric Allen
Faye Briggs
Wah Chiu
Jack Dongarra
Steve Wallach
Scott Warren

Adjunct Associate Professor
Chris Bronk

Adjunct Assistant Professors
Ken Chen
Erez Lieberman Aiden

Postdoctoral Research Associates
Hassan Abdellatif
Dinler Antunes
Tiago Cogumbreiro
Neil Dantam
Didier Devaurs
Martin Kong
Jianwen Li
Matt Moran
Vijay Murali
Kia Teymourian

Research Scientists and Programmers
Laksono Adhianto
R. Matt Barnett
Zoran Budimlic
Michael Burke
Philippe Charles
Sanjay Chatterjee
Michael Fagan
Akihiro Hayashi
Mark Krentel
Mark Moll
Carlos Monroy
Dung "Zung" Nguyen
Jun Shirako
Jisheng Zhao
Jia Zou

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: COMP

Department Description and Code
- Computer Science: COMP

Undergraduate Degree Descriptions and Codes
- Bachelor of Arts degree: BA
- Bachelor of Science in Computer Science degree: BSCS

Undergraduate Major Description and Code
- Major in Computer Science (for both the BA and BSCS degrees): COMP

Graduate Degree Descriptions and Codes
- Master of Computer Science degree: MCS
- Master of Science degree: MS
- Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
- Degree Program in Computer Science: COMP

Bachelor of Arts (BA) Degree with a Major in Computer Science

Program Learning Outcomes for the BA Degree with a Major in Computer Science
Upon completing the BA degree with a major in Computer Science, students will be able to:

1. Be knowledgeable about algorithms and their use. Students will analyze new problems, choose appropriate algorithms for their solutions, and develop analytical skills in the manipulation of algorithms.
2. Demonstrate the ability to design and implement complex software systems. Students will demonstrate skill in their design and implementation and function effectively in teams.
3. Be knowledgeable about programming languages and their use. Students will demonstrate an understanding of distinguishing and mapping two different programming languages.

Requirements for the BA Degree with a Major in Computer Science
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Computer Science must complete:

- A minimum of 17 courses (61 credit hours) to satisfy the major requirements.
- A minimum of 121 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 10 courses (36 credit hours, depending on course selection) at the 300-level or above.

The undergraduate program in computer science has been designed to accommodate a wide range of student interests. The program is sufficiently flexible for a student to customize it to his or her interests. A student can develop a broad educational program that couples computer science education with a variety of other fields in engineering, natural sciences, the humanities, or social sciences. Alternatively, a program might be designed for a student preparing for graduate study in computer science or for a career in computing and information technology.

The undergraduate program consists of required math and science courses; computer science core courses, including introductory courses and upper-level courses ensuring knowledge in a broad range of areas;
and computer science electives, which give students the freedom to explore specific interests.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
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<td>Total Credit Hours Required for the BA Degree with a Major in Computer Science</td>
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### Degree Requirements

**Core Requirements**

Math and Science Courses:

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<tr>
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<tr>
<td>STAT 310 / ECON 307</td>
<td>PROBABILITY AND STATISTICS</td>
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<td>STAT 312</td>
<td>PROBABILITY &amp; STATISTICS FOR ENGINEERS</td>
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Computer Science Courses:

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<td>COMP 215</td>
<td>INTRODUCTION TO PROGRAM DESIGN</td>
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<td>ELEC 220</td>
<td>FUNDAMENTALS OF COMPUTER ENGINEERING</td>
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<tr>
<td>COMP 310</td>
<td>ADVANCED OBJECT-ORIENTED PROGRAMMING AND DESIGN</td>
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</tr>
<tr>
<td>COMP 321</td>
<td>INTRODUCTION TO COMPUTER SYSTEMS</td>
<td>4</td>
</tr>
</tbody>
</table>

**Elective Requirements**

Select 2 Computer Science (COMP) departmental course offerings (a minimum of 3 credit hours each) at the 300-level or higher.

Total Credit Hours Required for the Major in Computer Science: 61

Total Credit Hours: 121

### Footnotes and Additional Information

1. Typically, the Math and Science courses are taken during the freshman and sophomore years.

2. At most 1 of these 2 courses may be an independent study project (COMP 390, COMP 490, or COMP 491). Students may take courses at the 500-level, however, departmental approval is required to use a course at the 600-level (or above) as an elective.

### Policies for the BA Degree with a Major in Computer Science

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

Students pursuing the major in Computer Science should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Computer Science website: [http://www.cs.rice.edu/](http://www.cs.rice.edu/).

### Opportunities for the BA Degree with a Major in Computer Science

#### Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university
Bachelor of Science in Computer Science (BSCS) Degree

Program Learning Outcomes for the BSCS Degree

Upon completion of the BSCS degree, students will be able to:

1. Be knowledgeable about algorithms and their use. Students will analyze new problems, choose appropriate algorithms for their solutions, and develop analytical skills in the manipulation of algorithms.
2. Demonstrate the ability to design and implement complex software systems. Students will demonstrate skill in their design and implementation and function effectively in teams.
3. Be knowledgeable about programming languages and their use. Students will demonstrate an understanding of distinguishing and mapping two different programming languages.
4. Demonstrate a deep knowledge in a subarea of Computer Science. Students will be able to explain issues in the selected subarea and demonstrate a depth of knowledge.
5. Communicate effectively to a client and user.

Requirements for the BSCS Degree

For general university requirements, see Graduation Requirements (p. 25).

Students pursuing the BSCS degree must complete:

- A minimum of 23-25 courses (84 credit hours) depending on course selection to satisfy the major requirements.
- A minimum of 128 credit hours to satisfy degree requirements.
- A minimum of 14 courses (51 credit hours) at the 300-level and above.

The BSCS degree is designed for students who are interested in an in-depth study of computer science to prepare themselves for a professional career in the computing industry.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<td></td>
<td>Total Credit Hours Required for the BSCS Degree</td>
<td>128</td>
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Bachelor of Science in Computer Science (BSCS) Degree

Degree Requirements

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<tr>
<td>or STAT 312</td>
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<tr>
<td>or ELEC 303</td>
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<td>INTRODUCTION TO COMPUTER SYSTEMS</td>
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</tr>
<tr>
<td>COMP 322 / ELEC 323</td>
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<td>COMP 382</td>
<td>REASONING ABOUT ALGORITHMS</td>
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<tr>
<td>COMP 411</td>
<td>PRINCIPLES OF PROGRAMMING LANGUAGES</td>
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</table>
SOFTWARE ENGINEERING METHODOLOGY

128

For Rice University’s policy regarding transfer credit, see Transfer Credit Policies for the BSCS Degree on transfer credit. The Office of Academic Advising maintains the departmental transfer credit guidelines:

Students pursuing the BSCS degree should be aware of the following possibilities.

The capstone sequence represents a coherent set of courses that include all of the above university requirements.

1 Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

2 At most 1 of these courses may be an independent study project (COMP 390, COMP 490, or COMP 491). Departmental approval is required to use a 600-level course as an elective.

3 The capstone sequence represents a coherent set of courses in a computer science specialization chosen by the student. Departmental approval is required for suggested specializations. Including the design component, the capstone requires a minimum of 15 credit hours.

1. Acquire a solid foundation in Computer Science at graduate level. Students will demonstrate a graduate-level understanding of material across a variety of sub-disciplines, be able to synthesize problem solutions by combining knowledge from different sources, and demonstrate a deep knowledge of sub-area in which they will pursue their dissertation.

2. Conduct an independent research program. Students will identify and pose a research problem, place that problem in context within the field’s established literature, and conduct an independent investigation that leads to credible scientific results.

3. Demonstrate professional skills in both oral and written communication. Students will write well-organized, coherent scientific issues and techniques in writing and in presentation, and be able to answer unanticipated technical questions in a public setting.

Footnotes and Additional Information

For additional information, please see the Computer Science website: http://www.cs.rice.edu/

Opportunities for the BSCS Degree

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Computer Science website: http://www.cs.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Computer Science

Program Learning Outcomes for the PhD Degree in the field of Computer Science

Upon completing the PhD degree in the field of Computer Science, students will be able to:

Requirements for the PhD Degree in the field of Computer Science

For general university requirements, please see Doctoral Degrees (p. 64). Students pursuing the PhD degree in the field of Computer Science must:

• Meet departmental course requirements as described in the Computer Science Department’s graduate student handbook available at: https://www.cs.rice.edu/academics/graduate-studies/phd/

• Complete a COMP 590 project by the end of the third semester.

• Complete a master’s thesis by the end of the fifth semester, if a previous master’s thesis has not been approved by the graduate committee.

• Pass a qualifying examination in an area of specialization within seven semesters after entering the PhD program.

• Conduct original research, submit an acceptable PhD thesis proposal, and successfully defend the thesis proposal.

Policies for the BSCS Degree

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the BSCS degree should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Elec 421

Operating Systems and Concurrent Programming

4

Developmental Pathway 4

COMP 421 / Operating Systems and Concurrent Programming

4

Elective Requirements

Select 2 Computer Science (COMP) departmental course offerings (a minimum of 3 credit hours each) at the 300-level or higher

Capstone Requirement

Design Component

Select 1 from the following:

COMP 410 SOFTWARE ENGINEERING METHODOLOGY

COMP 413 DISTRIBUTED PROGRAM CONSTRUCTION

COMP 460 / ARTS 460 ADVANCED COMPUTER GAME CREATION

Capstone

Select 3 additional courses at the 300-level or above in consultation with a major advisor

Total Credit Hours Required for the Major in Computer Science

84

University Graduation Requirements (p. 25)

44

Total Credit Hours

128

Rice University

2017-2018 General Announcements
Master of Business Administration (MBA) Degree / Master of Computer Science (MCS) Degree

Program Learning Outcomes for the MCS Degree

Upon completing the MCS degree, students will be able to:

1. Solve advanced Computer Science problems. Students will acquire and apply a graduate-level understanding of material in sub-areas of Computer Science.
2. Design and implement complex software systems. Students will demonstrate skill in their design and implementation and function effectively in teams.
3. Communicate effectively to a client and user.
4. Have improved professional opportunities relative to the time before entering the program.

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA/MCS Coordinated Degree Program

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
• A minimum of 24 credit hours in an engineering discipline
• A minimum of 45 credit hours in business
• A minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

**Policies for the MBA/MCS Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: [https://business.rice.edu/](https://business.rice.edu/)

**Opportunities for the MBA/MCS Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: [https://business.rice.edu/](https://business.rice.edu/)

**Master of Computer Science (MCS) Degree**

**Program Learning Outcomes for the MCS Degree**

Upon completing the MCS degree, students will be able to:

1. Solve advanced Computer Science problems. Students will acquire and apply a graduate-level understanding of material in sub-areas of Computer Science.
2. Design and implement complex software systems. Students will demonstrate skill in their design and implementation and function effectively in teams.
3. Communicate effectively to a client and user.
4. Have improved professional opportunities relative to the time before entering the program.

**Requirements for the MCS Degree**

The MCS degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MCS degree must complete:

- A minimum of 30 credit hours at the 500-level or above to satisfy degree requirements.
- A minimum of 24 credit hours completed at Rice.
- A minimum overall GPA of 2.67 in required coursework.
- A maximum of 2 courses (6 credit hours) from transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The MCS degree is a terminal degree for students intending to pursue a technical career in the computer industry. MCS degree areas of specialization include artificial intelligence and robotics, computer vision, data science, databases, operating systems and security, computer networks, computer architecture, parallel computing, compiler construction, programming languages, and software engineering. The MCS degree program normally requires three semesters of study.

Students in the MCS degree program are expected to pay full tuition and all fees. No financial aid is available from the university or the department for MCS students.

**Summary**

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**Degree Requirements**

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<th>Credit Hours</th>
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</table>

### Core Requirements

1. Students must complete 1 course from 3 of the following 4 core requirement areas listed below:

- **Languages and Compilers**
  - Select up to 1 from the following:
    - COMP 506: COMPILER CONSTRUCTION FOR GRADUATE STUDENTS
    - COMP 511: PRINCIPLES OF PROGRAMMING LANGUAGES
    - COMP 512: ADVANCED COMPILER CONSTRUCTION
    - COMP 515: ADVANCED COMPILATION FOR VECTOR PARALLEL PROCESSORS
    - COMP 535: APPROXIMATE COMPUTING SYSTEM FOR BIG DATA, SUPERCOMPUTING AND EMBEDDED SYSTEMS

- **Theory**
  - Select up to 1 from the following:
    - COMP 507: COMPUTER-AIDED PROGRAM DESIGN
    - COMP 509: ADVANCED LOGIC IN COMPUTER SCIENCE
    - COMP 581: AUTOMATA, FORMAL LANGUAGES, AND COMPUTABILITY
    - COMP 582 / ELEC 512: GRADUATE DESIGN AND ANALYSIS OF ALGORITHMS

- **Systems**
  - Select up to 1 from the following:
    - COMP 508 / ELEC 511: DESIGN AND ANALYSIS OF SECURE EMBEDDED SYSTEMS FOR IOT ERA
    - COMP 513: COMPLEXITY IN MODERN SYSTEMS
    - COMP 521 / ELEC 552: OPERATING SYSTEMS AND CONCURRENT PROGRAMMING
    - COMP 522: MULTI-CORE COMPUTING
    - COMP 524 / ELEC 524: MOBILE AND WIRELESS NETWORKING
    - COMP 526 / ELEC 552: HIGH PERFORMANCE COMPUTER ARCHITECTURE
    - COMP 528: INTRODUCTION TO VIRTUALIZATION
    - COMP 529 / ELEC 529: ADVANCED COMPUTER NETWORKS
    - COMP 532: INTRODUCTION TO DISTRIBUTED COMPUTER SYSTEMS
COMP 534  PARALLEL COMPUTING
COMP 538 / ELEC 538  SECURITY OF HW EMBEDDED SYSTEMS
COMP 541  INTRODUCTION TO COMPUTER SECURITY
COMP 554 / ELEC 554  COMPUTER SYSTEMS ARCHITECTURE
COMP 556 / ELEC 556  INTRODUCTION TO COMPUTER NETWORKS
ELEC 553  MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION

Applications
Select up to 1 from the following: 3-4
COMP 502  NEURAL MACHINE LEARNING I
COMP 530  DATABASE SYSTEM IMPLEMENTATION
COMP 531  WEB DEVELOPMENT AND DESIGN
COMP 533  INTRODUCTION TO DATABASE SYSTEMS
COMP 540  STATISTICAL MACHINE LEARNING
COMP 542  LARGE-SCALE MACHINE LEARNING
COMP 546  INTRODUCTION TO COMPUTER VISION
COMP 550  ALGORITHMIC ROBOTICS
COMP 557 / ELEC 557  ARTIFICIAL INTELLIGENCE
COMP 560  COMPUTER GRAPHICS AND GEOMETRIC MODELING
COMP 576  A PRACTICAL INTRODUCTION TO DEEP MACHINE LEARNING
COMP 602  NEURAL MACHINE LEARNING AND DATA MINING II
ELEC 549  COMPUTATIONAL PHOTOGRAPHY

Area of Specialization (Depth)
Select an Area of Specialization (see below for Areas of Specialization lists). 6-8

Design Project
Select 1 from the following: 4
COMP 501  PRODUCTION PROGRAMMING
COMP 504  GRADUATE OBJECT-ORIENTED PROGRAMMING AND DESIGN
COMP 539  SOFTWARE ENGINEERING METHODOLOGY
COMP 590  COMPUTER SCIENCE PROJECTS 2

Elective Requirements
Select electives to complete the total credit hour requirements for the MCS degree. 6-11

Total Credit Hours 30

Footnotes and Additional Information
1 Students demonstrating that they have passed one or more courses of comparable depth to a course listed for a core requirement area may petition to use one or more of those courses to waive requirements for that core requirement area.

2 MCS advisor approval is required to use COMP 590 Computer Science Projects to satisfy the MCS design project requirement. To be eligible to satisfy the MCS design project requirement, the proposed COMP 590 project must include a significant programming design and implementation effort.

3 Elective courses must be approved professional development courses and/or 500-level or above departmental (COMP) courses other than independent study projects (e.g. COMP 590). At most, 3 credit hours total, of 1-credit-hour and 2-credit-hour courses, may be applied toward MCS degree requirements. Up to 6 credit hours of professional development courses may be applied toward MCS degree requirements. See below for a list of approved professional development courses. Credit hours earned for ENGI 530 Engineering Practicum may not be applied toward MCS degree requirements.

Area of Specialization: AI and Robotics

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<tr>
<td>COMP 557 / ELEC 557</td>
<td>ARTIFICIAL INTELLIGENCE</td>
<td></td>
</tr>
<tr>
<td>COMP 576</td>
<td>A PRACTICAL INTRODUCTION TO DEEP MACHINE LEARNING</td>
<td></td>
</tr>
<tr>
<td>COMP 602</td>
<td>NEURAL MACHINE LEARNING AND DATA MINING II</td>
<td></td>
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</tbody>
</table>

Total Credit Hours 7-8

Area of Specialization: Architecture

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>COMP 526 / ELEC 526</td>
<td>HIGH PERFORMANCE COMPUTER ARCHITECTURE</td>
<td></td>
</tr>
<tr>
<td>COMP 535</td>
<td>APPROXIMATE COMPUTING SYSTEM FOR BIG DATA, SUPERCOMPUTING AND EMBEDDED SYSTEMS</td>
<td></td>
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<tr>
<td>COMP 554 / ELEC 554</td>
<td>COMPUTER SYSTEMS ARCHITECTURE</td>
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</table>

Total Credit Hours 6-7

Area of Specialization: Compilers

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 506</td>
<td>COMPILER CONSTRUCTION FOR GRADUATE STUDENTS</td>
<td>7-8</td>
</tr>
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2017-2018 General Announcements
### Area of Specialization: Computer Vision

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td><strong>Select 2 from the following:</strong></td>
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<tr>
<td>COMP 546</td>
<td>INTRODUCTION TO COMPUTER VISION</td>
<td></td>
</tr>
<tr>
<td>COMP 560</td>
<td>COMPUTER GRAPHICS AND GEOMETRIC MODELING</td>
<td></td>
</tr>
<tr>
<td>ELEC 549</td>
<td>COMPUTATIONAL PHOTOGRAPHY</td>
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</table>

Total Credit Hours: 6-7

### Area of Specialization: Data Science

<table>
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<tr>
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<td><strong>Select 2 from the following:</strong></td>
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</tr>
<tr>
<td>COMP 502</td>
<td>NEURAL MACHINE LEARNING I</td>
<td></td>
</tr>
<tr>
<td>COMP 530</td>
<td>DATABASE SYSTEM IMPLEMENTATION</td>
<td></td>
</tr>
<tr>
<td>COMP 533</td>
<td>INTRODUCTION TO DATABASE SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>COMP 540</td>
<td>STATISTICAL MACHINE LEARNING</td>
<td></td>
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<tr>
<td>COMP 542</td>
<td>LARGE-SCALE MACHINE LEARNING</td>
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<tr>
<td>COMP 576</td>
<td>A PRACTICAL INTRODUCTION TO DEEP MACHINE LEARNING</td>
<td></td>
</tr>
<tr>
<td>COMP 602</td>
<td>NEURAL MACHINE LEARNING AND DATA MINING II</td>
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Total Credit Hours: 6-8

### Area of Specialization: Database

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>COMP 530</td>
<td>DATABASE SYSTEM IMPLEMENTATION</td>
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<tr>
<td>COMP 533</td>
<td>INTRODUCTION TO DATABASE SYSTEMS</td>
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Total Credit Hours: 7-8

### Area of Specialization: Networking

<table>
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<tr>
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<tr>
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<td><strong>Select 2 from the following:</strong></td>
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<tr>
<td>COMP 524 / ELEC 524</td>
<td>MOBILE AND WIRELESS NETWORKING</td>
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</tr>
<tr>
<td>COMP 529 / ELEC 529</td>
<td>ADVANCED COMPUTER NETWORKS</td>
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</tr>
<tr>
<td>COMP 556 / ELEC 556</td>
<td>INTRODUCTION TO COMPUTER NETWORKS</td>
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Total Credit Hours: 8

### Area of Specialization: Optimization

<table>
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<td><strong>Select 2 from the following:</strong></td>
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<td>CAAM 560</td>
<td>OPTIMIZATION THEORY</td>
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<td>CAAM 564</td>
<td>NUMERICAL OPTIMIZATION</td>
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Total Credit Hours: 6

### Area of Specialization: Parallel Computing

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<tr>
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<td><strong>Select 2 from the following:</strong></td>
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<tr>
<td>COMP 515</td>
<td>ADVANCED COMPILATION FOR VECTOR PARALLEL PROCESSORS</td>
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<tr>
<td>COMP 522</td>
<td>MULTI-CORE COMPUTING</td>
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</tr>
<tr>
<td>COMP 534</td>
<td>PARALLEL COMPUTING</td>
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Total Credit Hours: 6

### Area of Specialization: PL Theory and Logic

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<tr>
<td>COMP 507</td>
<td>COMPUTER-AIDED PROGRAM DESIGN</td>
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<tr>
<td>COMP 509</td>
<td>ADVANCED LOGIC IN COMPUTER SCIENCE LANGUAGES</td>
<td></td>
</tr>
<tr>
<td>COMP 511</td>
<td>PRINCIPLES OF PROGRAMMING</td>
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Total Credit Hours: 8

### Area of Specialization: Software Engineering

<table>
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</thead>
<tbody>
<tr>
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<td><strong>Select 2 from the following:</strong></td>
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</tr>
<tr>
<td>COMP 501</td>
<td>PRODUCTION PROGRAMMING</td>
<td></td>
</tr>
<tr>
<td>COMP 504</td>
<td>GRADUATE OBJECT-ORIENTED PROGRAMMING AND DESIGN</td>
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</tr>
<tr>
<td>COMP 505</td>
<td>ADVANCED TOPICS IN OBJECT-ORIENTED DESIGN</td>
<td></td>
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<tr>
<td>COMP 539</td>
<td>SOFTWARE ENGINEERING METHODOLOGY</td>
<td></td>
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</tbody>
</table>

Total Credit Hours: 6-8

### Area of Specialization: Systems and Security

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Select 2 from the following:</strong></td>
<td>6-8</td>
</tr>
<tr>
<td>COMP 508 / ELEC 511</td>
<td>DESIGN AND ANALYSIS OF SECURE EMBEDDED SYSTEMS FOR IoT ERA</td>
<td></td>
</tr>
<tr>
<td>COMP 521 / ELEC 522</td>
<td>OPERATING SYSTEMS AND CONCURRENT PROGRAMMING</td>
<td></td>
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<tr>
<td>COMP 528</td>
<td>INTRODUCTION TO VIRTUALIZATION</td>
<td></td>
</tr>
<tr>
<td>COMP 532</td>
<td>INTRODUCTION TO DISTRIBUTED COMPUTER SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>COMP 538 / ELEC 528</td>
<td>SECURITY OF HW EMBEDDED SYSTEMS</td>
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<tr>
<td>COMP 541</td>
<td>INTRODUCTION TO COMPUTER SECURITY</td>
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</tr>
<tr>
<td>ELEC 553</td>
<td>MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION</td>
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</table>

Total Credit Hours: 6-8

### Professional Development

Students may take up to 6 credit hours from the following, which is encouraged, but not required.
Policies for the MCS Degree

Department of Computer Science Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Computer Science publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Computer_Science_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Computer_Science_Graduate_Handbook.pdf).

Degree Requirements Policies

Students must complete 30 credit hours of MCS-advisor approved course work with a cumulative grade point average of at least 2.67. Students may not use a single course to satisfy multiple degree requirements (e.g. both core requirements and Area of Specialization requirements).

Financial Aid

No financial aid is available from Rice University or the Computer Science Department for students in the MCS degree program.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the MCS degree should be aware of the following departmental transfer credit guidelines:

- No more than 6 credit hours of credit from another U.S. or international universities of similar standing at Rice may apply towards the degree. Transferred courses must be comparable in content and depth to the corresponding course at Rice, and must not have counted toward another degree.
- Request for transfer credit will be considered by the Computer Science Graduate Committee Chair, and the instructor of the equivalent Rice course.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MS Degree in the field of Computer Science</td>
<td>30</td>
</tr>
</tbody>
</table>

The MS degree is a research degree requiring a thesis in addition to course work. Students enrolled in the PhD program must meet additional requirements before they receive the MS degree. See the PhD program section for further information.

Policies for the MS Degree in the field of Computer Science

Department of Computer Science Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Computer Science publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Computer_Science_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Computer_Science_Graduate_Handbook.pdf).

Additional Information

For additional helpful information, please refer to the Graduate Study in Computer Science web page at [https://www.cs.rice.edu/academics/graduate-studies/](https://www.cs.rice.edu/academics/graduate-studies/) or contact the department at gradapp@rice.edu.

Opportunities for the MCS Degree

For additional information, please see the Computer Science website: [http://www.cs.rice.edu/](http://www.cs.rice.edu/)

Master of Science (MS) Degree in the field of Computer Science

Program Learning Outcomes for the MS Degree in the field of Computer Science

Upon completing the MS degree in the field of Computer Science, students will be able to:

1. Acquire a solid foundation in Computer Science at the graduate level.
2. Conduct an independent research program.
3. Demonstrate professional skills in both oral and written communication.

Requirements for the MS Degree in the field of Computer Science

The MS degree is a thesis master’s degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MS degree in the field of Computer Science must complete:

- A minimum of 30 credit hours at the 500-level or above to satisfy degree requirements.
Opportunities for the MS Degree in the field of Computer Science

For additional information, please see the Computer Science website: http://www.cs.rice.edu/

Critical and Cultural Theory

Contact Information

Critical and Cultural Theory
http://3ct.rice.edu/
116 Humanities Building
713-348-4274

Cary Wolfe
Director, 3CT
cewolfe@rice.edu

The Center for Critical and Cultural Theory (3CT) was founded to promote intellectual synergy and community among Rice faculty and graduate students whose work is informed by a deep and sustained engagement with critical and cultural theory and their ongoing development and permutations. Though housed in the School of Humanities, and drawing primarily on faculty and students from the Humanities, Social Sciences, and Architecture, 3CT welcomes and encourages faculty and students in any field whose work is framed by an intensive engagement with critical and cultural theory and its methodological innovations.

The program's primary pedagogical aim is to help equip students to engage ambitious and synthetic research projects of social and cultural significance in a wide range of areas such as new media studies, race and ethnicity studies, science and technology studies, ecocriticism and environmental humanities, animal studies, medical humanities, transnationalism, art and architecture, psychoanalysis, and political and social theory - just to name a few of the more established pursuits in which a strong theoretical background is indispensable. 3CT is therefore committed to the view that rigorous theoretical training enables empowering reflection upon the dominant forms of disciplinary norms, practices, and protocols and their historically and socially constituted nature. 3CT aims to strengthen and enrich how its participants understand and relate to their “home” disciplines.

The Center for Critical and Cultural Theory does not currently offer an academic program at the undergraduate level.

Certificate

• Certificate in Critical and Cultural Theory (p. 345)

Director

Cary Wolfe

Professors

Elias Bongmba
Dominic Boyer
April DeConick
Elaine Ecklund
James Faubion
Rosemary Hennessy
Jeffrey Kripal
Lars Lerup
Timothy Morton
Kirsten Ostherr
Albert Pope
Judith Roof
Sarah Whiting
Cary Wolfe

Associate Professors

Joseph Campana
Leo Costello
Sarah Ellenzweig
Cymene Howe
Betty Joseph
Susan Lurie
Alexander Regier
Nicole Waligora-Davis

Assistant Professors

Andrea Ballestero
Scott Colman
Fabiola López-Durán
Zöe Wool

Steering Committee

James Faubion
Timothy Morton
Judith Roof

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: Courses from various subjects may apply towards this program

Center Description and Code
• Center for Critical and Cultural Theory: CCCT

Graduate Certificate Description and Code
• Certificate in Critical and Cultural Theory: CCT

Certificate in Critical and Cultural Theory

Program Learning Outcomes for the Certificate in Critical and Cultural Theory

Upon completing the certificate in Critical and Cultural Theory, students will be able to:

1. Demonstrate knowledge of a range of approaches in contemporary critical and cultural theory.
2. Articulate the relationship between concepts and methodologies drawn from critical and cultural theory and the current state of the specific discipline(s) in which they work.
3. Incorporate concepts and methodologies from critical and cultural theory into their own intellectual and academic practice in forms...
such as oral and written exchange, conference papers, academic publications, and dissertation research and writing.

Requirements for the Certificate in Critical and Cultural Theory

The Certificate in Critical and Cultural Theory is a graduate certificate. For general university requirements, please see Graduate Certificates (p. 53).

Students pursuing the certificate in Critical and Cultural Theory must complete:

- A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.
- A minimum of 1 course (3 credit hours) outside of the student's home department.
- A minimum of 1 3CT Annual Colloquium.
- A minimum letter grade of at least 'B-' (2.67 grade points) in each course.
- All required coursework associated with the student's corresponding degree program.

In addition, no courses applied toward the certificate can be completed as transfer credit.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student's Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
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<tr>
<th>Code</th>
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Certificate Requirements

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</thead>
<tbody>
<tr>
<td></td>
<td>Required Courses</td>
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</table>

Select a minimum of 4 courses (at least 12 credit hours) from the following:

- ANTH 507 ANTHROPOLOGICAL DIRECTIONS FROM SECOND WORLD WAR TO PRESENT
- ANTH 508 THE ANTHROPOLOGY OF THE HISTORICAL IMAGINATION
- ANTH 548 ANTHROPOLOGIES OF NATURE
- ANTH 549 THE ANTHROPOLOGY OF ETHICS
- ANTH 554 ILLNESS, DISABILITY, AND THE GENDERED BODY

Colloquium

Students must participate in at least one annual colloquium.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 Required core courses for other graduate degree or certificate programs may not count toward the minimum of 4 courses requirement. However, elective courses used to fulfill requirements for other graduate degree or certificate programs at Rice may count toward this requirement. The Center recommends that students interested in applying for the certificate seek approval for courses as they are taken. Students may petition the Center for approval of courses not listed above.
Policies for the Certificate in Critical and Cultural Theory

Application Procedures

1. **Status:** The Certificate in Critical and Cultural Theory (CCT) program is open only to students already enrolled and in good academic standing in a Rice graduate-level degree-granting program.

2. **Application:** Students must apply for admission to the Certificate program by the end of the registration period for Fall semester each year. The application should consist of a vita, a 2-3 page single-spaced description of the student’s research interests, of the primary theoretical commitments that frame those interests, and how the research intervenes in the current state of critical and cultural theory. A brief (one or two paragraph) letter of endorsement from the faculty member directing the student’s research is also required. Only students in good academic standing in their home departments may apply. Students will be informed promptly early in the Fall semester each year of their acceptance, and students not accepted may reapply once to the Certificate program.

Program Restrictions and Exclusions

Students pursuing the certificate in Critical and Cultural Theory should be aware of the following restriction:

- Graduate students may declare their intent to pursue a university certificate only after they have first been admitted into a graduate-level Rice degree-granting program.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the certificate in Critical and Cultural Theory should be aware of the following program-specific transfer credit guidelines:

- The Certificate in Critical and Cultural Theory (CCT) program does not allow any of its course requirements to be met by transfer credit.

For additional information, please see the Center for Critical and Cultural Theory website: http://3ct.rice.edu/

Opportunities for the Certificate in Critical and Cultural Theory

For additional information, please see the Center for Critical and Cultural Theory website: http://3ct.rice.edu/

Earth, Environmental, and Planetary Sciences

Contact Information

Earth, Environmental, and Planetary Sciences
http://earthscience.rice.edu/
105 Keith Wiess Geological Labs
713-348-4880

Cin-Ty Lee
Department Chair
clee@rice.edu

The Department of Earth, Environmental, and Planetary Sciences offers students the opportunity to work with open-ended, complex, and highly interconnected problems, giving them the skills to become leaders and entrepreneurs in the real world, whether that is in academia, running a business, or working with and for societal issues. Field and laboratory opportunities abound. Many students also present their own research projects at national and international professional conferences.

Faculty members have joint research projects with scientists at over 100 institutions worldwide, giving an international scope to the department with research programs on all the continents, in all of the oceans, and on four planets. Their research interests span a wide range of topics and fall broadly under two principal research themes: Earth Structure and Dynamics, and Earth Systems Science. Many departmental research programs involve substantial field activities, both on land and at sea. Similarly, several course offerings include field trips to a variety of destinations and geologic settings.

All undergraduate majors in earth science take a five-course core sequence, typically in the sophomore and junior years, on earth processes, materials, observations, and history. Majors also take a course in geological field techniques and introductory courses in mathematics, chemistry, and in many cases, physics and biology.

The selection of upper-division courses and additional science courses depends on which degree, BA or BS, and, for the BS degree, which of five tracks are chosen by the student: geology, geochemistry, geophysics, environmental earth science, or a track designed by the student subject to the approval of the department undergraduate advisor. The program of study typically includes experience with analytical equipment, computer systems, and fieldwork.

The BS degree should be chosen by students planning a career or further study in earth science or a related field. The BA degree has fewer requirements and might be a good choice for students planning a career or further study to which earth science is incidental.

Bachelor’s Programs

- Bachelor of Arts (BA) Degree with a Major in Earth Science (p. 348)
- Bachelor of Science (BS) Degree with a Major in Earth Science (p. 351)

Master’s Programs

- Master of Science (MS) Degree in the field of Earth Science (p. 356)
Doctoral Program
- Doctor of Philosophy (PhD) Degree in the field of Earth Science (p. 355)

Chair
Cin-Ty Lee

Professors
John B. Anderson
Rajdeep Dasgupta
Gerald R. Dickens
André W. Droxler
Richard G. Gordon
Cin-Ty Lee
Adrian Lenardic
Alan Levander
Caroline Masiello
Julia Morgan
Fenglin Niu
Dale S. Sawyer
Colin Zelt

Associate Professor
Helge Gonnermann

Assistant Professors
Melodie French
Jeffrey Nittrouer
Mark Torres
Laurence Yeung

Professors Emeriti
Albert Bally
Dieter Heymann
William Leeman
Andreas Lüttge
Manik Talwani
Peter Vail

Lecturers
Ken Abdulah
Vitor Abreu
Gary G. Gray
Patrick J. McGovern
Jeffrey Nunn
Eric Scott
Robert R. Stewart

Wiess Visiting Scholars
Francis Albarede
Janne Blichert-Toft

Adjunct Faculty
Vitor Abreu
Kevin Biddle
K. K. Bissada
Christian Davies

Jeffrey J. Dravis
Brandon Dugan
Gary Gray
Paul M. Harris
N. Ross Hill
Thomas A. Jones
Stephen J. Mackwell
Patrick J. McGovern
Jeffrey Nunn
David L. Olgaard
James Pindell
W. C. Rusty Riese
Malcolm Ross
Eric Scott
Stephanie S. Shipp
Robert R. Stewart
John Sumner
Robert Wegner

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: ESCI

Department Description and Code
- Earth, Environmental, and Planetary Sciences: EEPS

Undergraduate Degree Description and Code
- Bachelor of Arts degree: BA
- Bachelor of Science degree: BS

Undergraduate Major Description and Code
- Major in Earth Science (for both the BA and BS degrees): ESCI

Graduate Degree Descriptions and Codes
- Master of Science degree: MS
- Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
- Degree Program in Earth Science: ESCI

Bachelor of Arts (BA) Degree with a Major in Earth Science

Program Learning Outcomes for the BA Degree with a Major in Earth Science
Upon completing the BA degree with a major in Earth Science, students will be able to:

1. Understand the structure and composition of the Earth and Planets, their evolution, and changing the Earth today.
2. Learn basic field geological measurements and recording.
Requirements for the BA Degree with a Major in Earth Science

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Earth Science must complete:

- A minimum of 24 courses (60-63 credit hours) to satisfy major requirements.
- A minimum of 120-123 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 9 courses (31 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
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<th>Title</th>
<th>Credit Hours</th>
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<tr>
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<tr>
<td></td>
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Degree Requirements

### Core Requirements

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<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
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<tr>
<td>Select 1 from the following:</td>
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<td>4</td>
</tr>
<tr>
<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
<td></td>
</tr>
<tr>
<td>CHEM 122 &amp; CHEM 123</td>
<td>GENERAL CHEMISTRY LABORATORY I</td>
<td></td>
</tr>
<tr>
<td>CHEM 151</td>
<td>HONORS CHEMISTRY I</td>
<td></td>
</tr>
<tr>
<td>CHEM 152 &amp; CHEM 153</td>
<td>HONORS CHEMISTRY LABORATORY I</td>
<td></td>
</tr>
<tr>
<td>Select 1 from the following:</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CHEM 122</td>
<td>GENERAL CHEMISTRY II</td>
<td></td>
</tr>
<tr>
<td>CHEM 123 &amp; CHEM 124</td>
<td>GENERAL CHEMISTRY LABORATORY II</td>
<td></td>
</tr>
<tr>
<td>CHEM 152</td>
<td>HONORS CHEMISTRY II</td>
<td></td>
</tr>
<tr>
<td>CHEM 154</td>
<td>HONORS CHEMISTRY LABORATORY II</td>
<td></td>
</tr>
<tr>
<td>Select 1 from the following:</td>
<td></td>
<td>3-4</td>
</tr>
<tr>
<td>ESCI 101</td>
<td>THE EARTH</td>
<td></td>
</tr>
<tr>
<td>ESCI 115</td>
<td>INTRODUCTION TO THE EARTH</td>
<td></td>
</tr>
<tr>
<td>ESCI 321</td>
<td>EARTH SYSTEM EVOLUTION AND CYCLES</td>
<td>4</td>
</tr>
<tr>
<td>ESCI 322</td>
<td>EARTH CHEMISTRY AND MATERIALS</td>
<td>4</td>
</tr>
<tr>
<td>ESCI 323</td>
<td>EARTH STRUCTURE AND DEFORMATION</td>
<td>4</td>
</tr>
<tr>
<td>ESCI 324</td>
<td>EARTH’S INTERIOR</td>
<td>4</td>
</tr>
<tr>
<td>ESCI 334</td>
<td>GEOLOGICAL TECHNIQUES</td>
<td>3</td>
</tr>
</tbody>
</table>

### Elective Requirements

Directed Electives in Fields Outside Earth Science

Select 2-4 courses from either Group A or Group B: 6-8

#### Group A

Select 1 from the following:

**BIOC 201** | INTRODUCTORY BIOLOGY & EBIO 202 and INTRODUCTORY BIOLOGY II

**PHYS 101** | MECHANICS (WITH LAB) & PHYS 103 and MECHANICS DISCUSSION & PHYS 102 and ELECTRICITY & MAGNETISM (WITH LAB) & PHYS 104 and ELECTRICITY AND MAGNETISM DISCUSSION

**PHYS 125** | GENERAL PHYSICS (WITH LAB) & PHYS 126 and GENERAL PHYSICS II (WITH LAB)

#### Group B

Select 2 from the following options:

**Option 1**

**PHYS 101** | MECHANICS (WITH LAB) & PHYS 103 and MECHANICS DISCUSSION

**PHYS 125** | GENERAL PHYSICS (WITH LAB)

**PHYS 102** | ELECTRICITY & MAGNETISM (WITH LAB) & PHYS 104 and ELECTRICITY AND MAGNETISM DISCUSSION

**PHYS 126** | GENERAL PHYSICS II (WITH LAB)

**Option 2**

**BIOC 211** | INTERMEDIATE EXPERIMENTAL BIOSCIENCES & EBIO 213 and INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY

**Option 3**

**MATH 211** | ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA

**Option 4**

**COMP 110 / NSCI 230** | COMPUTATION IN SCIENCE AND ENGINEERING or CAAM 210 INTRODUCTION TO ENGINEERING COMPUTATION

Directed Electives in Earth Science

Select 4 additional courses from departmental (ESCI) course offerings at the 300-level or above.

Directed Electives in Natural Science and Engineering

Select 2 courses from the School of Natural Sciences or the School of Engineering course offerings at the 200-level or above.

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Courses must be approved by the department undergraduate advisor. Courses from the School of Natural Sciences or the School of Engineering include the following subject codes: ASTR, BIOC, BIOE, CAAM, CEVE, CHBE, CHEM, COMP, EBIO, ELEC, ENGI, ENST, ESCI, GLHT, HEAL, KINE, MATH, MECH, MSNE, NSCI, PHYS, STAT.
Policies for the BA Degree with a Major in Earth Science

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Earth Science should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Earth Science major page, on the Department of Earth, Environmental, and Planetary Sciences website: http://earthscience.rice.edu/academics/undergraduate-program/

Opportunities for the BA Degree with a Major in Earth Science

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Honors Research

Undergraduates are encouraged to embark on an undergraduate honors thesis. The purpose of the honors thesis is for students to develop and demonstrate their creative and independent research potential. Students are recommended to begin in the fall of their junior year to provide ample time for research projects to be developed, executed and written. Students are expected to enroll in at least two semesters of the course ESCI 481, spanning their senior year. Juniors who have identified a research project and mentor can also enroll in ESCI 481. Students should sign up for ESCI 481 for 3 credits.

Criteria for Participating in Undergraduate Honors Thesis Research

- Strong performance in ESCI courses, in particular, ESCI 321, ESCI 322, ESCI 323, ESCI 324, and ESCI 334
- A grade of A- or better in ESCI 481
- Letter of recommendation of a faculty research mentor
- Research proposal

Requirements for Completing an Undergraduate Honors Thesis

Spring Semester of Junior Year

Each honors thesis candidate should choose a research topic, identify a faculty research advisor, and initiate independent research. The student should select a thesis committee, consisting of a faculty advisor, one member of the honors thesis committee, and one other faculty member of their choosing. Candidates are expected to turn in a preliminary written proposal (2 pages) at the end of their spring semester, accompanied by a formal application, both of which will be evaluated by the honors thesis committee for consideration of acceptance into the honors thesis program in their senior year. Required courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 401</td>
<td>SEMINAR: UNDERGRADUATE HONORS THESIS</td>
<td>1</td>
</tr>
<tr>
<td>ESCI 403</td>
<td>SEMINAR: DEPARTMENT RESEARCH</td>
<td>1</td>
</tr>
</tbody>
</table>

And if they have research project and mentor identified, they can also take:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 481</td>
<td>UNDERGRADUATE RESEARCH IN EARTH SCIENCE</td>
<td>3</td>
</tr>
</tbody>
</table>

Fall Semester of Senior Year

Students accepted into the honors thesis program continue to develop and refine their proposed research in concert with their research advisor and thesis committee. Students participate in meetings with other honors thesis candidates to discuss basic research protocols and philosophies, and meet independently with their chosen scientific advisor, and generate data, experiments or models. Students will give oral presentations of their research proposals in public by mid-semester, in the presence of their examining committee. At the end of the semester, students must submit final versions of their proposals, describing motivation, hypothesis, methodology, and preliminary results. The honors thesis committee will evaluate the proposals, and if approved, students can continue in the honors thesis program. Required courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 401</td>
<td>SEMINAR: UNDERGRADUATE HONORS THESIS</td>
<td>1</td>
</tr>
<tr>
<td>ESCI 404</td>
<td>SEMINAR: DEPARTMENT RESEARCH</td>
<td>1</td>
</tr>
<tr>
<td>ESCI 481</td>
<td>UNDERGRADUATE RESEARCH IN EARTH SCIENCE</td>
<td>3</td>
</tr>
</tbody>
</table>

Spring Semester of Senior Year

Students continue and complete their research. A mid-semester progress report must be submitted to the thesis committee for feedback. At the end of the spring semester, students submit their final theses, and give public oral exit talks. To complete the honors thesis program, student theses must be approved by the honors thesis committee. Required courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 401</td>
<td>SEMINAR: UNDERGRADUATE HONORS THESIS</td>
<td>1</td>
</tr>
<tr>
<td>ESCI 403</td>
<td>SEMINAR: DEPARTMENT RESEARCH</td>
<td>1</td>
</tr>
<tr>
<td>ESCI 481</td>
<td>UNDERGRADUATE RESEARCH IN EARTH SCIENCE</td>
<td>3</td>
</tr>
</tbody>
</table>

Further details about the program, and expectations and criteria for the thesis proposal and final thesis can be found on the Department of Earth, Environmental, and Planetary Sciences website (earthscience.rice.edu).
Application Process
Students must apply and be accepted to participate in the senior honors research program. The application form can be downloaded from Department of Earth, Environmental, and Planetary Sciences website (earthscience.rice.edu), and should be submitted along with a ~two page thesis proposal at the end of the spring semester of the junior year. Students will be informed of their acceptance into the honors thesis program before the start of the following fall semester.

Other Points of Consideration
Students who are accepted into the ‘RUSP : Rice Undergraduate Scholars Program’ can substitute ESCI 481 courses for semesters 2 and 3 with HONS 470 and HONS 471. However, the students will have to meet all other requirements of the honors thesis set by the department of the honors thesis set by the department. Other expectations, conditions, and opportunities related to carrying out an Earth Science Honors Thesis can be found on the Department of Earth, Environmental, and Planetary Sciences website (earthscience.rice.edu).

Undergraduate Independent Research
The department encourages, but does not require, Earth Science undergraduate majors to pursue independent supervised research in ESCI 481. This can also be carried out as part of the Earth Science Honors Thesis Program.

For additional information, please see the Earth Science major page, on the Department of Earth, Environmental, and Planetary Sciences website: http://earthscience.rice.edu/academics/undergraduate-program/

Bachelor of Science (BS) Degree with a Major in Earth Science
Program Learning Outcomes for the BS Degree with a Major in Earth Science
Upon completing the BS degree with a major in Earth Science, students will be able to:
1. Understand the structure and composition of the earth and planets, their evolution, and changing the Earth today.
2. Learn basic field geological measurements and recording.
3. Learn earth observations and recording outdoor scientific information.

Requirements for the BS Degree with a Major in Earth Science
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BS degree with a major in Earth Science must complete:
• A minimum of 20-22 courses (69-73 credit hours) depending on course selection to satisfy major requirements.
• A minimum of 129-133 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 8-12 courses (28-40 credit hours, depending on course selection) taken at the 300-level or above.
• The requirements for one area of specialization (see list below). The areas of specialization for the BS degree with a major in Earth Science are:
  • Geology (p. ), or
  • Geochemistry (p. ), or
  • Geophysics (p. ), or
  • Environmental Earth Science (p. ), or
  • Self-Designed (p. 354)

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Earth Science</td>
<td>69-73</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BS Degree with a Major in Earth Science</td>
<td>129-133</td>
</tr>
</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>Select 1 from the following:</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CHEM 121 &amp; CHEM 123</td>
<td>GENERAL CHEMISTRY I and GENERAL CHEMISTRY LABORATORY I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 151 &amp; CHEM 153</td>
<td>HONORS CHEMISTRY I and HONORS CHEMISTRY LABORATORY I</td>
<td>4</td>
</tr>
<tr>
<td>Select 1 from the following:</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CHEM 122 &amp; CHEM 124</td>
<td>GENERAL CHEMISTRY II and GENERAL CHEMISTRY LABORATORY II</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 152 &amp; CHEM 154</td>
<td>HONORS CHEMISTRY II and HONORS CHEMISTRY LABORATORY II</td>
<td>4</td>
</tr>
<tr>
<td>Select 1 from the following:</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>PHYS 101 &amp; PHYS 103</td>
<td>MECHANICS (WITH LAB) and MECHANICS DISCUSSION</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td>Select 1 from the following:</td>
<td></td>
<td>3-4</td>
</tr>
<tr>
<td>PHYS 102 &amp; PHYS 104</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td>4</td>
</tr>
</tbody>
</table>

Requirements for one area of specialization:
- Geology (p. ,)
- Geochemistry (p. ,)
- Geophysics (p. ,)
- Environmental Earth Science (p. ,)
- Self-Designed (p. 354)
Bachelor of Science (BS) Degree with a Major in Earth Science

ESCI 334  GEOLOGICAL TECHNIQUES  3

Areas of Specialization
Select 1 from the following (see areas of specialization below):  24-28
- Geology
- Geochemistry
- Geophysics
- Environmental Earth Science
- Self-Designed

Total Credit Hours Required for the Major in Earth Science  68-73

University Graduation Requirements (p. 25)  60

Total Credit Hours  128-133

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

Areas of Specialization
To fulfill the remaining Earth Science major requirements, students must complete the requirements for one of the following areas of specialization.

Area of Specialization: Geology

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>ESCI 419</td>
<td>MATERIALS CHARACTERIZATION</td>
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<tr>
<td>ESCI 426</td>
<td>INTERPRETATION OF REGIONAL 2-D SEISMIC DATA</td>
<td></td>
</tr>
<tr>
<td>ESCI 429</td>
<td>MAGMATIC, VOLCANIC AND HYDROTHERMAL PROCESSES</td>
<td></td>
</tr>
<tr>
<td>ESCI 442</td>
<td>EXPLORATION GEOPHYSICS</td>
<td></td>
</tr>
<tr>
<td>ESCI 463</td>
<td>STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>ESCI 464</td>
<td>GLOBAL TECTONICS</td>
<td></td>
</tr>
<tr>
<td>ESCI 467</td>
<td>GEOMECHANICS</td>
<td></td>
</tr>
<tr>
<td>ESCI 472</td>
<td>EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS</td>
<td></td>
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</table>

Total Credit Hours  24

Area of Specialization: Geochemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>ESCI 391</td>
<td>EARTH SCIENCE FIELD EXPERIENCE (at least 3 credit hours)</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Requirements
Upper-Level Electives (ESCI course offerings)
Select 4 from the following:  12

- ESCI 340 / EBIO 340 / ENST 340  GLOBAL BIOGEOCHEMICAL CYCLES
- ESCI 410  OPTICAL MINERALOGY AND PETROGRAPHY
- ESCI 411  ADVANCED PETROLOGY II
- ESCI 412  ADVANCED PETROLOGY
- ESCI 419  MATERIALS CHARACTERIZATION
- ESCI 421  PALEOECEANOGRAPHY
- ESCI 425 / CHEM 425 / ENST 425  ORGANIC GEOCHEMISTRY
- ESCI 426  INTERPRETATION OF REGIONAL 2-D SEISMIC DATA
- ESCI 429  MAGMATIC, VOLCANIC AND HYDROTHERMAL PROCESSES
- ESCI 430  TRACE-ELEMENT AND ISOTOPE GEOCHEMISTRY FOR EARTH AND ENVIRONMENTAL SCIENCE
- ESCI 472  EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS

Geochemistry Area of Specialization Electives
Select 2-4 courses from the following or from any ESCI course offerings at the 300-level or above:  6

- BIOC 211  INTERMEDIATE EXPERIMENTAL BIOSCIENCES
- CAAM 210  INTRODUCTION TO ENGINEERING COMPUTATION
- CEVE 401  CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 434 /</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
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<tr>
<td>CEVE 534</td>
<td></td>
<td></td>
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<tr>
<td>CHEM 550</td>
<td>ENVIRONMENTAL ORGANIC CHEMISTRY</td>
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<tr>
<td>CHEM 211</td>
<td>ORGANIC CHEMISTRY I</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 213</td>
<td>and ORGANIC CHEMISTRY DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>CHEM 212</td>
<td>ORGANIC CHEMISTRY II</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 214</td>
<td>and ORGANIC CHEM DISCUSSION II</td>
<td></td>
</tr>
<tr>
<td>CHEM 415</td>
<td>CHEMICAL KINETICS AND DYNAMICS</td>
<td></td>
</tr>
<tr>
<td>CHEM 495</td>
<td>TRANSITION METAL CHEMISTRY</td>
<td></td>
</tr>
<tr>
<td>COMP 110 /</td>
<td>COMPUTATION IN SCIENCE AND ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>NSCI 230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td></td>
</tr>
<tr>
<td>EBI 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
<td></td>
</tr>
<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit Hours**: 27

### Area of Specialization: Geophysics

Courses chosen from the list of ESCI course offerings must be 3 credit hours or more.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 110 /</td>
<td>COMPUTATION IN SCIENCE AND ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>NSCI 230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td></td>
</tr>
<tr>
<td>ESI 391</td>
<td>EARTH SCIENCE FIELD EXPERIENCE (at least 3 credit hours)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 201</td>
<td>WAVES, LIGHT, AND HEAT</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 231</td>
<td>ELEMENTARY PHYSICS LAB</td>
<td>1</td>
</tr>
</tbody>
</table>

### Elective Requirements

Upper-Level Electives (ESCI course offerings)

Select 2 from the following: 6

- **ESCI 418** / **CEVE 418**: QUANTITATIVE HYDROGEOLOGY
- **ESCI 426**: INTERPRETATION OF REGIONAL 2-D SEISMIC DATA
- **ESCI 440**: GEOPHYSICAL DATA ANALYSIS: DIGITAL SIGNAL PROCESSING
- **ESCI 441**: GEOPHYSICAL DATA ANALYSIS: INVERSE METHODS
- **ESCI 442**: EXPLORATION GEOPHYSICS
- **ESCI 462** / **CEVE 450**: TECTONOPHYSICS
- **ESCI 463**: STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS
- **ESCI 464**: GLOBAL TECTONICS
- **ESCI 467**: GEOMECHANICS
- **ESCI 472**: EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS
- **ESCI 542**: SEISMOLOGY II

**Total Credit Hours**: 28

### Area of Specialization: Environmental Earth Science

Select 2 from the following:

- Any course from ESCI course offerings between ESCI 410 and ESCI 475, except for research and special studies
- Any course from MATH, CAAM, or PHYS course offerings at the 300-level or above

**CHEM 311**: PHYSICAL CHEMISTRY I

**Total Credit Hours**: 28
Bachelor of Science (BS) Degree with a Major in Earth Science

**ESCI 452** GIS FOR SCIENTISTS AND ENGINEERS
**ESCI 463** STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS
**ESCI 467** GEOMECHANICS
**ESCI 472** EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS
**ESCI 504** SILICICLASTIC DEPOSITIONAL SYSTEMS
**ESCI 506** CARBONATE DEPOSITIONAL SYSTEMS
**ESCI 540** EARTH’S ATMOSPHERE
**ESCI 552** MARINE GEOLOGY SYSTEMS
**PHYS 201** WAVES, LIGHT, AND HEAT
**PHYS 231** ELEMENTARY PHYSICS LAB

**Total Credit Hours** 27

**Area of Specialization: Self-Designed**
The department recognizes the interdisciplinary nature of modern earth science and the opportunity for students to specialize in nontraditional and emerging fields. Therefore, students can design their own specialty track, normally in close consultation with one faculty member and followed by approval from the department’s undergraduate advisor. In addition to required earth science courses and related courses, these tracks will generally comprise 18 additional hours that target a coherent theme from an approved list of 300- or higher-level courses, from inside or outside the department. Interested students are expected to submit a statement of rationale by the beginning of their third year.

**Elective Requirements**
- **Earth Science Field Experience:**
  - **ESCI 391** EARTH SCIENCE FIELD EXPERIENCE (at least 3 credit hours)

**Self-Designed Electives**
Select 2 from the following:
- **BIOC 201** INTRODUCTORY BIOLOGY
- **CAAM 210** INTRODUCTION TO ENGINEERING COMPUTATION
- **CHEM 311** PHYSICAL CHEMISTRY I
- **CHEM 312** PHYSICAL CHEMISTRY II
- **COMP 110 / NSCI 230** COMPUTATION IN SCIENCE AND ENGINEERING
- **MATH 211** ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA
- **MATH 212** MULTIVARIABLE CALCULUS
- **PHYS 201** WAVES, LIGHT, AND HEAT

**Directed Electives in Self-Designed Specialization**
Students must complete a total of 6 courses at the 300-level or higher targeting a coherent theme selected with the approval of the department’s undergraduate advisor

**Total Credit Hours** 27

**Policies for the BS Degree with a Major in Earth Science**

**Transfer Credit**
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**
Students pursuing the major in Earth Science should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Earth Science major page, on the Department of Earth, Environmental, and Planetary Sciences website: [http://earthscience.rice.edu/academics/undergraduate-program/](http://earthscience.rice.edu/academics/undergraduate-program/)

**Opportunities for the BS Degree with a Major in Earth Science**

**Undergraduate Independent Research**
The department encourages, but does not require, Earth Science undergraduate majors to pursue independent supervised research in **ESCI 481**. This can also be carried out as part of the Earth Science Honors Thesis Program.

**Academic Honors**
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (**summa cum laude**, **magna cum laude**, and **cum laude**) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

**Honors Research**
Undergraduates are encouraged to embark on an undergraduate honors thesis. The purpose of the honors thesis is for students to develop and demonstrate their creative and independent research potential. Students are recommended to begin in the fall of their junior year to provide ample time for research projects to be developed, executed and written. Students are expected to enroll in at least two semesters of the course ESCI 481, spanning their senior year. Juniors who have identified a research project and mentor can also enroll in ESCI 481. Students should sign up for ESCI 481 for 3 credits.

**Criteria for Participating in Undergraduate Honors Thesis Research**
- Strong performance in ESCI courses, in particular, ESCI 321, ESCI 322, ESCI 323, ESCI 324, and ESCI 334
- A grade of A- or better in ESCI 481
- Letter of recommendation of a faculty research mentor
- Research proposal
Requirements for Completing an Undergraduate Honors Thesis

Spring Semester of Junior Year

Each honors thesis candidate should choose a research topic, identify a faculty research advisor, and initiate independent research. The student should select a thesis committee, consisting of a faculty advisor, one member of the honors thesis committee, and one other faculty member of their choosing. Candidates are expected to turn in a preliminary written proposal (2 pages) at the end of their spring semester, accompanied by a formal application, both of which will be evaluated by the honors thesis committee for consideration of acceptance into the honors thesis program in their senior year. Required courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 401</td>
<td>SEMINAR: UNDERGRADUATE HONORS THESIS</td>
<td>1</td>
</tr>
<tr>
<td>ESCI 403</td>
<td>SEMINAR: DEPARTMENT RESEARCH</td>
<td>1</td>
</tr>
</tbody>
</table>

And if they have research project and mentor identified, they can also take:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 481</td>
<td>UNDERGRADUATE RESEARCH IN EARTH SCIENCE</td>
<td>3</td>
</tr>
</tbody>
</table>

Fall Semester of Senior Year

Students accepted into the honors thesis program continue to develop and refine their proposed research in concert with their research advisor and thesis committee. Students participate in meetings with other honors thesis candidates to discuss basic research protocols and philosophies, and meet independently with their chosen scientific advisor, and generate data, experiments or models. Students will give oral presentations of their research proposals in public by mid-semester, in the presence of their examining committee. At the end of the semester, students must submit final versions of their proposals, describing motivation, hypothesis, methodology, and preliminary results. The honors thesis committee will evaluate the proposals, and if approved, students can continue in the honors thesis program. Required courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 401</td>
<td>SEMINAR: UNDERGRADUATE HONORS THESIS</td>
<td>1</td>
</tr>
<tr>
<td>ESCI 404</td>
<td>SEMINAR: DEPARTMENT RESEARCH</td>
<td>1</td>
</tr>
<tr>
<td>ESCI 481</td>
<td>UNDERGRADUATE RESEARCH IN EARTH SCIENCE</td>
<td>3</td>
</tr>
</tbody>
</table>

Spring Semester of Senior Year

Students continue and complete their research. A mid-semester progress report must be submitted to the thesis committee for feedback. At the end of the spring semester, students submit their final theses, and give public oral exit talks. To complete the honors thesis program, student theses must be approved by the honors thesis committee. Required courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 401</td>
<td>SEMINAR: UNDERGRADUATE HONORS THESIS</td>
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</tr>
<tr>
<td>ESCI 403</td>
<td>SEMINAR: DEPARTMENT RESEARCH</td>
<td>1</td>
</tr>
</tbody>
</table>

ESCI 481 UNDERGRADUATE RESEARCH IN EARTH SCIENCE

Further details about the program, and expectations and criteria for the thesis proposal and final thesis can be found on the Department of Earth, Environmental, and Planetary Sciences website (earthscience.rice.edu).

Application Process

Students must apply and be accepted to participate in the senior honors research program. The application form can be downloaded from Department of Earth, Environmental, and Planetary Sciences website (earthscience.rice.edu), and should be submitted along with a ~two page thesis proposal at the end of the spring semester of the junior year. Students will be informed of their acceptance into the honors thesis program before the start of the following fall semester.

Other Points of Consideration

Students who are accepted into the 'RUSP. Rice Undergraduate Scholars Program' can substitute ESCI 481 courses for semesters 2 and 3 with HONS 470 and HONS 471. However, the students will have to meet all other requirements of the honors thesis set by the department of the honors thesis set by the department.

Other expectations, conditions, and opportunities related to carrying out an Earth Science Honors Thesis can be found on the Department of Earth, Environmental, and Planetary Sciences website (earthscience.rice.edu).

For additional information, please see the Earth Science major page, on the Department of Earth, Environmental, and Planetary Sciences website: http://earthscience.rice.edu/academics/undergraduate-program/

Doctor of Philosophy (PhD) Degree in the field of Earth Science

Program Learning Outcomes for the PhD Degree in the field of Earth Science

Upon completing the PhD degree in the field of Earth Science, students will be able to:

1. Understand the structure and composition of the Earth and Planets, their evolution, and changing the Earth today.
2. Use appropriate computational or analytical techniques in the conduct of research investigations.
3. Demonstrate significant skills in scientific communication, written and oral.
4. Demonstrate peer-reviewed literature, and to write and publish a substantial contribution.

Requirements for the PhD Degree in the field of Earth Science

For general university requirements, please see Doctoral Degrees (p. 64). All incoming students should have a strong background in physics, chemistry, and mathematics and should have, or should acquire, a broad grounding in fundamental earth science. The department encourages applications from well-qualified students with degrees in the other sciences, mathematics, or engineering. The requirements for the MS and PhD Degrees in earth science are similar, but the PhD demands a significantly higher level of knowledge, research skills, and
scholarly independence. Most students need at least two years beyond the bachelor’s degree to complete the MS or four to complete the PhD.

Candidates determine, with their major professor and thesis committee, a course of study following the Guidelines for Advanced Degrees in the Department of Earth Science handbook, distributed to all incoming students. For both degrees, candidates must:

- Complete 20 semester hours of course work at the 500-level and above (or other approved courses), not including research hours
- Pass a written preliminary exam
- Maintain a grade point average of 3.00 (B) or better
- Prepare a written thesis comprised of peer-reviewed publication(s) that represent an original contribution to science
- Defend the research and conclusions of the thesis in an oral examination

Students with a bachelor’s degree and department approval may work directly toward the PhD, in which case the course of study is equivalent to that required for both degrees; performance on the examinations and the thesis, however, should be at the level required for the PhD. Because the graduate programs require full-time study and close interaction with faculty and fellow students, the department discourages students from holding full (or nearly full) time jobs outside the university. Outside employment must be approved by the chair.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

**Policies for the PhD Degree in the field of Earth Science**

**Department of Earth, Environmental, and Planetary Science Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Earth, Environmental, and Planetary Science publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Earth_Science_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Earth_Science_Graduate_Handbook.pdf)

For additional information, please see the Earth, Environmental, and Planetary Science website: [http://earthscience.rice.edu/](http://earthscience.rice.edu/)

**Opportunities for the PhD Degree in the field of Earth Science**

For additional information, please see the Earth, Environmental, and Planetary Science website: [http://earthscience.rice.edu/](http://earthscience.rice.edu/)

**Program Learning Outcomes for the MS Degree in the field of Earth Science**

Upon completion of the MS degree in the field of Earth Science, students will be able to:

1. Understand the structure and composition of the Earth and Planets, their evolution, and changing the Earth today.
2. Use appropriate computational or analytical techniques in the conduct of research investigations.
3. Demonstrate significant skills in scientific communication, written and oral.
4. Develop the ability to contribute to the peer-reviewed literature.

**Requirements for the MS Degree in the field of Earth Science**

The MA degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 67). All incoming students should have a strong background in physics, chemistry, and mathematics and should have, or should acquire, a broad grounding in fundamental earth science. The department encourages applications from well-qualified students with degrees in the other sciences, mathematics, or engineering. The requirements for the MS and PhD in earth science are similar, but the PhD demands a significantly higher level of knowledge, research skills, and scholarly independence. Most students need at least 2 years beyond the bachelor’s degree to complete the MS or 4 to complete the PhD.

Candidates determine, with their major professor and thesis committee, a course of study following the Guidelines for Advanced Degrees in the Department of Earth Science handbook, distributed to all incoming students. For both degrees, candidates must:

- Complete 20 semester hours of course work at the 500-level and above (or other approved courses), not including research hours
- Pass a written preliminary exam
- Maintain a grade point average of 3.00 (B) or better
- Prepare a written thesis comprised of peer-reviewed publication(s) that represent an original contribution to science
- Defend the research and conclusions of the thesis in an oral examination

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
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<td>30</td>
</tr>
</tbody>
</table>

**Policies for the MS Degree in the field of Earth Science**

**Department of Earth, Environmental, and Planetary Science Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Earth, Environmental, and Planetary Science publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Earth_Science_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Earth_Science_Graduate_Handbook.pdf)
For additional information, please see the Earth, Environmental, and Planetary Science website:
http://earthscience.rice.edu/

Opportunities for the MS Degree in the field of Earth Science
For additional information, please see the Earth, Environmental, and Planetary Science website:
http://earthscience.rice.edu/

Economics

Contact Information

Economics
https://economics.rice.edu/
266 Baker Building
713-348-3563

Ken Wolpin
Department Chair
Kenneth.I.Wolpin@rice.edu

Hülya Eraslan
Director of Doctoral Studies
eraslan@rice.edu

George Zodrow
Director of Undergraduate Studies
zodrow@rice.edu

Kenneth Medlock III
Director of MEEcon Program
medlock@rice.edu

Peter Hartley
Co-Director of MEEcon Program
hartley@rice.edu

Students will learn the basic principles of microeconomics, macroeconomics, and econometrics, and how to apply those principles in studying economics phenomena and analyzing public policy issues.

Undergraduates may major in economics or mathematical economic analysis (but not both). The major in mathematical economic analysis is recommended for students who intend to pursue graduate work in economics or a business or governmental job in which extensive analytical and quantitative skills are required.

Master of Energy Economics (MEEcon) students will be able to produce insightful analyses of energy markets to inform such things as capital asset decisions, firm strategic direction, and future market orientation.

The PhD program in economics equips students with the theoretical and empirical skills essential to entering research careers in academia, business and government.

Bachelor's Programs
• Bachelor of Arts (BA) Degree with a Major in Economics (p. 358)
• Bachelor of Arts (BA) Degree with a Major in Mathematical Economic Analysis (p. 360)

Master's Programs
• Master of Energy Economics (MEEcon) Degree (p. 364)
• Master of Arts (MA) Degree in the field of Economics*

Doctoral Programs
• Doctor of Philosophy (PhD) Degree in the field of Economics (p. 361)
  • and a Major Concentration in Economics and Finance (p. 363)
* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Chair
Kenneth Wolpin

Professors
Kerry Back
Richard Boylan
Bryan W. Brown
James N. Brown
Flavio Cunha
Mahmoud El-Gamal
Hulya Eraslan
Peter Hartley
Vivian Ho
Antonio Merlo
Ted Loch-Temzelides
Isabelle Perrigne
Robin C. Sickles
Xun Tang
George R. Zodrow

Associate Professors
Marc Peter Dudey
Jeremy Fox

Assistant Professors
Rosella Calvi
Yinghua He
Yunmi Kong
Mallesh Pai
Natalia Sizova

Professors Emeriti
Dagobert L. Brito
John B. Bryant
Donald L. Huddle
Peter Mieszkowski
Ronald Soligo
Lecturers
Maria Bejan
Michele Biavati
Amelie Carlton
James DeNicco

Adjunct Professors
Bruce M. Lairson
John Michael Swint

Adjunct Associate Professors
Charles E. Begley
Russell Green

Adjunct Assistant Professors
John Diamond
Kenneth Medlock

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: ECON

Department Description and Code
• Economics: ECON

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Descriptions and Codes
• Major in Economics: ECON
• Major in Mathematical Economic Analysis: MTEC

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Master of Energy Economics degree: MEEcon
• Doctor of Philosophy degree: PhD

Graduate Degree Program Descriptions and Codes
• Degree Program in Economics: ECON
• Degree Program in Energy Economics: ENEC

Bachelor of Arts (BA) Degree with a Major in Economics

Program Learning Outcomes for the BA Degree with a Major in Economics
Upon completing the BA degree with a major in Economics, students will be able to:

1. Learn various statistical and econometric skills, including a thorough knowledge of applied econometrics and the ability to use statistical software packages to analyze economic data and interpret statistical results.

2. Learn the core principles of microeconomics, including supply and demand, utility maximization by consumers and profit maximization by firms, and equilibrium market structures, as well as advanced topics in microeconomics, especially economic applications of game theory.

3. Learn the core principles of macroeconomics, including the macroeconomic effects of monetary and fiscal policy, the nature of the business cycle, and the determinants of growth, and learn alternative approaches to analyzing the performance of the macroeconomy.

4. Learn how the basic economic principles that have been absorbed in the core courses are utilized in economic analyses of critical policy issues in a wide variety of applied subject areas.

Additionally, students pursing the two-semester honors program will:

1. Learn how to conduct economic research, beginning with framing of a research idea and progressing to a critical review and evaluation of the relevant literature, the construction of an economic model to analyze the issue under consideration, the identification of testable hypotheses, the collection of data and econometric testing of their hypotheses, the presentation of a research paper that presents those results.

Requirements for the BA Degree with a Major in Economics
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Economics must complete:

• A minimum of either 14 or 15 courses (44 or 47 credit hours) to satisfy major requirements.
• A minimum of 120 hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 5 courses (15 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Economics</td>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Economics</td>
<td>120</td>
</tr>
</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mathematics and Statistics ²</td>
<td></td>
</tr>
<tr>
<td>Select 1 from the following:</td>
<td></td>
<td>3-6</td>
</tr>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
<td></td>
</tr>
</tbody>
</table>
Policies for the BA Degree with a Major in Economics

Program Restrictions and Exclusions

Students pursuing the BA degree with a major in Economics should be aware of the following program restriction:

- Students pursuing the major in Economics may not additionally declare the major in Mathematical Economic Analysis.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Economics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

In some cases, transfer credit may be awarded by the economics department for courses completed at other schools after the student has matriculated at Rice. Students may present a maximum of 2 such transfer courses in fulfilling the mathematics and statistics core requirements, and a maximum of 3 such transfer courses in fulfilling the economics/econometrics core requirements and the elective requirements combined. (Additional transfer courses may count toward meeting university graduation requirements, but not toward fulfillment of requirements for the major.)

Credits awarded to transfer students for courses taken prior to matriculation at Rice are not counted against the departmental limit on transfer courses, but all students must complete more than half of their upper-level major coursework (300-level and 400-level courses) at Rice.

For additional information, please see the Economics website: https://economics.rice.edu/.

Opportunities for the BA Degree with a Major in Economics

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Requirements for Departmental Honors

1. To earn departmental honors in economics, students must earn a grade of B+ or better in the department’s two-semester honors program, ECON 498 and ECON 499.
2. The honors program is available to both ECON and MTEC majors.
3. To be admitted to the honors program, students:
Bachelor of Arts (BA) Degree with a Major in Mathematical Economic Analysis

Requirements for the BA Degree with a Major in Mathematical Economic Analysis

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Mathematical Economic Analysis must complete:

- A minimum of either 16 or 17 courses (52 or 56 credit hours depending on course selection) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 8 courses (26 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Mathematical Economic Analysis</td>
<td>52-56</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Mathematical Economic Analysis</td>
<td>120</td>
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**Degree Requirements**

**Core Requirements**

<table>
<thead>
<tr>
<th>Mathematics and Statistics</th>
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</thead>
<tbody>
<tr>
<td>MATH 101 SINGLE VARIABLE CALCULUS I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 102 SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>Select 1 from the following:</td>
<td>3-6</td>
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<tr>
<td>MATH 212 MULTIVARIABLE CALCULUS</td>
<td></td>
</tr>
<tr>
<td>MATH 221 &amp; MATH 222 and HONORS CALCULUS III</td>
<td></td>
</tr>
<tr>
<td>ECON 307 / STAT 310 ECONOMETRICS</td>
<td>3-4</td>
</tr>
</tbody>
</table>

**Elective Requirements**

<table>
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<tr>
<th>Economics and Econometrics</th>
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</thead>
<tbody>
<tr>
<td>ECON 100 PRINCIPLES OF ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>ECON 200 MICROECONOMICS</td>
<td>4</td>
</tr>
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<td>ECON 203 MACROECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>ECON 209 APPLIED ECONOMETRICS</td>
<td>4</td>
</tr>
<tr>
<td>ECON 305 GAME THEORY AND OTHER MICRO TOPICS FOR MTEC MAJORS</td>
<td>3</td>
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<tr>
<td>ECON 308 MATHEMATICAL ECONOMICS</td>
<td>4</td>
</tr>
<tr>
<td>ECON 310 / STAT 376 ECONOMETRICS</td>
<td>4</td>
</tr>
<tr>
<td>ECON 496 RESEARCH IN ECONOMIC THEORY or ECON 497 RESEARCH IN ECONOMETRICS</td>
<td>3</td>
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Select 1 course from the following:  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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</thead>
<tbody>
<tr>
<td>ECON 210</td>
<td>BEHAVIORAL ECONOMICS</td>
</tr>
<tr>
<td>ECON 239</td>
<td>LAW AND ECONOMICS</td>
</tr>
<tr>
<td>Courses between ECON 343-ECON 495.</td>
<td></td>
</tr>
<tr>
<td>ECON 498</td>
<td>HONORS PROGRAM IN ECONOMICS-I</td>
</tr>
</tbody>
</table>

Select 3 courses from ECON 410-ECON 495 and ECON 498.  

| Total Credit Hours Required for the Major in Mathematical Economic Analysis | 52-56 |
| Additional Credit Hours to Complete BA Degree Requirements                  | 4-8   |
| University Graduation Requirements (p. 25)                                  | 60    |
| Total Credit Hours                                                           | 120   |

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 As specified in their course descriptions, the following courses do not satisfy the Electives requirement for the major in Mathematical Economic Analysis: ECON 101, ECON 103, ECON 111, ECON 113, ECON 260, ECON 265, ECON 270, ECON 275. In addition, BUSI 343 may be substituted for ECON 343, and STAT 449 may be substituted for ECON 449.

2 After matriculation: In some cases, transfer credit may be awarded by the economics department for courses completed at other schools after the the student has matriculated at Rice. Students may present a maximum of 2 such transfer courses in fulfilling the mathematics and statistics core requirements, and a maximum of 3 such transfer courses in fulfilling the economics/econometrics core requirements and elective requirements combined. (Additional transfer courses may count toward meeting university graduation requirements, but not toward fulfillment of requirements for the major.)

Before matriculation: Credits awarded to transfer students for courses taken prior to matriculation at Rice are not counted against the departmental limit on transfer courses, but all students must complete more than half of their upper-level major coursework (300-level and 400-level courses) at Rice.

Opportunities for the BA Degree with a Major in Mathematical Economic Analysis

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Requirements for Departmental Honors

1. To earn departmental honors in economics, students must earn a grade of B+ or better in the department’s two-semester honors program, ECON 498 and ECON 499.

2. The honors program is available to both ECON and MTEC majors.

3. To be admitted to the honors program, students:
   a. must have a GPA of 3.67 or better in all courses taken toward fulfilling their departmental major requirements at the beginning of the academic year in which they enter the honors program;
   b. must have completed all of the core requirements for their major;
   c. must have completed the 400-level course or courses most closely related to their area of research, and
   d. must be accepted to the honors program by the professor supervising the program.

4. For additional information, consult the Economics Department Honors’ Program at http://economics.rice.edu/undergraduate-program/honors-program.

For additional information, please see the Economics website: https://economics.rice.edu/.

Doctor of Philosophy (PhD) Degree in the field of Economics
Program Learning Outcomes for the MA and PhD Degrees in the field of Economics

Students graduating with a MA and PhD degree in the field of Economics will:

1. Learn mathematical, statistical, econometric, and computational tools to carry out independent research in economics.
2. Write an independent and original dissertation that is of sufficient quality to merit publication in a top economics journal.
3. Conduct a focused review of the literature and develop a research design to carry out independent research.
4. Learn to defend their research design and modeling choices by presenting their paper in a seminar environment.
5. Communicate their research effectively by writing clearly, concisely, and cogently.
6. Read critically and assess research manuscripts related to their field of study and in other fields.

Requirements for the MA and PhD Degrees in the field of Economics

For general university requirements, please see Doctoral Degrees (p. 64). Candidates for the PhD usually spend from 2 to 2-1/2 years in full-time coursework and at least 1 year writing the dissertation; 5 years is a reasonable goal for completing the program. For the PhD, students must:

1. Attend the statistics and mathematics camp before starting their first year courses.
2. Complete an approved program of at least 18 courses (including approved courses in other departments), no more than 4 of which are research workshops. At least 2 years of full-time study must be in residence at Rice.
3. Perform satisfactorily on the written general exams in economic theory and econometrics.
4. Write a research paper proposal before the start of their third year.
5. Write and present a research paper before the end of their third year.
6. Choose a dissertation advisor by the end of their seventh semester.
7. Attend a research workshop every semester after their first year and present their own research in a workshop once every year after their second year.
8. Submit a written progress report in every semester they register for ECON 800.
9. Submit a dissertation progress report every year starting with their fourth year.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MA Degree in the field of Economics</td>
<td>30</td>
</tr>
</tbody>
</table>

MA Degree Program

The MA degree is a non-thesis master's degree. For general university requirements for non-thesis masters degrees, please see Graduate Degrees (p. 49). Although students are not normally admitted to study for an MA, graduate students may earn the MA along the way to the PhD. In order to obtain a MA Degree in the field of Economics:

- Students must pass the first year core courses with a grade point average of 2.67 or better
- Students must complete 6 field courses with passing grades

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MA Degree in the field of Economics</td>
<td>30</td>
</tr>
</tbody>
</table>

Policies for the PhD Degree in the Field of Economics

Department of Economics Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Economics publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Economics_Graduate_Handbook.pdf.

Admission

Preparation for PhD Program. Applicants to the PhD program should have a strong background in mathematics and statistics. All applicants are required to take the Graduate Record Exam (GRE).

For additional information, please see the Economics website: https://economics.rice.edu/.

Opportunities for the PhD Degree in the Field of Economics

Additional Master's Degrees Options for the PhD Degree in the field of Economics, or the PhD Degree in the field of Statistics

Students pursuing the PhD degree in the field of Economics, or in the field of Statistics, have the opportunity to also earn a Master of Arts (MA) degree in either the fields of Economics or Statistics, respectively.

Requirements for the PhD Degree in Economics with an MA Degree in Statistics

Students pursuing the PhD degree in the field of Economics and the MA degree with coordinated work in Statistics must complete:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Qualifier in Econometrics at the comparable level of an MA degree in Statistics.</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>A major project - this may directed by economics faculty, but must have strong statistical content. The doctoral proposal in economics can count toward this requirement.</td>
<td>15</td>
</tr>
</tbody>
</table>

Total Credit Hours

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>90</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1. Courses that are joint listed (cross-listed) between the 2 departments are counted towards the number of courses in the "home" department for the particular course.
Requirements for the PhD Degree in Statistics with an MA Degree in Economics

Students pursuing the PhD degree in the field of Statistics and the MA degree with coordinated work in Economics must complete:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>
| Core Requirements
Select 5 courses from departmental (ECON) course offerings comprising: | | |
| ECON 501    | MICROECONOMICS I                      | 3            |
| ECON 502    | MACROECONOMICS                        | 3            |
| Select 1 from the following: | | |
| ECON 505 / BUSI 521 | FINANCIAL ECONOMICS I ² | 2 |
| ECON 504 / STAT 604 | COMPUTATIONAL ECONOMICS ² | 2 |
| ECON 508    | MICROECONOMICS II                     | 5            |
| ECON 511 / STAT 611 | ECONOMETRICS II ³ | 3 |
| Elective Requirements
Select 5 courses from departmental (STAT) course offerings. | | 15 |
| Qualifier in Statistics at the comparable level of a field of examination from the MA degree in the field of Economics. | | |
| A Major Project ¹ | | |

Total Credit Hours 32

Footnotes and Additional Information

¹ This may be directed by statistics faculty, but must have strong econometrics content. The doctoral proposal in statistics can count toward this requirement.

² Courses that are joint listed (cross-listed) between the 2 departments are counted toward the number of courses in the "home" department of the particular course.

For additional information, please see the Economics website: https://economics.rice.edu/.

Doctor of Philosophy (PhD) Degree in the field of Economics and a Major Concentration in Economics and Finance

Program Learning Outcomes for the Major Concentration: Economics and Finance

Upon completing the PhD degree in the field of Economics with a major concentration in Economics and Finance, students will:

1. Conduct a focused review of the literature and develop a research design to carry out independent research.
2. Learn to defend their research design and modeling choices by presenting their paper in a seminar environment.
3. Communicate their research effectively by writing clearly, concisely, and cogently.
4. Read critically and assess research manuscripts related to their field of study and in other fields.

Requirements for the MA and PhD Degrees in the field of Economics

For general university requirements, please see Doctoral Degrees (p. 64). Candidates for the PhD usually spend from 2 to 2-1/2 years in full-time coursework and at least 1 year writing the dissertation; 5 years is a reasonable goal for completing the program. For the PhD, students must:

1. Attend the statistics and mathematics camp before starting their first year courses.
2. Complete an approved program of at least 18 courses (including approved courses in other departments), no more than 4 of which are research workshops. At least 2 years of full-time study must be in residence at Rice.
3. Perform satisfactorily on the written general exams in economic theory and econometrics.
4. Write a research paper proposal before the start of their third year.
5. Write and present a research paper before the end of their third year.
6. Choose a dissertation advisor by the end of their seventh semester.
7. Attend a research workshop every semester after their first year and present their own research in a workshop once every year after their second year.
8. Submit a written progress report in every semester they register for ECON 800.
9. Submit a dissertation progress report every year starting with their fourth year.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Credit Hours Required for the PhD Degree in the field of Economics</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

MA Degree Program

The MA degree is a non-thesis master's degree. For general university requirements for non-thesis masters degrees, please see Graduate Degrees (p. 49). Although students are not normally admitted to study for an MA, graduate students may earn the MA along the way to the PhD. In order to obtain a MA Degree in the field of Economics:

• Students must pass the first year core courses with a grade point average of 2.67 or better
• Students must complete 6 field courses with passing grades

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Credit Hours Required for the MA Degree in the field of Economics</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>
Requirements for the Major Concentration: Economics and Finance

Students pursuing the PhD degree program in the field of Economics with the major concentration in Economics and Finance must:

1. Achieve a minimum grade of B (3.0 grade points) in each of the 10 required courses (32 credit hours), including Microeconomics, Macroeconomics, Econometrics, Real Analysis, Computational Economics, and Financial Economics.
2. Successfully pass comprehensive exams in Economic Theory and Econometrics administered by the Economics faculty at the end of the first year.
4. Successfully complete 6 credit hours of elective requirements from the following courses: BUSI 524, BUSI 525, BUSI 526, BUSI 527, and ECON 575.
5. Successfully pass a comprehensive exam on Corporate Finance and Empirical Methods administered by the Finance faculty at the end of the Fall semester of the second year.
6. Write and present a paper in the third year of the program. The paper and its presentation must be approved by two faculty advisors, one of whom must be in the Economics department and one of whom must be a member of the Finance group in the Business school.
7. Write and defend a dissertation. The dissertation committee must include at least one member from the Economics department and at least one member from the Finance group in the Business School.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 501</td>
<td>MICROECONOMICS I</td>
<td>3</td>
</tr>
<tr>
<td>ECON 502</td>
<td>MACROECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>ECON 504 / STAT 604</td>
<td>COMPUTATIONAL ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>ECON 505 / BUSI 521</td>
<td>FINANCIAL ECONOMICS I</td>
<td>3</td>
</tr>
<tr>
<td>ECON 508</td>
<td>MICROECONOMICS II</td>
<td>5</td>
</tr>
<tr>
<td>ECON 510 / STAT 610</td>
<td>ECONOMETRICS I</td>
<td>3</td>
</tr>
<tr>
<td>ECON 511 / STAT 611</td>
<td>ECONOMETRICS II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 321</td>
<td>INTRODUCTION TO ANALYSIS I</td>
<td>3</td>
</tr>
<tr>
<td>BUSI 522</td>
<td>CORPORATE FINANCE</td>
<td>3</td>
</tr>
<tr>
<td>BUSI 523</td>
<td>EMPIRICAL METHODS IN FINANCE</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Requirements

Select a minimum of 6 credit hours from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>BUSI 524</td>
<td>FINANCE: SPECIAL TOPICS I</td>
</tr>
<tr>
<td>BUSI 525</td>
<td>FINANCE: SPECIAL TOPICS II</td>
</tr>
</tbody>
</table>

Total Credit Hours Required for the Major Concentration: Economics and Finance

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>BUSI 526</td>
<td>FINANCE: SPECIAL TOPICS III</td>
</tr>
<tr>
<td>BUSI 527</td>
<td>FINANCE: SPECIAL TOPICS IV</td>
</tr>
<tr>
<td>ECON 575</td>
<td>TOPICS IN FINANCIAL ECONOMICS</td>
</tr>
</tbody>
</table>

Total Credit Hours

38

Footnotes and Additional Information

1. Each of the 10 required courses (32 credit hours) must be completed with a minimum grade of B (3.0 grade points) or above.

Policies for the PhD Degree in the Field of Economics with a Major Concentration in Economics and Finance

Department of Economics Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Economics publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Economics_Graduate_Handbook.pdf

Preparation for PhD Program

Applicants to the PhD program should have a strong background in mathematics and statistics. All applicants are required to take the Graduate Record Exam (GRE). For additional information, please see the Economics website: https://economics.rice.edu/

Opportunities for the PhD Degree in the Field of Economics with a Major Concentration in Economics and Finance

For additional information, please see the Economics website: https://economics.rice.edu/

Master of Energy Economics (MEEcon) Degree

Program Learning Outcomes for the MEEcon Degree

Upon completing the MEEcon degree, students will:

1. Understand and apply basic economic scientific, political, and statistical principles useful for analyzing and understanding energy markets.
2. Develop quantitative skills to better utilize data to inform strategic decisions.
3. Be better able to communicate insights arising from the economics perspective on issues affecting the energy sector.

Requirements for the MEEcon Degree

The MEEcon degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MEEcon degree must complete:

- A minimum of 40 credit hours to satisfy degree requirements.
Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MEEcon Degree</td>
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Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td></td>
</tr>
<tr>
<td>ECON 601</td>
<td>ENERGY ECONOMICS I</td>
<td>4</td>
</tr>
<tr>
<td>ECON 602</td>
<td>MICROECONOMICS OF THE ENERGY SECTOR</td>
<td>4</td>
</tr>
<tr>
<td>ECON 603</td>
<td>APPLIED ECONOMETRICS FOR ENERGY MARKETS</td>
<td>4</td>
</tr>
<tr>
<td>ECON 604</td>
<td>ENERGY ECONOMICS II</td>
<td>4</td>
</tr>
<tr>
<td>ECON 606</td>
<td>CORPORATE FINANCE FOR THE ENERGY SECTOR</td>
<td>4</td>
</tr>
<tr>
<td>ECON 699</td>
<td>PRACTICUM 1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Elective Requirements</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Select 4 courses as electives from departmental (ECON) course offerings selected from ECON 605 or any course between ECON 607 and ECON 622.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>40</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 A (Summer Session) practicum or internship is required for completion of the MEEcon professional master's degree. The practicum will provide students with practical experience relative to the degree. Students will work on projects developed by an industry advisory group. The research will be presented to participating industry advisors at the completion of the degree program. The projects will provide prospective employers with an opportunity to evaluate new talent effectively. As an alternative to the practicum, students may complete an internship with an approved employer. The internship is meant to last 7 weeks and should be directly related to the student's core area of study in the MEEcon degree program. Internships with an approved employer may be substituted. In particular, it is recognized that some students may have previous professional experience in their area of study, and that their employer may be able to fulfill the internship requirement may be fulfilled by working on an approved special project with their current employer.

2 Students must complete a total of 4 courses as electives from departmental (ECON) course offerings selected from ECON 605 or any course between ECON 607 and ECON 622. Students may complete either 3 electives in Session II, and 1 elective in Session III, or complete 2 electives each in both Sessions II and III.

Proposed Plan-of-Study

The MEEcon degree program is completed in 12 months and is organized in four sessions. Sessions I and II correspond to the Fall and Spring semester, respectively, and follow the standard Rice academic calendar. Sessions III and IV are two consecutive 7-week long sessions that take place during the subsequent summer. All courses (including required courses and electives) are graduate-level courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session I (Fall Semester)</td>
<td>ECON 601 ENERGY ECONOMICS I</td>
<td>4</td>
</tr>
</tbody>
</table>

Policies for the MEEcon Degree

Admission

Information on admission to the MEEcon program is available on the Economics website (https://economics.rice.edu/graduate-program/MEECON/for-applicants/admissions-requirements). For general university requirements, see Graduate Degrees (p. 49) and Admission to Graduate Study (p. 55).

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.
Opportunities for the MEEcon Degree

Byron Pope Award

The Byron Pope Award is given to the student who best exemplifies the benefits provided by participation in the Masters in Energy Economics Program.

For additional information, please see the Economics website: https://economics.rice.edu/

Electrical and Computer Engineering

Contact Information

Electrical and Computer Engineering
http://www.ece.rice.edu/
Abercrombie Lab A204
713-348-4020

Edward Knightly
Professor, Sheafor-Lindsay Chair and Department Chair
knightly@rice.edu

The Electrical and Computer Engineering (ECE) department provides high-quality degree programs that emphasize fundamental principles, respond to the changing demands and opportunities of new technology, challenge the exceptional abilities of Rice students, and prepare students for roles of leadership in their chosen careers.

The department’s undergraduate and graduate programs each offer specializations in the areas of Computer Engineering; Data Science; Neuroengineering; Photonics, Electronics, and Nano-devices; and Systems.

• Computer Engineering topics include: computer architecture, high performance application specific systems, mobile and embedded systems, integrated circuits and antennas for medical imaging and bio-sensing, and parallel I/O for large-scale network storage systems.
• Data Science topics include: data acquisition, data analytics, data storage, and computing infrastructure.
• Neuroengineering topics include: neural signal processing, brain-computer interfaces at the device, circuit, and systems levels.
• Photonics, Electronics, and Nano-devices topics include: nanophotonics/nanospectroscopy, molecular electronics, biophotonics, ultrafast optics and optoelectronics, materials for energy, semiconductor optics and devices, multispectral imaging and terahertz imaging, and condensed matter physics/materials science.
• Systems topics include: communications systems, dynamical systems and computation, networks, signal and image processing, wireless networking, pattern recognition, scalable personal healthcare, and computational neuroscience and neuroengineering.

The Electrical and Computer Engineering department offers two graduate degree programs. The Master of Electrical Engineering (MEE) degree is a course-based program designed to increase a student’s mastery of advanced subjects; no thesis is required. The MEE prepares a student to succeed and advance rapidly in today’s competitive technical marketplace. Additionally, a coordinated MBA/MEE degree is offered in conjunction with the Jesse H. Jones Graduate School of Business.

The Doctor of Philosophy (PhD) degree program prepares students for a research career in academia or industry. The PhD degree program consists of formal courses and original research conducted under the guidance of a faculty advisor, leading to a dissertation. Students in the PhD program complete a Master of Science (MS) degree as part of their program; the Electrical and Computer Engineering department does not admit students for a terminal MS degree.

Bachelor's Programs

• Bachelor of Arts (BA) Degree with a Major in Electrical Engineering (p. 367)
• Bachelor of Science in Electrical Engineering (BSEE) Degree (p. 371)

Master's Programs

• Master of Electrical Engineering (MEE) Degree (p. 377)
• Master of Science (MS) Degree in the field of Electrical and Computer Engineering*

Doctoral Program

• Doctor of Philosophy (PhD) Degree in the field of Electrical and Computer Engineering (p. 375)

Coordinated Program

• Master of Business Administration (MBA) Degree / Master of Electrical Engineering (MEE) Degree (p. 376)

* Although students are not normally admitted to a Master of Science (MS) degree program, graduate students may earn the MS as they work towards the PhD.

Chair
Edward W. Knightly

Professors
Behnaam Aazhang
Athanasios C. Antoulas
Richard G. Baraniuk
Joseph R. Cavallaro
John W. Clark Jr.
Fabrizio Gabbiani
Naomi J. Halas
Junichiro Kono
Michael Orchard
Ashutosh Sabharwal
Harel Shouval
Frank K. Tittel
Peter J. Varman
Lin Zhong

Associate Professors
Aydin Babakhani
Kevin Kelly
Ashok Veeraraghavan
Venu Vasudevan

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: ELEC

Department Description and Code
• Electrical and Computer Engineering: ELEC

Undergraduate Degree Descriptions and Codes
• Bachelor of Arts degree: BA
• Bachelor of Science in Electrical Engineering degree: BSEE

Undergraduate Major Description and Code
• Major in Electrical Engineering (both BA and BSEE degrees): ELEG

Graduate Degree Descriptions and Codes
• Master of Electrical Engineering degree: MEE
• Master of Science degree: MS
• Doctor of Philosophy degree: PhD

Graduate Degree Program Descriptions and Codes
• Degree Program in Electrical Engineering (MEE degree): ELEG
• Degree Program in Electrical and Computer Engineering (both MS and PhD degrees): ELEC

Bachelor of Arts (BA) Degree with a Major in Electrical Engineering

Program Learning Outcomes for the Bachelor of Arts Degree (BA) with a Major in Electrical Engineering

Upon completing the BA degree with a major in Electrical Engineering, students will be able to demonstrate:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to identify, formulate, and solve engineering problems.
5. An understanding of professional and ethical responsibility.
6. An ability to communicate effectively.
7. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
8. A recognition of the need for, and an ability to engage in life-long learning.
9. A knowledge of contemporary issues.
10. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Requirements for the BA Degree with a Major in Electrical Engineering

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Electrical Engineering must complete:

- A minimum of 21-23 courses (63 credit hours) to satisfy major requirements.
- A minimum of 123 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 8 courses (24 credit hours) taken at the 300-level or above.
- The requirements for one area of specialization (see list below).

The Electrical Engineering major offers five areas of specialization described below.

The BA degree provides a basic foundation in Electrical and Computer Engineering that is highly flexible, permitting a student to tailor the program to his or her interests, be they broad or highly focused. Because of its flexibility and large number of electives, the BA can be combined easily with courses from other departments to create an interdisciplinary program. This may be particularly appropriate for students planning further study in law, business, or medicine. The program leading to the BA Degree is not accredited by the EAC of ABET. A course can satisfy only one program requirement. Students who place out of required courses without transcript credit must substitute other approved courses in the same area.

Planning sheets and degree plan forms may be found on the Electrical and Computer Engineering website (http://www.ece.rice.edu).

Electrical and Computer Engineering undergraduate degrees are organized around a core of required courses and a selection of elective courses from five areas of specialization:

- Computer Engineering (p. 370): provides a broad background in computer systems engineering, including computer architecture, digital hardware engineering, software engineering, and computer systems performance analysis.
- Data Science (p. 370): integrates the foundations, tools and techniques involving data acquisition, data analytics, data storage and computing infrastructure in order to enable meaningful extraction of actionable information from diverse and potentially massive data sources.
- Neuroengineering (p. 370): exploits engineering techniques to understand, repair, manipulate, or treat the diseases of human neural systems and networks.
- Photonics, Electronics, and Nano-devices (p. 370): encompasses studies of electronic materials, including nanomaterials, semiconductor and optoelectronic devices, lasers and their applications.

The specialization electives provide the flexibility to create a focus that crosses traditional areas.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Electrical Engineering</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Electrical Engineering</td>
<td>123</td>
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</table>

Degree Requirements

Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC 261</td>
<td>ELECTRONIC MATERIALS AND QUANTUM DEVICES</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 303</td>
<td>RANDOM SIGNALS IN ELECTRICAL ENGINEERING SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 221</td>
<td>HONORS CALCULUS III</td>
<td>3</td>
</tr>
<tr>
<td>MATH 355</td>
<td>LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>or CAAM 335</td>
<td>MATRIX ANALYSIS</td>
<td>3</td>
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</table>

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 101 &amp; PHYS 103</td>
<td>MECHANICS (WITH LAB) and MECHANICS DISCUSSION</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
<td>4</td>
</tr>
</tbody>
</table>

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 102 &amp; PHYS 104</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td>4</td>
</tr>
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</table>

Electrical and Computer Engineering (ECE) Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC 220</td>
<td>FUNDAMENTALS OF COMPUTER ENGINEERING</td>
<td>4</td>
</tr>
<tr>
<td>ELEC 241</td>
<td>FUNDAMENTALS OF ELECTRICAL ENGINEERING I and FUNDAMENTALS OF ELECTRICAL ENGINEERING I LABORATORY</td>
<td>4</td>
</tr>
<tr>
<td>ELEC 242 &amp; ELEC 244</td>
<td>FUNDAMENTALS OF ELECTRICAL ENGINEERING II and FUNDAMENTALS OF ELECTRICAL ENGINEERING II LABORATORY</td>
<td>4</td>
</tr>
<tr>
<td>ELEC 305</td>
<td>INTRODUCTION TO PHYSICAL ELECTRONICS</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 326 / COMP 326</td>
<td>DIGITAL LOGIC DESIGN</td>
<td>3</td>
</tr>
</tbody>
</table>
Computation Course

COMP 140  COMPUTATIONAL THINKING  4
or COMP 130  ELEMENTS OF ALGORITHMS AND COMPUTATION

Design Laboratory

Select 1 from the following, based on area of specialization:

ELEC 327  IMPLEMENTATION OF DIGITAL SYSTEMS
(for Computer Engineering, Data Science, or Neuroengineering areas of specialization)

ELEC 332  ELECTRONIC SYSTEMS PRINCIPLES AND PRACTICE
(for Data Science, Neuroengineering, or Systems areas of specialization)

ELEC 364  PHOTONICS MEASUREMENTS: PRINCIPLES AND PRACTICE
(for Photonics, Electronics, and Nano-devices area of specialization)

Areas of Specialization

Select 1 from the following (see below for Areas of Specialization):

- Computer Engineering
- Data Science
- Neuroengineering
- Photonics, Electronics, and Nano-devices
- Systems - Communication, Control, Networks, Signal Processing

BA Unrestricted Electives *

Students must complete additional courses to meet the BA degree's minimum requirement of at least 123 semester hours.

Total Credit Hours Required for the Major in Electrical Engineering  63
University Graduation Requirements (p. 25) *  60
Total Credit Hours  123

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 The required Design Laboratory does not count as a specialization course.

Areas of Specialization

Students pursuing the BA degree must complete a total of 4 courses (minimum of 12 credit hours), including at least 2 courses in one area of specialization, and courses from at least 2 areas of specialization. In addition, ELEC graduate courses in the 500-level series may be used to satisfy specialization requirements with permission. Consult departmental advisors and the ECE website (http://www.ece.rice.edu) for the latest information.

Area of Specialization: Computer Engineering

Select 2 from the following: 1

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 321</td>
<td>INTRODUCTION TO COMPUTER SYSTEMS</td>
<td>6</td>
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</table>

Area of Specialization: Data Science

Select 2 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 330</td>
<td>TOOLS AND MODELS FOR DATA SCIENCE</td>
<td>6</td>
</tr>
<tr>
<td>ELEC 380 / BIOE 380 / NEUR 383</td>
<td>MEASURING AND MANIPULATING NEURAL ACTIVITY</td>
<td>2017-2018 General Announcements</td>
</tr>
</tbody>
</table>

ELEC 424 / COMP 424  MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION
ELEC 425 / COMP 425  COMPUTER SYSTEMS ARCHITECTURE
ELEC 427  ADVANCED DIGITAL HARDWARE DESIGN, IMPLEMENTATION, AND OPTIMIZATION

ELEC 429 / COMP 429  NETWORKS
ELEC 446 / COMP 446  MOBILE DEVICE APPLICATIONS PROJECT
ELEC 447  INTRODUCTION TO COMPUTER VISION

Footnotes and Additional Information

1 The sequence of COMP 140, COMP 182, and COMP 215 is recommended in addition for the Computer Engineering specialization as these courses are prerequisites for many of the Computer Science courses.

Area of Specialization: Computer Engineering

Select 2 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 321</td>
<td>INTRODUCTION TO COMPUTER SYSTEMS</td>
<td>6</td>
</tr>
</tbody>
</table>

Area of Specialization: Data Science

Select 2 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 330</td>
<td>TOOLS AND MODELS FOR DATA SCIENCE</td>
<td>6</td>
</tr>
<tr>
<td>ELEC 380 / BIOE 380 / NEUR 383</td>
<td>MEASURING AND MANIPULATING NEURAL ACTIVITY</td>
<td>2017-2018 General Announcements</td>
</tr>
</tbody>
</table>

ELEC 424 / COMP 424  MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION
ELEC 425 / COMP 425  COMPUTER SYSTEMS ARCHITECTURE
ELEC 427  ADVANCED DIGITAL HARDWARE DESIGN, IMPLEMENTATION, AND OPTIMIZATION

ELEC 431  DIGITAL SIGNAL PROCESSING
ELEC 432  MOBILE BIO-BEHAVIORAL SENSING
ELEC 447  INTRODUCTION TO COMPUTER VISION
ELEC 475  LEARNING FROM SENSOR DATA
ELEC 488 / CAAM 415 / NEUR 415  THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS

ELEC 489 / CAAM 416 / NEUR 416  NEURAL COMPUTATION

STAT 413  INTRODUCTION TO STATISTICAL MACHINE LEARNING

Footnotes and Additional Information

1 The sequence of COMP 140, COMP 182, and COMP 215 is recommended in addition for the Computer Engineering specialization as these courses are prerequisites for many of the Computer Science courses.
Bachelor of Arts (BA) Degree with a Major in Electrical Engineering

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ELEC 342</td>
<td>ANALOG ELECTRONIC CIRCUITS</td>
<td></td>
</tr>
<tr>
<td>ELEC 380 / BIOE 380 / NEUR 383</td>
<td>INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING</td>
<td></td>
</tr>
<tr>
<td>ELEC 381 / BIOE 381</td>
<td>ELECTROPHYSIOLOGY</td>
<td></td>
</tr>
<tr>
<td>ELEC 382 / NEUR 382</td>
<td>INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE</td>
<td></td>
</tr>
<tr>
<td>ELEC 431</td>
<td>DIGITAL SIGNAL PROCESSING</td>
<td></td>
</tr>
<tr>
<td>ELEC 447</td>
<td>INTRODUCTION TO COMPUTER VISION</td>
<td></td>
</tr>
<tr>
<td>ELEC 481 / BIOE 481 / NEUR 481</td>
<td>COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING</td>
<td></td>
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<tr>
<td>ELEC 482 / BIOE 482</td>
<td>PHYSIOLOGICAL CONTROL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>ELEC 485 / BIOE 485 / COMP 485</td>
<td>FUNDAMENTALS OF MEDICAL IMAGING I</td>
<td></td>
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<tr>
<td>ELEC 486 / BIOE 486 / COMP 486</td>
<td>FUNDAMENTALS OF MEDICAL IMAGING II</td>
<td></td>
</tr>
<tr>
<td>ELEC 488 / CAAM 415 / NEUR 415</td>
<td>THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>ELEC 489 / CAAM 416 / NEUR 416</td>
<td>NEURAL COMPUTATION</td>
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**Total Credit Hours**: 12

**Area of Specialization: Photonics, Electronics, and Nano-devices**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ELEC 262</td>
<td>INTRODUCTION TO WAVES AND PHOTONICS</td>
<td></td>
</tr>
<tr>
<td>ELEC 306</td>
<td>APPLIED ELECTROMAGNETICS</td>
<td></td>
</tr>
<tr>
<td>or PHYS 302</td>
<td>INTERMEDIATE ELECTRODYNAMICS</td>
<td></td>
</tr>
<tr>
<td>ELEC 342</td>
<td>ANALOG ELECTRONIC CIRCUITS</td>
<td></td>
</tr>
<tr>
<td>ELEC 361</td>
<td>QUANTUM MECHANICS FOR ENGINEERS</td>
<td></td>
</tr>
<tr>
<td>or PHYS 311</td>
<td>INTRODUCTION TO QUANTUM PHYSICS I</td>
<td></td>
</tr>
<tr>
<td>ELEC 365 / MSNE 365</td>
<td>NANOMATERIALS FOR ENERGY</td>
<td></td>
</tr>
<tr>
<td>ELEC 461</td>
<td>SOLID STATE PHYSICS</td>
<td></td>
</tr>
<tr>
<td>or PHYS 412</td>
<td>SOLID STATE PHYSICS</td>
<td></td>
</tr>
<tr>
<td>ELEC 462</td>
<td>OPTOELECTRONIC DEVICES</td>
<td></td>
</tr>
<tr>
<td>PHYS 416</td>
<td>COMPUTATIONAL PHYSICS</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit Hours**: 12

**Area of Specialization: Systems - Communication, Control, Networks, Signal Processing**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC 301</td>
<td>SIGNALS, SYSTEMS, AND LEARNING</td>
<td></td>
</tr>
<tr>
<td>ELEC 302</td>
<td>INTRODUCTION TO SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>ELEC 306</td>
<td>APPLIED ELECTROMAGNETICS</td>
<td></td>
</tr>
<tr>
<td>ELEC 430</td>
<td>DIGITAL COMMUNICATION</td>
<td></td>
</tr>
<tr>
<td>ELEC 431</td>
<td>DIGITAL SIGNAL PROCESSING</td>
<td></td>
</tr>
<tr>
<td>ELEC 432</td>
<td>MOBILE BIO-BEHAVIORAL SENSING</td>
<td></td>
</tr>
<tr>
<td>ELEC 433</td>
<td>ARCHITECTURE FOR WIRELESS COMMUNICATIONS</td>
<td></td>
</tr>
<tr>
<td>ELEC 435 / MECH 435</td>
<td>INTRODUCTION TO ENERGY-EFFICIENT MECHATRONICS</td>
<td></td>
</tr>
<tr>
<td>ELEC 436 / MECH 420</td>
<td>FUNDAMENTALS OF CONTROL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>ELEC 437</td>
<td>INTRODUCTION TO COMMUNICATION NETWORKS</td>
<td></td>
</tr>
<tr>
<td>ELEC 438</td>
<td>WIRELESS NETWORKING FOR UNDER-RESOURCED URBAN COMMUNITIES</td>
<td></td>
</tr>
<tr>
<td>ELEC 447</td>
<td>INTRODUCTION TO COMPUTER VISION</td>
<td></td>
</tr>
<tr>
<td>ELEC 498 / COMP 498 / MECH 498</td>
<td>INTRODUCTION TO ROBOTICS</td>
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</tr>
<tr>
<td>MECH 488</td>
<td>DESIGN OF MECHATRONIC SYSTEMS</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit Hours**: 12

**Policies for the BA Degree with a Major in Electrical Engineering**

**Advising**

Rice University provides multiple avenues for undergraduate advising through the Office of Academic Advising, the Rice Residential College system, and academic departments. Although students may consult with their Divisional Advisors in their College during the freshman and sophomore years, they are welcome and encouraged to meet with a major advisor in the Electrical and Computer Engineering Department. In particular, ECE students are required to meet with a major advisor in ECE at least during their junior and senior years to discuss their ECE Specialization Area course selection and Design Courses. The ECE Undergraduate Committee currently has seven faculty members who serve as major advisors. More information on sample degree plans and on the process for declaring ECE as a major is available on the ECE website.

**Transfer Credit**

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic advisor.
program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the major in Electrical Engineering should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Electrical and Computer Engineering website: [http://www.ece.rice.edu/](http://www.ece.rice.edu/).

**Opportunities for the BA Degree with a Major in Electrical Engineering**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) ([summa cum laude, magna cum laude, and cum laude](http://www.ece.rice.edu/ugresearch/)) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

**Independent Research**

The ECE Department encourages our undergraduates to pursue research projects with the faculty. The ECE Department has several opportunities including the multi-year, team-oriented Vertically Integrated Projects (VIP) program and independent individual research with a faculty member through the ELEC 490 course. Also, there are often summer research opportunities through the NSF funded Research Experience for Undergraduates (REU) program, through individual ECE faculty grants, or through the Smalley-Curl Institute REU Sites program. For more information, see the ECE Department web page at: [http://www.ece.rice.edu/ugresearch/](http://www.ece.rice.edu/ugresearch/).

**Study Abroad**

A semester of study abroad is a valuable experience to enhance an individual’s perspective on engineering and technology. The ECE Department encourages students to explore this option particularly for the spring semester of the sophomore or junior year. The ECE Department and the University Study Abroad office coordinate to review programs and courses appropriate for Rice engineering students. Additional information is on the ECE Department website at: [http://www.ece.rice.edu/Content.aspx?id=2147483981](http://www.ece.rice.edu/Content.aspx?id=2147483981).

For additional information, please see the Electrical and Computer Engineering website: [http://www.ece.rice.edu/](http://www.ece.rice.edu/).

**Bachelor of Science in Electrical Engineering (BSEE) Degree**

The program leading to the BSEE degree is accredited by the Engineering Accreditation Commission (EAC) of ABET, [http://www.abet.org](http://www.abet.org).

**Program Learning Outcomes (Student Outcomes) for the BSEE Degree**

Upon completing the BSEE degree, students will demonstrate:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multi-disciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

**Program Educational Objectives for the BSEE Degree**

The Bachelor of Science in Electrical Engineering’s (BSEE) degree program strives to provide a high quality degree that emphasizes fundamental principles, responds to the changing demands and opportunities of technology, challenges the exceptional abilities of Rice students, and prepares these students for roles of leadership in their chosen careers.

In support of this goal, the Bachelor of Science in Electrical Engineering’s (BSEE) degree program educational objectives are to produce graduates who:

1. Practice electrical and computer engineering, and related fields, and/or obtain an advanced degree in electrical and computer engineering, and related fields.
2. Use mathematical modeling and problem solving skills in electrical and computer engineering and other technical applications.
3. Analyze, incorporate, and adapt to new technical and scientific developments.
4. Assume increasing professional responsibility and enhance communication and teamwork abilities.

**Requirements for the BSEE Degree**

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BSEE degree must complete:

- A minimum of 29-31 courses (85 credit hours) to satisfy major requirements.
- A minimum of 134 credit hours to satisfy degree requirements.
- A minimum of 13 courses (39 credit hours) taken at the 300-level or above.
- The requirements for one Area of Specialization (see list below). The Electrical Engineering major offers five Areas of Specialization described below.
Planning sheets and degree plan forms can be found on the Electrical and Computer Engineering (http://www.ece.rice.edu) website.

Electrical and Computer Engineering undergraduate degrees are organized around a core of required courses and a selection of elective courses from five areas of specialization:

- Computer Engineering (p. ): provides a broad background in computer systems engineering, including computer architecture, digital hardware engineering, software engineering, and computer systems performance analysis.

- Data Science (p. ): integrates the foundations, tools and techniques involving data acquisition, data analytics, data storage and computing infrastructure in order to enable meaningful extraction of actionable information from diverse and potentially massive data sources.

- Neuroengineering (p. 374): exploits engineering techniques to understand, repair, manipulate, or treat the diseases of human neural systems and networks.

- Photonics, Electronics, and Nano-devices (p. ): encompasses studies of electronic materials, including nanomaterials, semiconductor and optoelectronic devices, lasers and their applications.

- Systems - Control, Communication, and Signal Processing (p. 374): focuses on wireless communication systems, digital signal processing, image processing, and networking.

The specialization electives provide the flexibility to create a focus that crosses traditional areas. Ultimately each student’s program must contain a course sequence that provides depth in one area and courses from at least two areas to provide breadth. Because of the number of options, students should consult early with departmental advisors to plan a program that meets their needs.

The BSEE degree is the usual degree taken by those students planning a career in engineering practice. The BSEE requires more hours and greater depth than the BA degree; however, it still provides considerable flexibility and can reduce the time required to become a licensed professional engineer. In the final year, BSEE students undertake a capstone design project.

Students considering a major offered by Electrical and Computer Engineering should take physics (PHYS 101, PHYS 102) and calculus (MATH 101, MATH 102) in their freshman year, along with CHEM 121 and COMP 140. The first core courses in the department, ELEC 220, ELEC 241 (lecture) with ELEC 240 (lab), and ELEC 261 are usually taken during the sophomore year, along with more math and science. A course can satisfy only one program requirement. Students entering with advanced placement may have more scheduling options and may take some of these core courses in freshman year. Students who place out of required courses without transcript credit must substitute other approved courses in the same area. Students should consult with one of the department’s undergraduate advisors in these situations.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.
**Design Requirements**

**1.** Design Laboratory

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC 327</td>
<td>IMPLEMENTATION OF DIGITAL SYSTEMS (for Computer Engineering, Data Science, or Neuroengineering specializations)</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 332</td>
<td>ELECTRONIC SYSTEMS PRINCIPLES AND PRACTICE (for Data Science, Neuroengineering or Systems specializations)</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 364</td>
<td>PHOTONICS MEASUREMENTS: PRINCIPLES AND PRACTICE (for Photonics, Electronics, and Nano-devices specializations)</td>
<td>3</td>
</tr>
</tbody>
</table>

**2.** Design laboratory is taken in the junior year. Selection is based on the student’s specialization area. The required Design Laboratory does not count as a specialization course. If the Design Laboratory requirement (ELEC 327, ELEC 332, or ELEC 364) is satisfied with the lab in the student’s chosen specialization area, then the student takes 3 of 6 courses in his/her chosen "major" (specialization) area; however, if the Design Laboratory requirement is satisfied with the lab in the student’s "minor" (other areas of specialization) area, then it is recommended that the student take 4 of 6 courses in his/her chosen "major" (specialization) area. It is important to consult a departmental advisor in this situation or if interested in taking a second Design Laboratory course.

**3.** Students must complete the ELEC 494 during both the fall and spring semesters of their senior year. Within the senior design sequence, professional issues and project management for electrical engineers provide instruction in professional engineering topics and the nontechnical aspects of the design process, including ethics, design methodology, project planning, technical presentations, and documentation. Both semesters of the senior year are devoted to the team design project using the resources of the Oshman Engineering Design Kitchen (OEDK) through the ELEC 494 course. In the fall semester of the senior year, students finalize their project topics in coordination with the faculty and begin the design project. In the spring semester, students continue in the laboratory to complete their design project. Several presentations and design contests within the ECE department and the School of Engineering occur in the spring in which to showcase the projects.

**Areas of Specialization**

Students must complete a total of 6 courses (minimum of 18 credit hours) from at least two areas of specialization offered within the BSEE degree program, including at least 3 courses from one area of specialization. Also, ELEC graduate courses in the 500-level series may be used to satisfy specialization area requirements with permission. Consult departmental advisors and the Electrical and Computer Engineering (https://www.ece.rice.edu) website for the latest information.

**Area of Specialization: Computer Engineering**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit</th>
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<tbody>
<tr>
<td>COMP 321</td>
<td>INTRODUCTION TO COMPUTER SYSTEMS</td>
<td>9</td>
</tr>
<tr>
<td>COMP 382</td>
<td>REASONING ABOUT ALGORITHMS</td>
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</tr>
<tr>
<td>COMP 430</td>
<td>INTRODUCTION TO DATABASE SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>ELEC 323 /</td>
<td>PRINCIPLES OF PARALLEL</td>
<td></td>
</tr>
<tr>
<td>COMP 322</td>
<td>PROGRAMMING</td>
<td></td>
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<tr>
<td>ELEC 342</td>
<td>ANALOG ELECTRONIC CIRCUITS</td>
<td></td>
</tr>
<tr>
<td>ELEC 421 /</td>
<td>OPERATING SYSTEMS AND CONCURRENT</td>
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</tr>
<tr>
<td>COMP 421</td>
<td>PROGRAMMING</td>
<td></td>
</tr>
<tr>
<td>ELEC 422</td>
<td>VLSI SYSTEMS DESIGN</td>
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<tr>
<td>ELEC 424 /</td>
<td>MOBILE AND EMBEDDED SYSTEM DESIGN</td>
<td></td>
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<tr>
<td>COMP 424</td>
<td>AND APPLICATION</td>
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<tr>
<td>ELEC 425 /</td>
<td>COMPUTER SYSTEMS ARCHITECTURE</td>
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<tr>
<td>COMP 425</td>
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<tr>
<td>ELEC 427</td>
<td>ADVANCED DIGITAL HARDWARE DESIGN,</td>
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<tr>
<td>ELEC 429 /</td>
<td>IMPLEMENTATION, AND OPTIMIZATION</td>
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<tr>
<td>COMP 429</td>
<td>INTRODUCTION TO COMPUTER NETWORKS</td>
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</table>

**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 The design requirements (Design Laboratory and Senior Design) are taken during the junior and senior years.
Bachelor of Science in Electrical Engineering (BSEE) Degree

**ELEC 446 / COMP 446**  
**MOBILE DEVICE APPLICATIONS PROJECT**

**ELEC 447**  
**INTRODUCTION TO COMPUTER VISION**

Select an additional 3 courses from the other areas of specialization.  

Total Credit Hours: 18

**Footnotes and Additional Information**  
1. The sequence of COMP 140, COMP 182, and COMP 215 is recommended in addition for the Computer Engineering area of specialization as these courses are prerequisites for many of the Computer Science courses.

---

**Area of Specialization: Data Science**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 330</td>
<td>TOOLS AND MODELS FOR DATA SCIENCE</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 380 / BIOE 380 / NEUR 383</td>
<td>INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 424 / COMP 424</td>
<td>MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 425 / COMP 425</td>
<td>COMPUTER SYSTEMS ARCHITECTURE</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 427</td>
<td>ADVANCED DIGITAL HARDWARE DESIGN, IMPLEMENTATION, AND OPTIMIZATION</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 431</td>
<td>DIGITAL SIGNAL PROCESSING</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 432</td>
<td>MOBILE BIO-BEHAVIORAL SENSING</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 447</td>
<td>INTRODUCTION TO COMPUTER VISION</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 475</td>
<td>LEARNING FROM SENSOR DATA</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 488 / CAAM 415 / NEUR 415</td>
<td>THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS</td>
<td>9</td>
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<tr>
<td>ELEC 489 / CAAM 416 / NEUR 416</td>
<td>NEURAL COMPUTATION</td>
<td>9</td>
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<tr>
<td>STAT 413</td>
<td>INTRODUCTION TO STATISTICAL MACHINE LEARNING</td>
<td>9</td>
</tr>
</tbody>
</table>

Select an additional 3 courses from the other areas of specialization.  

Total Credit Hours: 18

---

**Area of Specialization: Photonics, Electronics, and Nano-Devices**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ELEC 262</td>
<td>INTRODUCTION TO WAVES AND PHOTONICS</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 306</td>
<td>APPLIED ELECTROMAGNETICS</td>
<td>9</td>
</tr>
<tr>
<td>or PHYS 302</td>
<td>INTERMEDIATE ELECTRODYNAMICS</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 342</td>
<td>ANALOG ELECTRONIC CIRCUITS</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 361</td>
<td>QUANTUM MECHANICS FOR ENGINEERS</td>
<td>9</td>
</tr>
<tr>
<td>or PHYS 311</td>
<td>INTRODUCTION TO QUANTUM PHYSICS I</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 365 / MSNE 365</td>
<td>NANOMATERIALS FOR ENERGY</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 461</td>
<td>SOLID STATE PHYSICS</td>
<td>9</td>
</tr>
<tr>
<td>or PHYS 412</td>
<td>SOLID STATE PHYSICS</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 462</td>
<td>OPTOELECTRONIC DEVICES</td>
<td>9</td>
</tr>
<tr>
<td>PHYS 416</td>
<td>COMPUTATIONAL PHYSICS</td>
<td>9</td>
</tr>
</tbody>
</table>

Select an additional 3 courses from the other areas of specialization.  

Total Credit Hours: 18

---

**Area of Specialization: Systems - Communications, Control, Networks, and Signal Processing**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC 302</td>
<td>INTRODUCTION TO SYSTEMS</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 306</td>
<td>APPLIED ELECTROMAGNETICS</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 430</td>
<td>DIGITAL COMMUNICATION</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 431</td>
<td>DIGITAL SIGNAL PROCESSING</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 432</td>
<td>MOBILE BIO-BEHAVIORAL SENSING</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 433</td>
<td>ARCHITECTURE FOR WIRELESS SENSING</td>
<td>9</td>
</tr>
<tr>
<td>ELEC 435 / MECH 435</td>
<td>INTRODUCTION TO ENERGY-EFFICIENT MECHATRONICS</td>
<td>9</td>
</tr>
</tbody>
</table>

Select 3 from the following:
### Policies for the BSEE Degree

#### Advising

Rice University provides multiple avenues for undergraduate advising through the Office of Academic Advising, the Rice Residential College system, and academic departments. Although students may consult with their Divisional Advisors in their College during the freshman and sophomore years, they are welcome and encouraged to meet with a major advisor in the Electrical and Computer Engineering Department. In particular, ECE students are required to meet with a major advisor in ECE at least during their junior and senior years to discuss their ECE Specialization Area course selection and Design Courses. The ECE Undergraduate Committee currently has seven faculty members who serve as major advisors. More information on sample degree plans and on the process for declaring ECE as a major is available on the ECE website: http://www.ece.rice.edu/academic/ugadvisors.aspx.

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

Students pursuing the BSEE degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Electrical and Computer Engineering website: http://www.ece.rice.edu/.

### Opportunities for the BSEE Degree

#### Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

#### Independent Research

The ECE Department encourages our undergraduates to pursue research projects with the faculty. The ECE Department has several opportunities including the multi-year, team-oriented Vertically Integrated Projects (VIP) program and individual independent research with a faculty member through the ELEC 490 course. Also, there are often summer research opportunities through the NSF-funded Research Experience for Undergraduates (REU) program, through individual ECE faculty grants, or through the Smalley-Curl Institute REU Sites program.

#### Study Abroad

A semester of study abroad is a valuable experience to enhance an individual’s perspective on engineering and technology. The ECE Department encourages students to explore this option particularly for the spring semester of the sophomore or junior year. The ECE Department and the University Study Abroad office coordinate to review programs and courses appropriate for Rice engineering students.

For additional information, please see the Electrical and Computer Engineering website: http://www.ece.rice.edu/.

### Doctor of Philosophy (PhD) Degree in the field of Electrical and Computer Engineering

#### Program Learning Outcomes for the PhD Degree in the field of Electrical and Computer Engineering

Upon completing the PhD degree in the field of Electrical and Computer Engineering, students will be able to:

1. Identify and define relevant research topics in Electrical and Computer Engineering and conduct independent research with results that advance the state of the art in the field.
2. Lead research and design groups by communicating innovative ideas effectively.
3. Solve real-world problems by integrating knowledge gained in courses and through independent study.

### Requirements for the PhD Degree in the field of Electrical and Computer Engineering

For general university requirements, please see Doctoral Degrees (p. 64).

Students are admitted to the PhD program only in the fall semester. Electrical and Computer Engineering PhD students move through the program in stages, starting as a first-year student, advancing to MS candidate, PhD-qualified student, and PhD candidate; each advancement requires the approval of the Electrical and Computer Engineering Graduate Committee. The MS degree is a thesis master's degree. For general university requirements, please see Thesis Master’s Degrees (p. 67).
Students entering with previous graduate work may follow a hybrid program developed in consultation with the faculty and the Graduate Committee. The first academic year concentrates on foundation coursework and developing a research area. Each student must successfully complete a project, ELEC 599, in his or her chosen area of research in lieu of an oral or written qualifying exam. In addition to enabling the faculty to evaluate the student's research potential, the project encourages timely completion of the MS degree. The student must complete a master's thesis and successfully defend it in an oral examination. Students who have already acquired a master's degree elsewhere must also complete the ELEC 599 project, after which acceptance of their previous master's degree will be determined by the Graduate Committee. No course in which the student earned a grade lower than a B- (2.67 grade points) may count toward an MS or PhD.

A candidate for the PhD degree must demonstrate independent, original research in Electrical and Computer Engineering. After successful completion of all coursework, a student is eligible for PhD candidacy. The student then engages in full-time research, culminating in presentation of the PhD research proposal and then the completion and public defense of the PhD dissertation. Details of the PhD program requirements, the phases of study, and a timetable may be found on the Electrical and Computer Engineering website (http://www.ece.rice.edu).

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Electrical and Computer Engineering</td>
<td>90</td>
</tr>
</tbody>
</table>

### Policies for the PhD Degree in the field of Electrical and Computer Engineering

**Department of Electrical and Computer Engineering Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Electrical and Computer Engineering publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Electrical_Computer_Engineering_Graduate_Handbook.pdf.

For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/.

### Opportunities for the PhD Degree in the field of Electrical and Computer Engineering

For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/.

### Program Learning Outcomes for the MEE Degree

Upon completing the MEE degree, students will be able to:

1. Apply the principles of mathematics and science necessary to solve advanced electrical engineering problems.
2. Practice at an advanced level in at least one of the major sub-fields of electrical engineering.

### Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

### Requirements for the MBA/MEE Coordinated Degree Program

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.
Policies for the MBA/MEE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/

Opportunities for the MBA/MEE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/

Master of Electrical Engineering (MEE) Degree

Program Learning Outcomes for the MEE Degree

Upon completing the MEE degree, students will be able to:

1. Apply the principles of mathematics and science necessary to solve advanced electrical engineering problems.
2. Practice at an advanced level in at least one of the major sub-fields of electrical engineering.

Requirements for the MEE Degree

The MEE degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MEE degree must complete:

- A minimum of 10 courses (30 credit hours) at the 500-level or higher to satisfy degree requirements.
- A minimum of 6 courses (18 credit hours) from an Area of Specialization (as a major area of focus).
- A minimum of 2 courses (6 credit hours) from another Area of Specialization (as a minor area).
- A minimum of 8 of the 10 courses in the major and minor Areas of Specialization taught by ECE faculty. Only exceptions approved by the Chair of the MEE Committee will be permitted.
- A minimum overall GPA of 3.0 in required coursework with a minimum grade of C (2.0 grade points) in each course.
- A maximum of 1 course (3 credit hours) of graduate-level coursework from transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.
- ELEC 698 each semester of full-time enrollment.

Students are admitted to the MEE degree program in the fall semester. MEE students are to consult with an academic advisor on the MEE Committee each semester in order to identify and clearly document their individual curricular requirements or degree plan to be followed. An MEE degree planning form and current requirements may be found on the ECE website (http://www.ece.rice.edu).

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
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<td>Total Credit Hours Required for the MEE Degree</td>
<td>30</td>
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### Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select 1 Area of Specialization from the following (see below for Areas of Specialization):</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Computer Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data Science</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neuroengineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Photonics, Electronics, and Nano-Devices</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Systems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 2 courses from another Area of Specialization as a minor area</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Free Electives</td>
<td>6</td>
</tr>
<tr>
<td>ELEC 698</td>
<td>ECE PROFESSIONAL MASTERS SEMINAR SERIES (required each semester of full-time enrollment, credit hours earned do not apply towards degree requirements)</td>
<td>1</td>
</tr>
</tbody>
</table>

| Total Credit Hours | 30 |

### Footnotes and Additional Information

1 A minimum of 8 of the 10 courses in the major and minor Areas of Specialization taught by ECE faculty. Only exceptions approved by the Chair of the MEE Committee will be permitted.

2 Electives may be fulfilled through research courses (such as ELEC 590 or ELEC 591, when either are taken for at least 3 credit hours), other ECE electives, or through courses available through affiliated departments in areas such as Communication Training or Engineering Leadership Management.

### Areas of Specialization

Students must complete a minimum of 6 courses (18 credit hours) from one area of specialization and a minimum of 2 courses (6 credit hours) from another area of specialization as a minor area. The following courses represent typical courses under the current 5 areas of specialization that students may study as part of the MEE degree program. Students may take and are encouraged to take, with the approval of an academic advisor, other courses that are not listed below that are consistent with their career objectives. ELEC 590 may not be applied toward the requirements for the areas of specialization.

<table>
<thead>
<tr>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>ELEC 513 / COMP 513</td>
<td>COMPLEXITY IN MODERN SYSTEMS</td>
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<td>ELEC 516</td>
<td>ANALOG INTEGRATED CIRCUITS</td>
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<td>ELEC 522</td>
<td>ADVANCED VLSI DESIGN</td>
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<tr>
<td>ELEC 524 / COMP 524</td>
<td>MOBILE AND WIRELESS NETWORKING</td>
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<tr>
<td>ELEC 526 / COMP 526</td>
<td>HIGH PERFORMANCE COMPUTER ARCHITECTURE</td>
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</tbody>
</table>

2017-2018 General Announcements
### Master of Electrical Engineering (MEE) Degree

**Area of Specialization: Data Science**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>ELEC 502 / COMP 502</td>
<td>NEURAL MACHINE LEARNING I</td>
<td>18</td>
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<tr>
<td>ELEC 502 / COMP 502 / STAT 502</td>
<td>or COMP 541 STATISTICAL MACHINE LEARNING</td>
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<tr>
<td>ELEC 533 / CAAM 583 / STAT 583</td>
<td>INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS</td>
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<tr>
<td>ELEC 535</td>
<td>INFORMATION THEORY</td>
<td></td>
</tr>
<tr>
<td>ELEC 557 / COMP 557</td>
<td>ARTIFICIAL INTELLIGENCE</td>
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<tr>
<td>ELEC 558</td>
<td>DIGITAL SIGNAL PROCESSING</td>
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<tr>
<td>ELEC 575</td>
<td>LEARNING FROM SENSOR DATA</td>
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<tr>
<td>ELEC 576</td>
<td>A PRACTICAL INTRODUCTION TO DEEP MACHINE LEARNING</td>
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<tr>
<td>ELEC 631</td>
<td>ADVANCED TOPICS IN SIGNAL PROCESSING</td>
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<tr>
<td>STAT 648</td>
<td>GRAPHICAL MODELS AND NETWORKS</td>
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**Area of Specialization: Neuroengineering**

<table>
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<tbody>
<tr>
<td>ELEC 502 / COMP 502</td>
<td>NEURAL MACHINE LEARNING I</td>
<td>18</td>
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<tr>
<td>ELEC 533 / CAAM 583 / STAT 583</td>
<td>INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS</td>
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<tr>
<td>ELEC 548 / BIOE 548</td>
<td>MACHINE LEARNING AND SIGNAL PROCESSING FOR NEURO ENGINEERING</td>
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<tr>
<td>ELEC 585 / BIOE 591</td>
<td>FUNDAMENTALS OF MEDICAL IMAGING I</td>
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<tr>
<td>ELEC 588</td>
<td>THEORETICAL NEUROSCIENCE I: BIOPHYSICAL MODELING OF CELLS AND CIRCUITS</td>
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<tr>
<td>ELEC 589</td>
<td>NEURAL COMPUTATION</td>
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<tr>
<td>ELEC 680 / BIOE 680</td>
<td>NANO-NEUROTECHNOLOGY</td>
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<tr>
<td>NEUR 582</td>
<td>INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE</td>
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</table>

**Area of Specialization: Photonics, Electronics, and Nano-Devices**

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ELEC 562</td>
<td>OPTOELECTRONIC DEVICES</td>
<td>18</td>
</tr>
<tr>
<td>ELEC 568</td>
<td>LASER SPECTROSCOPY</td>
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</tr>
<tr>
<td>ELEC 569 / PHYS 569</td>
<td>ULTRAFAST OPTICAL PHENOMENA</td>
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<td>ELEC 571</td>
<td>IMAGING AT THE NANOSCALE</td>
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<td>ELEC 603</td>
<td>TOPICS IN NANOPHOTONICS</td>
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<tr>
<td>ELEC 605 / PHYS 605</td>
<td>COMPUTATIONAL ELECTRODYNAMICS AND NANOPHOTONICS</td>
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<tr>
<td>ELEC 661 / CHEM 661 / MSNE 661</td>
<td>NANOPHOTONICS, SPECTROSCOPY, AND MATERIALS FOR SUSTAINABILITY</td>
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**Area of Specialization: Systems**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC 531</td>
<td>STATISTICAL SIGNAL PROCESSING</td>
<td>18</td>
</tr>
<tr>
<td>ELEC 533 / CAAM 583 / STAT 583</td>
<td>INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS</td>
<td></td>
</tr>
<tr>
<td>ELEC 535</td>
<td>INFORMATION THEORY</td>
<td></td>
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<tr>
<td>ELEC 537</td>
<td>COMMUNICATION NETWORKS</td>
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<tr>
<td>ELEC 539</td>
<td>INTRODUCTION TO COMMUNICATION NETWORKS</td>
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<tr>
<td>ELEC 542</td>
<td>THE APPLICATION OF VECTOR SPACE METHODS AND OTHER ADVANCED TECHNIQUES TO DSP</td>
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<tr>
<td>ELEC 546</td>
<td>INTRODUCTION TO COMPUTER VISION</td>
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<tr>
<td>ELEC 547</td>
<td>COMPUTER VISION</td>
<td></td>
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<tr>
<td>ELEC 549</td>
<td>COMPUTATIONAL PHOTOGRAPHY</td>
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<td>ELEC 551</td>
<td>DIGITAL COMMUNICATION</td>
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<tr>
<td>ELEC 558</td>
<td>DIGITAL SIGNAL PROCESSING</td>
<td></td>
</tr>
</tbody>
</table>

**Policies for the MEE Degree**

**Department of Electrical and Computer Engineering Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Electrical and Computer Engineering publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Electrical_Computer_Engineering_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Electrical_Computer_Engineering_Graduate_Handbook.pdf).

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.
Departmental Transfer Credit Guidelines
Students pursuing the MEE degree in the field of Electrical and Computer Engineering should be aware of the following departmental transfer credit guidelines:

• No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.
• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/.

Opportunities for the MEE Degree
For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/.

Energy and Water Sustainability
Contact Information
Energy and Water Sustainability
http://ceve.rice.edu/
713-348-4949

Jim Blackburn
Program Director
blackbur@rice.edu

The interdisciplinary program in Energy and Water Sustainability is offered by the Civil and Environmental Engineering Department in collaboration with several other Rice University departments.

Sustainable development is a societal goal that challenges traditional ways of thinking and requires alternative approaches and solutions to balance environmental, economic, and social interests. Carbon management strategies and renewable resources will be key elements of energy policy for the coming decades. Similarly, the long-term viability of existing water use and human settlement patterns must be reconsidered given the effect of climate change in freshwater availability, as well as increasing competing demands for this limited resource. More generally, the dedication of materials, energy, and ecological resources will become more important in economic decision-making, while more and more members of society will demand equity in decision-making processes.

Students studying Energy and Water Sustainability will gain knowledge of both the science and policy issues associated with the evaluation of sustainable energy and water strategies that will form a cornerstone of 21st century social systems. Students completing this program will be better prepared for a global society that is attempting to understand and address the challenge of meeting basic human needs today and in the future while maintaining a functional natural system and social order.

Minor
• Minor in Energy and Water Sustainability (p. 379)

Energy and Water Sustainability does not currently offer an academic program at the graduate level.

Director
Jim Blackburn, Civil and Environmental Engineering

Undergraduate Advisors
Pedro Alvarez, Civil and Environmental Engineering
Jim Blackburn, Civil and Environmental Engineering

Steering Committee
Phil Bedient, Civil and Environmental Engineering
Walter Chapman, Chemical and Biomolecular Engineering
Dan Cohan, Civil and Environmental Engineering
Ken Cox, Chemical and Biomolecular Engineering
Leonardo Dueñas-Osorio, Civil and Environmental Engineering
Peter Hartley, Economics
George Hirasaki, Chemical and Biomolecular Engineering
Qilin Li, Civil and Environmental Engineering
Carrie Masiello, Earth Science
Ka-Yiu San, Bioengineering
Ed Segner, Civil and Environmental Engineering
Robert Stein, Political Science
William Symes, Computational and Applied Mathematics
Mason Tomson, Civil and Environmental Engineering
Rick Wilson, Political Science
Kyriacos Zygioulakis, Chemical and Biomolecular Engineering

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: Courses from various subjects may apply towards this program

Program Description and Code
• Energy and Water Sustainability: EWSU

Undergraduate Minor Description and Code
• Minor in Energy and Water Sustainability: EWSU

Minor in Energy and Water Sustainability
Program Learning Outcomes for the Minor in Energy and Water Sustainability
Upon completing the minor in Energy and Water Sustainability, students will be able to:

1. Apply basic economic concepts of energy and water sustainability including aspects of environmental economics and project-scale economic issues.
2. Understand basic environmental issues applicable to energy and water sustainability.
3. Conduct evaluations of social aspects from a sustainability perspective.
4. Evaluate projects and political systems from the standpoint of energy and water issues as well as more general sustainability issues.
5. Apply sustainability concepts at varying scales and viewpoints, including project level, corporate level, and municipal, state, national, and international levels.

6. Understand the role of climate change on future projects and societies.

Requirements for the Minor in Energy and Water Sustainability

Students pursuing the minor in Energy and Water Sustainability must complete:

- A minimum of 7 courses (at least 19 credit hours) to satisfy the minor requirements.
- A Design Practicum.¹
- No more than 2 courses applied towards the minor can be used to fulfill a student's major requirements.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
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Minor Requirements

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td></td>
<td>Required Courses</td>
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<tr>
<td>CEVE 302 / ENG 302</td>
<td>SUSTAINABLE DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 307 / ENST 307 / ESCI 307</td>
<td>ENERGY AND THE ENVIRONMENT</td>
<td>3</td>
</tr>
<tr>
<td>ECON 480 / ENST 480</td>
<td>ENVIRONMENTAL ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>or CEVE 479</td>
<td>ENGINEERING PROJECT MANAGEMENT AND ECONOMICS</td>
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<td></td>
<td>Design Practicum</td>
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<tr>
<td>CEVE 499</td>
<td>SPECIAL PROBLEMS (at least 1 credit hour)</td>
<td></td>
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<td></td>
<td>Elective Requirements</td>
<td>9</td>
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<tr>
<td></td>
<td>Select 3 electives courses (at least 9 credit hours) from at least 2 of the following 3 categories:</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>Select up to 2 from the following:</td>
<td></td>
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<tr>
<td>ECON 437 / ENST 437</td>
<td>ENERGY ECONOMICS</td>
<td></td>
</tr>
<tr>
<td>ESCI 415</td>
<td>DECISION MAKING AND ECONOMICS IN THE ENERGY INDUSTRY</td>
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<td>ESCI 417</td>
<td>PETROLEUM INDUSTRY ECONOMICS AND MANAGEMENT</td>
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<td>ESCI 550</td>
<td>MODERN EXPLORATION TECHNOLOGY</td>
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<tr>
<td>Water</td>
<td>Select up to 2 from the following:</td>
<td></td>
</tr>
<tr>
<td>CEVE 314 / BIOE 365 / GLHT 314</td>
<td>SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD</td>
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<td>CEVE 412</td>
<td>HYDROLOGY AND WATER RESOURCES ENGINEERING</td>
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</tr>
<tr>
<td>CEVE 418 / ESCI 418</td>
<td>QUANTITATIVE HYDROGEOLOGY</td>
<td></td>
</tr>
<tr>
<td>CEVE 444</td>
<td>ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY</td>
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Sustainability

<table>
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<tr>
<td></td>
<td>Select up to 2 from the following:</td>
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<tr>
<td>ARCH 313 / ENST 313</td>
<td>CASE STUDIES IN SUSTAINABLE DESIGN</td>
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<tr>
<td>CEVE 406 / ENST 406</td>
<td>INTRODUCTION TO ENVIRONMENTAL LAW</td>
<td></td>
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<tr>
<td>CEVE 492</td>
<td>MODELING AND ANALYSIS OF NETWORKED SYSTEMS</td>
<td></td>
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<tr>
<td>CHBE 281 / ENST 281</td>
<td>ENGINEERING SUSTAINABLE COMMUNITIES</td>
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<td>ENST 302 / SOCI 304</td>
<td>ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE</td>
<td></td>
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<tr>
<td>POLI 331</td>
<td>ENVIRONMENTAL POLITICS AND POLICY</td>
<td></td>
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<tr>
<td>POLI 432</td>
<td>URBAN POLITICS</td>
<td></td>
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<tr>
<td>POLI 441 / ENST 441</td>
<td>GOVERNING THE ENVIRONMENTAL COMMONS</td>
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<tr>
<td>STAT 485</td>
<td>ENVIRONMENTAL STATISTICS AND DECISION MAKING</td>
<td></td>
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</table>

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>19</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

¹ Students are required to complete 1 special topics course (CEVE 499), typically during the fall semester of their senior year. Students in engineering and architecture will fulfill this requirement by preparing a report that describes the incorporation of sustainability concepts into their design effort in consultation with their senior (capstone) design course instructor. Students not engaged in a suitable design project will either consult with an extant design group or pursue a project related to their own area of study in consultation with the EWSU advisors.

² No more than 2 electives courses can be drawn from any 1 of the 3 electives categories. At least 1 elective course must be taken from a different school than the school hosting the student's major.

Policies for the Minor in Energy and Water Sustainability

Program Restrictions and Exclusions

Students pursuing the minor in Energy and Water Sustainability should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first
declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the minor in Energy and Water Sustainability should be aware of the following program-specific transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Energy and Water Sustainability website: http://ceve.rice.edu/sustainabilityminor.aspx (http://ceve.rice.edu/sustainabilityminor.aspx).

Opportunities for the Minor in Energy and Water Sustainability

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Energy and Water Sustainability website: http://ceve.rice.edu/sustainabilityminor.aspx (http://ceve.rice.edu/sustainabilityminor.aspx).

Engineering Design

Contact Information

Engineering Design
http://oedk.rice.edu/minor
Oshman Engineering Design Kitchen
713-348-OEDK

Maria Oden
Program Co-Chair
moden@rice.edu

Marcia O’Malley
Program Co-Chair
omalleym@rice.edu

Defined simply, Engineering Design is the process of creating a new product or process to meet a defined need while taking into account constraints such as cost, practicality, and safety. The design process begins with creating an open-ended problem statement to address an unmet need. Through careful consideration of existing solutions and other research, students establish goals that the design should meet. Following a period of brainstorming, students select ideas that best meet the design goals. Building and testing technologies is challenging and forces students to apply their “book knowledge” (e.g., equations) to develop a physical or computational solution. A proof-of-concept prototype usually needs extensive revision and testing before it can be manufactured at scale. Throughout the design process, project planning and communication are essential. Because solving engineering challenges is often open-ended, it is very important to give students many opportunities to experience the steps in the process.

The minor in Engineering Design capitalizes on strengths in engineering design at Rice—both innovative and successful engineering design courses and unsurpassed facilities that are available for undergraduate engineering students starting in their freshman year. Students may begin the minor in their freshman year and take courses throughout their duration of undergraduate studies. The skills they gain will complement their academic major and provide a deep understanding and skill set to successfully embark in engineering design careers.

Minor

• Minor in Engineering Design (p. 382)

Engineering Design does not currently offer an academic program at the graduate level.

Co-Chairs

Maria Oden, Bioengineering
Marcia O’Malley, Mechanical Engineering

Executive Committee

Maria Oden, Bioengineering
Gary Woods, Electrical and Computer Engineering
Marcia O’Malley, Mechanical Engineering
Matthew Wettergreen, Oshman Engineering Design Kitchen

Minor Advisors

Maria Oden, Bioengineering
Ann Saterbak, Bioengineering
Gary Woods, Electrical and Computer Engineering
Marcia O’Malley, Mechanical Engineering
Matthew Wettergreen, Oshman Engineering Design Kitchen

Faculty Advisory Board

Jordan Miller, Bioengineering
Maria Oden, Bioengineering
Rebecca Richards-Kortum, Bioengineering
Ann Saterbak, Bioengineering
Robert Griffin, Civil and Environmental Engineering
Rafael Verduzco, Chemical and Biomolecular Engineering
Joe Cavallaro, Electrical and Computer Engineering
Gary Woods, Electrical and Computer Engineering
Marcia O’Malley, Mechanical Engineering
Matthew Wettergreen, Oshman Design Engineering Kitchen

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:
Course Catalog/Schedule
• Course offerings/subject codes: Courses from various subjects may apply towards this program.

Program Description and Code
• Engineering Design: EDES

Undergraduate Minor Description and Code
• Minor in Engineering Design: EDES

Minor in Engineering Design

Program Learning Outcomes for the Minor in Engineering Design

Upon completing the minor in Engineering Design, students will be able to:

1. Execute steps of the engineering design process including problem identification, needs assessment, context review, defining design criteria, idea generation, solution selection, iterative prototyping, and testing.

2. Become familiar with other steps of the engineering design process including market assessment, design for manufacturing, field testing, and implementation.

3. Apply technical knowledge from their major within the School of Engineering to solve a design challenge.

4. Develop breadth in design by working on at least two different design projects.

5. Work in multiple teams, filling the role of a team member and a team leader.

6. Apply project planning tools to guide design projects.

7. Communicate effectively their design problems and solutions through written, oral, and visual communication tools to a wide variety of audiences.

8. Become proficient in low and high fidelity physical and digital-based prototyping.

Requirements for the Minor in Engineering Design

Students pursuing the minor in Engineering Design must complete:

• A minimum of 6 courses (18 credit hours) to satisfy minor requirements.

Students are encouraged to begin taking courses in the minor during their freshman year, and are encouraged to declare the minor no later than the beginning of their fifth semester.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<th>Code</th>
<th>Title</th>
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Minor Requirements

Core Requirements

Select 1 from the following:

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<tr>
<th>Code</th>
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<tr>
<td>ENGI 120</td>
<td>INTRODUCTION TO ENGINEERING DESIGN I</td>
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<tr>
<td>ENGI 220</td>
<td>INTRODUCTION TO ENGINEERING DESIGN II</td>
<td>3</td>
</tr>
<tr>
<td>FWIS 188</td>
<td>INTRODUCTION TO ENGINEERING DESIGN III</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 210</td>
<td>PROTOTYPING AND FABRICATION</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 350</td>
<td>NEEDS IDENTIFICATION AND DESIGN IMPLEMENTATION</td>
<td>3</td>
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<tr>
<td>ENGI 355</td>
<td>DIGITAL DESIGN AND VISUALIZATION</td>
<td>3</td>
</tr>
<tr>
<td>or MECH 403</td>
<td>COMPUTER AIDED DESIGN</td>
<td>3</td>
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Elective Requirements

Select 2 from the following:

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>BIOE 360 /</td>
<td>APPROPRIATE DESIGN FOR GLOBAL HEALTH</td>
<td>6</td>
</tr>
<tr>
<td>GLHT 360</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEVE 314 /</td>
<td>SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD</td>
<td>6</td>
</tr>
<tr>
<td>BIOE 365 /</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GLHT 314</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHBE 490</td>
<td>CHEMICAL CAR ENGINEERING AND DESIGN</td>
<td>3</td>
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<tr>
<td>ELEC 342</td>
<td>ANALOG ELECTRONIC CIRCUITS</td>
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<tr>
<td>ELEC 491</td>
<td>UNDERGRADUATE ELECTRICAL ENGINEERING RESEARCH PROJECTS- VERTICALLY INTEGRATED PROJECTS</td>
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<tr>
<td>ENGI 200</td>
<td>ENGINEERING DESIGN STUDIO</td>
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<td>ENGI 300</td>
<td>ENGINEERING DESIGN WORKSHOP</td>
<td></td>
</tr>
<tr>
<td>ENGI 315</td>
<td>LEADING TEAMS AND INNOVATION</td>
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<tr>
<td>MECH 488</td>
<td>DESIGN OF MECHATRONIC SYSTEMS</td>
<td></td>
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<tr>
<td>PSYC 370</td>
<td>INTRODUCTION TO HUMAN FACTORS AND ERGONOMICS</td>
<td>3</td>
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</tbody>
</table>

Additional Requirement

Students must participate in at least two different design projects during their undergraduate experience. 2

Total Credit Hours

Footnotes and Additional Information

1 With minor advisor approval, students may also complete departmental design courses or project-based courses, excluding capstone or final-year design coursework, to satisfy the Electives Requirement.
The design projects requirement is in place to ensure that students have some breadth in their practice of design. This can be satisfied by a project completed while taking the courses listed in the Electives Requirement and/or a capstone design course. Note that while a capstone design course may be required by the student's major (e.g., BIOE 451 and BIOE 452, MECH 407 and MECH 408, ELEC 494, etc.) that capstone design course may not count as an elective in the Engineering Design minor. However, a project completed in these major-required courses may count as a second design project for this minor. For example, a student may work on one project in ENGI 120 and ENGI 200 and then a second project in the major-required capstone course, such as CHBE 404. ENGI 120 and ENGI 200 may be used to count toward minor requirements, whereas CHBE 404 would not count toward the minor requirements. However, the projects completed in ENGI 120, ENGI 200, and CHBE 404 could be used to fulfill the design projects requirement. Please see the minor advisor regarding the design projects requirement.

**Policies for the Minor in Engineering Design**

**Admission**

Rice students who are pursuing a B.A. or B.S. degree in the School of Engineering are best prepared to pursue the minor in Engineering Design. Many courses that can be applied towards the minor requirements are open to all Rice students, including those not pursuing the minor in Engineering Design. For ENGI 200 and ENGI 300, students must explain their interest and reasons for taking the course in order to gain instructor permission. Preferential admission will be given to students who indicate they are seeking to complete the minor in Engineering Design.

**Program Restrictions and Exclusions**

Students pursuing the minor in Engineering Design should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

**Transfer Credit**

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Program Transfer Credit Guidelines**

Students pursuing the minor in Engineering Design should be aware of the following program-specific transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Engineering Design website: [http://oedk.rice.edu/minor](http://oedk.rice.edu/minor).

**Opportunities for the Minor in Engineering Design**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) ([summa cum laude](http://oedk.rice.edu/minor), [magna cum laude](http://oedk.rice.edu/minor), and [cum laude](http://oedk.rice.edu/minor)) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Engineering Design website: [http://oedk.rice.edu/minor](http://oedk.rice.edu/minor).

**Engineering Leadership**

**Contact Information**

Engineering Leadership
Abercrombie Lab
713-348-3181

C. Fred Higgs, III
Faculty Director
higgs@rice.edu

Kaz Karwowski
Executive Director
kazimir.karwowski@rice.edu

The mission of the Rice Center for Engineering Leadership (RCEL) is to educate and develop Rice Engineers to become inspiring leaders, exceptional team members, effective communicators, and bold entrepreneurs. RCEL programming enhances traditional undergraduate education by developing skills that are not expressly covered by the traditional curricula from the School of Engineering. Ultimately, the goal of the Certificate in Engineering Leadership is to equip engineering students with the critical technical, communication, and leadership skills necessary to succeed and excel professionally.

The Certificate in Engineering Leadership is designed to familiarize undergraduate students with key leadership concepts and allow them to practice the skills necessary to function effectively in a variety of leadership roles: research, academia, executive management, policy-making, and entrepreneurship. Through coursework, extracurricular activities, internship support, and community events, the Certificate in Engineering Leadership lays a foundation for leadership advancement within 3-5 years of graduation. RCEL programming covers a range of important competency domains, including such topics as creative problem solving, conflict resolution, developing self-awareness, setting goals, project management, oral/written communication, and teamwork.

**Certificate**

- Certificate in Engineering Leadership (p. 384)

Engineering Leadership does not currently offer an academic program at the graduate level.
Faculty Director
C. Fred Higgs, III, John and Ann Doerr Professor of Mechanical Engineering

Executive Director
Kazimir Karwowski

Professor
David Van Kleeck

Lecturers
Jan Hewitt
Kazimir Karwowski
Beata Krupa
Gayle Moran
Beth O’Sullivan
Tina Peterson
Tom Phalen
Germaine Porche
Chuck Roberts
Cesare Wright

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: Courses from various subjects may apply towards this program

Center Description and Code
• Rice Center for Engineering Leadership: RCEL

Undergraduate Certificate Description and Code
• Certificate in Engineering Leadership: CEL

Certificate in Engineering Leadership
Program Learning Outcomes for the Certificate in Engineering Leadership
Upon completing the certificate in Engineering Leadership, students will be able to:

1. Develop and articulate a personal point of view about what leadership means and how it is effectively practiced in engineering environments.
2. Learn how to be valuable team members in engineering environments.
3. Learn how to be capable team leaders in engineering environments.
4. Communicate strategically in engineering and other interpersonal contexts.
5. Increase their self-awareness and confidence about who they are and what they are able to achieve in their professional careers.
6. Position themselves for first jobs that align with their unique strengths and self-directed career ambitions.

Requirements for the Certificate in Engineering Leadership
Students pursuing the certificate in Engineering Leadership must complete:

• A minimum of 6 courses (at least 10 credit hours) to satisfy certificate requirements.
• A Leadership Development Plan.
• An Engineering Internship.
• A Senior Leadership Portfolio and Presentation.
• Each course with a minimum grade of a ’C’ (2.0 grade points) or better.

No credit hours counted toward the student’s major or minor degree requirements can be applied toward the certificate. Only Engineering majors (declared or anticipated) are eligible to receive the certificate.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student’s Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Certificate Requirements

<table>
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Required Courses

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<tr>
<td>ENGI 140</td>
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</tr>
<tr>
<td>ENGI 218 &amp; ENGI 219</td>
<td>ENGINEERING LEADERSHIP LAB I and ENGINEERING LEADERSHIP LAB II</td>
<td>2</td>
</tr>
<tr>
<td>ENGI 315</td>
<td>LEADING TEAMS AND INNOVATION</td>
<td>3</td>
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Engineering Internship

<table>
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<tr>
<th>Code</th>
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<td>ENGI 241</td>
<td>PROFESSIONAL EXCELLENCE FOR ENGINEERS</td>
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Leadership Action Learning or Advanced Lab

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<tr>
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<tr>
<td>or ENGI 318 &amp; ENGI 319</td>
<td>LEADING ENGINEERING LEADERSHIP LAB I and LEADING ENGINEERING LEADERSHIP LAB II</td>
<td>2</td>
</tr>
</tbody>
</table>

Senior Leadership Portfolio and Presentation

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Credit Hours</td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>
Footnotes and Additional Information

1 The Certificate in Engineering Leadership requires all students to participate in a qualifying summer internship, ideally after the sophomore year. To receive credit for the internship experience, students enroll in ENGI 241 Professional Excellence for Engineers.

2 The certificate program culminates in the creation of a comprehensive Leadership Portfolio, which documents the personal, academic, and professional growth of the student over the course of his or her time in the program. Each student must also deliver a final Senior Leadership Presentation that synthesizes and expands upon the information included in the Leadership Portfolio.

Additional Recommended Courses

The following courses are not required to complete the certificate in Engineering Leadership, but are highly recommended:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGI 120</td>
<td>INTRODUCTION TO ENGINEERING DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 128</td>
<td>INTRODUCTION TO ENGINEERING SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 242</td>
<td>COMMUNICATION FOR ENGINEERS: BUILDING A PRACTICAL TOOLBOX</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 303</td>
<td>ENGINEERING ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 320</td>
<td>ETHICS AND ENGINEERING LEADERSHIP</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 428</td>
<td>ENTREPRENEURSHIP INDEPENDENT STUDY</td>
<td>1</td>
</tr>
<tr>
<td>ENGI 505</td>
<td>ENGINEERING PROJECT MANAGEMENT AND ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>BUSI 310</td>
<td>LEADING PEOPLE IN ORGANIZATIONS</td>
<td>3</td>
</tr>
</tbody>
</table>

Policies for the Certificate in Engineering Leadership

Programs and Restrictions

Students pursuing the certificate in Engineering Leadership should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), students may declare their intent to pursue a university certificate only after they have first declared a major.
- No credit hours counted toward a student’s major or minor degree requirements can be applied toward the certificate in Engineering Leadership.
- Only Engineering majors (declared or anticipated) are eligible to declare and receive the certificate.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the certificate in Engineering Leadership should be aware of the following program-specific transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Engineering Leadership website: http://www.rcelconnect.org/

Opportunities for the Certificate in Engineering Leadership

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Engineering Leadership website: http://www.rcelconnect.org/

English

Contact Information

English
http://www.english.rice.edu/
225 Herring Hall
713-348-2666
Rosemary Hennessy
Department Chair
rosemary.hennessy@rice.edu

The English department's undergraduate program offers a broad spectrum of courses, including British and American literature, creative writing, women and gender studies, cultural studies, literary theory, media studies, and film. Beyond gaining a critical appreciation of literature, students also will sharpen their written communication and analytical skills.

The English department's graduate program offers concentrations in all fields of British and American literature and literary theory.

Bachelor's Programs

- Bachelor of Arts (BA) Degree with a Major in English (p. 386)
  - and a Major Concentration in Creative Writing (p. 389)

Master's Program

- Master of Arts (MA) Degree in the field of English*

Doctoral Program

- Doctor of Philosophy (PhD) Degree in the field of English (p. 392)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.
Chair
Rosemary Hennessy

Director of Undergraduate Studies
Scott S. Derrick

Director of Graduate Studies
Helena Michie

Professors
Krista Comer
Terrence Arthur Doody
Rosemary Hennessy
Caroline Levander
Helena Michie
Wesley Abram Morris
Timothy Morton
Kirsten Ostherr
Judith Roof
Meredith Skura
Edward A. Snow
Cary E. Wolfe

Associate Professors
José F. Aranda Jr.
Joseph A. Campana
Amber Dermont
Scott S. Derrick
Sarah Ellenzweig
Betty Joseph
Colleen Lamos
Susan Lurie
Alexander Regier
Nicole Waligora-Davis

Assistant Professors
Emily Houlik-Ritchey
Lacy Johnson
Paul Otremba

Professors Emeriti
Linda P. Driskill
J. Dennis Huston
Susan Wood

Professor in the Practice
Logan Delano Browning

Senior Lecturer
Jill "Thad" Logan

Lecturers
Amanda Johnson
Ian Schimmel

Writer in Residence
Justin C. Cronin

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: ENGL

Department Description and Code
• English: ENGL

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in English: ENGL

Undergraduate Major Concentration Description and Code
• Major Concentration in Creative Writing: ECRW

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in English: ENGL

Bachelor of Arts (BA) Degree with a Major in English

Program Learning Outcomes for the BA Degree with a Major in English
Upon completing the BA degree with a major in English, students will be able to demonstrate:

1. Knowledge of literary genres.
2. Understanding of literature in relation to its historical contexts.
3. Familiarity with non-canonical literary and cultural traditions.
4. Disciplinary-specific methodological, critical, and theoretical training.
5. Critical writing skills in papers of varying length.
6. Disciplinary-specific research knowledge.

Requirements for the BA Degree with a Major in English
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in English must complete:

• A minimum of 12 courses (36 credit hours) to satisfy the major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 8 courses (24 credit hours) taken at the 300-level or above.

Students who are pursuing two majors (i.e., are double majors) and have declared the English major must complete:

• A minimum of 10 courses (30 credit hours) to satisfy major requirements.

• A minimum of 6 courses (18 credit hours) taken at the 300-level or above.

Double majors who drop the other major are required to meet the requirements listed for single majors.

AP course credit is not permitted to count towards the major. The department recommends that all English majors take courses in British and American history and, if they plan to do graduate work, at least 6 credit hours of upper-level coursework in a foreign language.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in English (for single majors)</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in English (for double majors)</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in English</td>
<td>120</td>
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</tbody>
</table>

Degree Requirements

Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 200</td>
<td>CRITICAL READING AND WRITING</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 300</td>
<td>PRACTICES OF LITERARY STUDY: READING METHOD</td>
<td>3</td>
</tr>
</tbody>
</table>

Pre-1900 and Pre-1800 Requirement

Select 3 courses from the Pre-1900 and Pre-1800 Requirement list (see below for course list and additional details regarding the requirement). Courses vary from semester to semester.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 311</td>
<td>TOPICS IN MEDIEVAL LITERATURE AND/OR CULTURE</td>
<td>6-9</td>
</tr>
<tr>
<td>ENGL 314</td>
<td>MEDIEVAL ROMANCE</td>
<td></td>
</tr>
<tr>
<td>ENGL 315</td>
<td>MEDIEVAL CULTURES THROUGH FILM</td>
<td></td>
</tr>
<tr>
<td>ENGL 316 / MDEM 316</td>
<td>CHAUCER</td>
<td></td>
</tr>
<tr>
<td>ENGL 317 / MDEM 317 / SWGS 301</td>
<td>ARTHURIAN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 320</td>
<td>SHAKESPEARE ON FILM</td>
<td></td>
</tr>
<tr>
<td>ENGL 321</td>
<td>EARLY SHAKESPEARE</td>
<td></td>
</tr>
<tr>
<td>ENGL 322</td>
<td>LATE SHAKESPEARE</td>
<td></td>
</tr>
<tr>
<td>ENGL 323</td>
<td>RENAISSANCE DRAMA</td>
<td></td>
</tr>
<tr>
<td>ENGL 326</td>
<td>EARLY MODERN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 328</td>
<td>MILTON</td>
<td></td>
</tr>
<tr>
<td>ENGL 330</td>
<td>ORIGINS OF THE ENGLISH NOVEL</td>
<td></td>
</tr>
<tr>
<td>ENGL 331</td>
<td>TOPICS IN 18TH CENTURY BRITISH LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 332</td>
<td>LITERATURE OF THE BRITISH ENLIGHTENMENT</td>
<td></td>
</tr>
<tr>
<td>ENGL 333</td>
<td>18TH CENTURY BRITISH FICTION</td>
<td></td>
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<tr>
<td>ENGL 360</td>
<td>AMERICAN LITERATURE BEFORE THE CIVIL WAR</td>
<td></td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Double majors who drop the other major are required to meet the requirements listed for single majors.

2 Double majors must complete a total of 3 additional courses (9 credit hours) from ENGL course offerings.

Please Note: The following lists of approved courses can be used to satisfy the requirements of the major. Specific course offerings will vary from semester to semester. Courses not on the list may be taken upon approval of the department's academic advisor.

Pre-1900 and Pre-1800 Requirement

Students must complete a total of 3 courses (9 credit hours) at the 300-level or above in periods before 1900 (Pre-1800 and/or Pre-1900). Of the 3 courses, 2 courses (6 credit hours) must be from the approved Pre-1800 coursework, but only one may be a Shakespearean course. The third required course may be an additional course from the Pre-1800 coursework or an approved Pre-1900 course.

Select 2 (or 3) from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 200</td>
<td>CRITICAL READING AND WRITING</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 300</td>
<td>PRACTICES OF LITERARY STUDY: READING METHOD</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Pre-1900 and Pre-1800 Requirement list</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Noncanonical Fields list (see below for course list).</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Capstone Seminar list (see below for course list).</td>
<td>3</td>
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<tr>
<td></td>
<td>Elective Requirements</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in English (for single majors)</td>
<td>36</td>
</tr>
</tbody>
</table>
ENGL 418  RENAISSANCE DRAMA  
ENGL 419  TOPICS IN SHAKESPEARE  
ENGL 422  18TH CENTURY BRITISH STUDIES  

Pre-1900  
Select up to 1 from the following:  

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ENGL 338</td>
<td>BRITISH ROMANTICISM</td>
<td></td>
</tr>
<tr>
<td>ENGL 339</td>
<td>ROMANTICISM IN RUINS</td>
<td></td>
</tr>
<tr>
<td>ENGL 341</td>
<td>VICTORIAN LITERATURE AND CULTURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 342</td>
<td>SURVEY OF VICTORIAN FICTION</td>
<td></td>
</tr>
<tr>
<td>ENGL 343</td>
<td>JANE AUSTEN'S WORLDS</td>
<td></td>
</tr>
<tr>
<td>ENGL 361</td>
<td>US LITERATURE FROM THE CIVIL WAR TO WWI</td>
<td></td>
</tr>
<tr>
<td>ENGL 441</td>
<td>VICTORIAN STUDIES</td>
<td></td>
</tr>
<tr>
<td>ENGL 461</td>
<td>19TH-CENTURY AMERICAN STUDIES</td>
<td></td>
</tr>
</tbody>
</table>

Noncanonical Fields  
Students must complete 1 course (3 credit hours) at the 200-level or above that focuses on noncanonical traditions, such as gender and sexuality studies, African American, Chicano/a, Asian American, ethnic, global, or diasporic studies.  

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>ENGL 222</td>
<td>THE WORLD AND SOUTH ASIA</td>
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<tr>
<td>ENGL 265</td>
<td>JEWISH-AMERICAN LITERATURE AND CULTURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 267</td>
<td>INTRODUCTION TO AFRICAN AMERICAN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 268</td>
<td>INTRODUCTION TO NATIVE AMERICAN LITERATURE</td>
<td></td>
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<tr>
<td>ENGL 351</td>
<td>THE CITY IN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 354 / SWGS 364</td>
<td>QUEER LITERARY CULTURES</td>
<td></td>
</tr>
<tr>
<td>ENGL 367 / SWGS 367</td>
<td>LITERATURE AND CULTURE OF THE US-MEXICO BORDERLANDS</td>
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</tr>
<tr>
<td>ENGL 369</td>
<td>THE AMERICAN WEST AND ITS OTHERS</td>
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<tr>
<td>ENGL 370</td>
<td>AFRICAN AMERICAN LITERATURE</td>
<td></td>
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<tr>
<td>ENGL 371 / SPPO 354 / SWGS 354</td>
<td>CHICANO/A LITERATURE</td>
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<tr>
<td>ENGL 379</td>
<td>INTRODUCTION TO THIRD WORLD LITERATURE</td>
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<tr>
<td>ENGL 380</td>
<td>CONTEMPORARY ANGLOPHONE LITERATUREs</td>
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<tr>
<td>ENGL 381 / SWGS 327</td>
<td>TOPICS IN WOMEN WRITERS</td>
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</tr>
<tr>
<td>ENGL 382 / SWGS 380</td>
<td>FEMINIST THEORY</td>
<td></td>
</tr>
<tr>
<td>ENGL 393</td>
<td>BLACK MANHATTAN: 1915-1940</td>
<td></td>
</tr>
<tr>
<td>ENGL 398</td>
<td>SLAVERY IN 20TH CENTURY FILM AND FICTION</td>
<td></td>
</tr>
<tr>
<td>ENGL 399</td>
<td>THE BLACK IMAGINARY: 1775-PRESENT</td>
<td></td>
</tr>
<tr>
<td>ENGL 430</td>
<td>EMPIRE AND BRITISH LITERATURE 1700-1950</td>
<td></td>
</tr>
<tr>
<td>ENGL 438</td>
<td>THE GROTESQUE</td>
<td></td>
</tr>
</tbody>
</table>

ENGL 470 / SWGS 453  STUDIES IN AFRICAN AMERICAN LITERATURE  
ENGL 471 / SPO 456  STUDIES IN CHICANO/A LITERATURE  
ENGL 481 / SWGS 407  STUDIES IN FEMINIST LITERARY THEORY  
ENGL 498 / SWGS 430  QUEER THEORY  

Capstone Seminar  
Students must complete 1 course (3 credit hours) at the 400-level that is not a creative writing course. Capstone courses cannot simultaneously serve to fulfill another requirement. Students may, however, take additional capstone courses to fulfill the pre-1900, pre-1800, or noncanonical requirements.  

<table>
<thead>
<tr>
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<th>Title</th>
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<tbody>
<tr>
<td>ENGL 400</td>
<td>SEMINAR FOR MAJORS</td>
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<tr>
<td>ENGL 418</td>
<td>RENAISSANCE DRAMA</td>
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<tr>
<td>ENGL 419</td>
<td>TOPICS IN SHAKESPEARE</td>
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<tr>
<td>ENGL 422</td>
<td>18TH CENTURY BRITISH STUDIES</td>
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<tr>
<td>ENGL 424</td>
<td>20TH CENTURY BRITISH STUDIES</td>
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<tr>
<td>ENGL 430</td>
<td>EMPIRE AND BRITISH LITERATURE 1700-1950</td>
<td></td>
</tr>
<tr>
<td>ENGL 432</td>
<td>TOPICS IN RICHARDSON'S CLARISSA</td>
<td></td>
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<tr>
<td>ENGL 438</td>
<td>THE GROTESQUE</td>
<td></td>
</tr>
<tr>
<td>ENGL 441</td>
<td>VICTORIAN STUDIES</td>
<td></td>
</tr>
<tr>
<td>ENGL 459</td>
<td>TOPICS IN LITERATURE AND ECOLOGY</td>
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<tr>
<td>ENGL 460</td>
<td>TOPICS IN ANGLO-AMERICAN/TRANSATLANTIC LITERATURE AND CULTURE</td>
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<tr>
<td>ENGL 461</td>
<td>19TH-CENTURY AMERICAN STUDIES</td>
<td></td>
</tr>
<tr>
<td>ENGL 462 / SWGS 462</td>
<td>20TH-21ST CENTURY AMERICAN STUDIES</td>
<td></td>
</tr>
<tr>
<td>ENGL 466</td>
<td>STUDIES IN AMERICAN LITERATURE AND CULTURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 470 / SWGS 453</td>
<td>STUDIES IN AFRICAN AMERICAN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 481</td>
<td>STUDIES IN FEMINIST LITERARY THEORY</td>
<td></td>
</tr>
<tr>
<td>ENGL 484</td>
<td>STUDIES IN LITERARY GENRES</td>
<td></td>
</tr>
<tr>
<td>ENGL 485</td>
<td>STUDIES IN MODERN LITERATURE</td>
<td></td>
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<tr>
<td>ENGL 486</td>
<td>STUDIES IN CRITICAL REGIONALISM</td>
<td></td>
</tr>
<tr>
<td>ENGL 497</td>
<td>STUDIES IN LITERATURE AND CULTURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 498 / SWGS 430</td>
<td>QUEER THEORY</td>
<td></td>
</tr>
</tbody>
</table>

Policies for the BA Degree with a Major in English  

Transfer Credit  
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic advisor for more information.
program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in English should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the departmental Director of Undergraduate Studies (and/or the program's official transfer credit advisor) on an individual case-by-case basis.
- The English department does not award Rice equivalent transfer credit for coursework taken at community colleges, online universities, "for-profit" universities, or two-year colleges.

For additional information, please see the English website: http://english.rice.edu/

Opportunities for the BA Degree with a Major in English

Study Abroad Program for English Majors at the University of Exeter

English majors may opt to spend the spring semester of their junior year at the University of Exeter in the U.K. Students planning to do so should complete ENGL 200 and ENGL 300 by the fall semester of their junior year (the semester preceding study abroad). At Exeter, students will take 2 courses or modules (each worth 30 Exeter credits) from Rice's approved list of Exeter Courses.

The approved courses taken abroad will transfer back to Rice and will appear on the Rice transcript as transfer credit. The English department has obtained special transfer credit status for these courses in that the final grades received on the Exeter transcript will be transferred in to Rice and counted in the student's Rice GPA. The 2 Exeter courses will be articulated as ENGL 325 (2 instances of 3 semester credit hours each) with the remaining hours articulated as general TRAN credit.

With department pre-approval, ENGL 325 may additionally count toward elective and field requirements of the major in the following ways:

- The 2 instances of ENGL 325 of 3 semester credit hours each can count as general electives in the English major (as 2 courses at the 300 level), or
- The 2 instances of ENGL 325 may be used, depending on their topical focus, to fulfill up to 2 field distribution requirements of the Major (Pre-1800, Pre-1900, or Noncanonical).

Please refer to the Rice English Department website (http://www.english.rice.edu) for instructions and pre-requisites for applying to the Rice-Exeter program.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Bachelor of Arts (BA) Degree with a Major in English and a Major Concentration in Creative Writing

Program Learning Outcomes for the BA Degree with a Major in English and a Major Concentration in Creative Writing

Upon completing the BA degree with a major in English and a major concentration in Creative Writing, students will be able to:

1. Develop sensitivity to the capacities and achievements of English literary language.
2. Demonstrate an understanding of the depth and breadth of English literary history.
3. Develop skills in making eloquent sentences, paragraphs and essays in English.
4. Be reflective. They will understand the potential gaps in their own viewpoints and arguments, and appreciate viewpoints and arguments different from their own in English literary theory and criticism.
5. Develop skills in producing original works of fictional prose, literary essays, poetry, plays, and/or screenplays in English.

Requirements for the BA Degree with a Major in English and a Major Concentration in Creative Writing

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in English, and a major concentration in Creative Writing, must complete:

- A minimum of 12 courses (36 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 8 courses (24 credit hours) taken at the 300-level or above.
- The requirements for the Major Concentration in Creative Writing.

Students who are pursuing two majors (i.e., are double majors) and have declared a major in English, and a major concentration in Creative Writing, must complete:

- A minimum of 10 courses (33 credit hours) to satisfy major requirements.
- A minimum of 6 courses (18 credit hours) at the 300-level or above.
- The requirements for the Major Concentration in Creative Writing.

Double majors who drop the other major are required to meet the requirements listed for single majors.

All courses with the ENGL subject code and HUMA 101 and HUMA 102 may be counted toward the English major. AP course credit is not permitted to count towards the major. The department recommends that all English majors take courses in British and American history and, if they plan to do graduate work, at least 6 hours of upper-level courses in a foreign language.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.
### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in English and a Major Concentration in Creative Writing (for single majors)</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in English and a Major Concentration in Creative Writing (for double majors)</td>
<td>33</td>
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</table>

### Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>English Core</td>
<td></td>
</tr>
<tr>
<td>ENGL 200</td>
<td>CRITICAL READING AND WRITING</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 300</td>
<td>PRACTICES OF LITERARY STUDY: READING METHODS</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Pre-1900 Requirement</td>
<td></td>
</tr>
<tr>
<td>Select 3 courses from the Pre-1900 Requirement list (see below for course list and additional details regarding the requirement).</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Noncanonical Fields</td>
<td></td>
</tr>
<tr>
<td>Select 1 course from the Noncanonical Fields list (see below for course list).</td>
<td>3</td>
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</tr>
<tr>
<td></td>
<td>Capstone Seminar</td>
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<tr>
<td>Select 1 course from the Capstone Seminar list (see below for course list).</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Major Concentration in Creative Writing</td>
<td>12</td>
</tr>
<tr>
<td>Select 4 courses from the Requirements for the Major Concentration in Creative Writing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electives Requirement</td>
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</tr>
<tr>
<td>Students must complete 1 additional course from departmental (ENGL) course offerings (single majors only).</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours for the Major in English and a Major Concentration in Creative Writing (for single majors)</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours for the Major in English and a Major Concentration in Creative Writing (for double majors)</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Additional Credit Hours to Complete BA Degree Requirements</td>
<td>24-27</td>
</tr>
<tr>
<td></td>
<td>University Graduation Requirements (p. 25)</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>120</td>
</tr>
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</table>

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Double majors who drop the other major are required to meet the requirements listed for single majors.

2 Specific course offerings will vary from semester to semester.

3 Courses in this category focus on noncanonical traditions, such as courses in gender and sexuality studies or on African American, Chicano/a, Asian American, ethnic, global, and diasporic writers.

4 May not be a creative writing course. Capstone courses cannot simultaneously serve to fulfill another requirement.

### Pre-1900 and Pre-1800 Requirement

Students must complete a total of 3 courses (9 credit hours) at the 300-level or above in periods before 1900 (Pre-1800 and/or Pre-1900). Of the 3 courses, 2 courses (6 credit hours) must be from the approved Pre-1800 coursework, but only one may be a Shakespearean course. The third required course may be an additional course from the Pre-1800 coursework or an approved Pre-1900 course.

### Pre-1800

Select 2 (or 3) from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 311</td>
<td>TOPICS IN MEDIEVAL LITERATURE AND/ OR CULTURE</td>
<td>6-9</td>
</tr>
<tr>
<td>ENGL 314</td>
<td>MEDIEVAL ROMANCE</td>
<td></td>
</tr>
<tr>
<td>or MDEM 311</td>
<td>MEDIEVAL ROMANCE</td>
<td></td>
</tr>
<tr>
<td>ENGL 315</td>
<td>MEDIEVAL CULTURES THROUGH FILM</td>
<td></td>
</tr>
<tr>
<td>ENGL 316</td>
<td>CHAUCER</td>
<td></td>
</tr>
<tr>
<td>or MDEM 316</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL 317</td>
<td>ARTHURIAN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>or MDEM 317</td>
<td>or SWGS 301</td>
<td></td>
</tr>
<tr>
<td>ENGL 320</td>
<td>SHAKESPEARE ON FILM</td>
<td></td>
</tr>
<tr>
<td>ENGL 321</td>
<td>EARLY SHAKESPEARE</td>
<td></td>
</tr>
<tr>
<td>ENGL 322</td>
<td>LATE SHAKESPEARE</td>
<td></td>
</tr>
<tr>
<td>ENGL 323</td>
<td>RENAISSANCE DRAMA</td>
<td></td>
</tr>
<tr>
<td>ENGL 326</td>
<td>EARLY MODERN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 328</td>
<td>MILTON</td>
<td></td>
</tr>
<tr>
<td>ENGL 330</td>
<td>ORIGINS OF THE ENGLISH NOVEL</td>
<td></td>
</tr>
<tr>
<td>ENGL 331</td>
<td>TOPICS IN 18TH CENTURY BRITISH LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 332</td>
<td>LITERATURE OF THE BRITISH ENLIGHTENMENT</td>
<td></td>
</tr>
<tr>
<td>ENGL 333</td>
<td>18TH CENTURY BRITISH FICTION</td>
<td></td>
</tr>
<tr>
<td>ENGL 360</td>
<td>AMERICAN LITERATURE BEFORE THE CIVIL WAR</td>
<td></td>
</tr>
<tr>
<td>ENGL 418</td>
<td>RENAISSANCE DRAMA</td>
<td></td>
</tr>
<tr>
<td>ENGL 419</td>
<td>TOPICS IN SHAKESPEARE</td>
<td></td>
</tr>
<tr>
<td>ENGL 422</td>
<td>18TH CENTURY BRITISH STUDIES</td>
<td></td>
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</table>

### Pre-1900

Select up to 1 from the following:

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>ENGL 338</td>
<td>BRITISH ROMANTICISM</td>
<td>0-3</td>
</tr>
<tr>
<td>ENGL 339</td>
<td>ROMANTICISM IN RUINS</td>
<td></td>
</tr>
<tr>
<td>ENGL 341</td>
<td>VICTORIAN LITERATURE AND CULTURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 342</td>
<td>SURVEY OF VICTORIAN FICTION</td>
<td></td>
</tr>
<tr>
<td>ENGL 343</td>
<td>JANE AUSTEN’S WORLDS</td>
<td></td>
</tr>
<tr>
<td>ENGL 361</td>
<td>US LITERATURE FROM THE CIVIL WAR TO WWI</td>
<td></td>
</tr>
<tr>
<td>ENGL 441</td>
<td>VICTORIAN STUDIES</td>
<td></td>
</tr>
<tr>
<td>ENGL 461</td>
<td>19TH-CENTURY AMERICAN STUDIES</td>
<td></td>
</tr>
</tbody>
</table>

### Noncanonical Fields

Students must complete 1 course (3 credit hours) at the 200-level or above in a course that focuses on noncanonical traditions, such as courses in gender and sexuality studies or on African American, Chicano/a, Asian American, ethnic, global, and diasporic writers.
### Major Concentration: Creative Writing

Students must complete a minimum of 4 courses (12-13 credit hours) from departmental (ENGL) course offerings with the creative writing designation. Of these 4 courses, students must complete at least 2 courses (6-7 credit hours) at the 300-level or above, and at least 1 course (3-4 credit hours) at the 400-level or above. The remaining required course can be selected from any of the approved Creative Writing coursework.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>ENGL 222</td>
<td>THE WORLD AND SOUTH ASIA</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 265</td>
<td>JEWISH-AMERICAN LITERATURE AND CULTURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 267</td>
<td>INTRODUCTION TO AFRICAN AMERICAN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 268</td>
<td>INTRODUCTION TO NATIVE AMERICAN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 351</td>
<td>THE CITY IN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 354 / SWGS 364</td>
<td>QUEER LITERARY CULTURES</td>
<td></td>
</tr>
<tr>
<td>ENGL 367 / SWGS 367</td>
<td>LITERATURE AND CULTURE OF THE US- MEXICO BORDERLANDS</td>
<td></td>
</tr>
<tr>
<td>ENGL 369</td>
<td>THE AMERICAN WEST AND ITS OTHERS</td>
<td></td>
</tr>
<tr>
<td>ENGL 370</td>
<td>AFRICAN AMERICAN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 371 / SPPO 354 / SWGS 354</td>
<td>CHICANO/A LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 379</td>
<td>INTRODUCTION TO THIRD WORLD LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 380</td>
<td>CONTEMPORARY ANGLOPHONE LITERATUREES</td>
<td></td>
</tr>
<tr>
<td>ENGL 381 / SWGS 327</td>
<td>TOPICS IN WOMEN WRITERS</td>
<td></td>
</tr>
<tr>
<td>ENGL 382 / SWGS 380</td>
<td>FEMINIST THEORY</td>
<td></td>
</tr>
<tr>
<td>ENGL 393</td>
<td>BLACK MANHATTAN: 1915-1940</td>
<td></td>
</tr>
<tr>
<td>ENGL 398</td>
<td>SLAVERY IN 20TH CENTURY FILM AND FICTION</td>
<td></td>
</tr>
<tr>
<td>ENGL 399</td>
<td>THE BLACK IMAGINARY: 1775-PRESENT</td>
<td></td>
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<tr>
<td>ENGL 430</td>
<td>EMPIRE AND BRITISH LITERATURE 1700-1950</td>
<td></td>
</tr>
<tr>
<td>ENGL 438</td>
<td>THE GROTESQUE</td>
<td></td>
</tr>
<tr>
<td>ENGL 470 / SWGS 453</td>
<td>STUDIES IN AFRICAN AMERICAN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 471 / SPPO 456</td>
<td>STUDIES IN CHICANO/A LITERATURE</td>
<td></td>
</tr>
<tr>
<td>ENGL 481 / SWGS 407</td>
<td>STUDIES IN FEMINIST LITERARY THEORY</td>
<td></td>
</tr>
<tr>
<td>ENGL 498 / SWGS 430</td>
<td>QUEER THEORY</td>
<td></td>
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</table>

### Capstone Seminar

Students must complete 1 course (3 credit hours) at the 400-level that is not a creative writing course. Capstone courses cannot simultaneously serve to fulfill another requirement.

<table>
<thead>
<tr>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>ENGL 400</td>
<td>SEMINAR FOR MAJORS</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 418</td>
<td>RENAISSANCE DRAMA</td>
<td></td>
</tr>
<tr>
<td>ENGL 419</td>
<td>TOPICS IN SHAKESPEARE</td>
<td></td>
</tr>
<tr>
<td>ENGL 422</td>
<td>18TH CENTURY BRITISH STUDIES</td>
<td></td>
</tr>
<tr>
<td>ENGL 424</td>
<td>20TH CENTURY BRITISH STUDIES</td>
<td></td>
</tr>
<tr>
<td>ENGL 430</td>
<td>EMPIRE AND BRITISH LITERATURE 1700-1950</td>
<td></td>
</tr>
<tr>
<td>ENGL 432</td>
<td>TOPICS IN RICHARDSON'S CLARISSA</td>
<td></td>
</tr>
<tr>
<td>ENGL 438</td>
<td>THE GROTESQUE</td>
<td></td>
</tr>
<tr>
<td>ENGL 441</td>
<td>VICTORIAN STUDIES</td>
<td></td>
</tr>
<tr>
<td>ENGL 459</td>
<td>TOPICS IN LITERATURE AND ECOLOGY</td>
<td></td>
</tr>
<tr>
<td>ENGL 460</td>
<td>TOPICS IN ANGLO-AMERICAN/ TRANSATLANTIC LITERATURE AND CULTURE</td>
<td></td>
</tr>
</tbody>
</table>
Policies for the BA Degree with a Major in English and a Major Concentration in Creative Writing

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 47). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://www.english.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in English should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the departmental Director of Undergraduate Studies (and/or the program's official transfer credit advisor) on an individual case-by-case basis.
- The English department does not award Rice equivalent course transfer credit for coursework taken at community colleges, online universities, “for-profit” universities, or two-year colleges.

For additional information, please see the English website: http://english.rice.edu/

Opportunities for the BA Degree with a Major in English and a Major Concentration in Creative Writing

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Study Abroad Program for English Majors at the University of Exeter

English majors may opt to spend the spring semester of their junior year at the University of Exeter in the U.K. Students planning to do so should complete ENGL 200 and ENGL 300 by the fall semester of their junior year (the semester preceding study abroad). At Exeter, students will take 2 courses or modules (each worth 30 Exeter credits) from Rice's approved list of Exeter Courses.

The approved courses taken abroad will transfer back to Rice and will appear on the Rice transcript as transfer credit. The English department has obtained special transfer credit status for these courses in that the final grades received on the Exeter transcript will be transferred in to Rice and counted in the student’s Rice GPA. The 2 Exeter courses will be articulated as ENGL 325 (2 instances of 3 semester credit hours each) with the remaining hours articulated as general TRAN credit.

With department pre-approval, ENGL 325 may additionally count toward elective and field requirements of the major in the following ways:

- The 2 instances of ENGL 325 of 3 semester credit hours each can count as general electives in the English major (as 2 courses at the 300 level), or
- The 2 instances of ENGL 325 may be used, depending on their topical focus, to fulfill up to 2 field distribution requirements of the Major (Pre-1800, Pre-1900, or Noncanonical)

Please refer to the Rice English Department website (http://www.english.rice.edu) for instructions and pre-requisites for applying to the Rice-Exeter program.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Doctor of Philosophy (PhD) Degree in the field of English

Program Learning Outcomes for the MA and PhD Degrees in the field of English

Upon completing the MA and PhD degrees in the field of English, students will be able to:

1. Apply advanced knowledge of abilities in literary, cultural, and critical studies, including: critical reading, thinking, and writing; professional methodologies; literary and cultural histories, and theoretical and interdisciplinary perspectives.
2. Demonstrate breadth and depth of knowledge in fields of specialization for research and teaching.
3. Demonstrate the ability to teach literature and culture at the university level.
4. Demonstrate professional level skills in public and oral presentation through participation in symposia, work-in-progress groups, conferences, and in-course presentations.
5. Demonstrate the capacity to create professional-level and ultimately publishable research that makes original contributions to scholarly debates.

Requirements for the MA and PhD Degrees in the field of English

For general university requirements, please see Doctoral Degrees (p. 64). As part of their training, graduate students participate in both the teaching and research activities of the department. Upon entering, students will be assigned to a Program Advisory Committee (PAC), consisting of two faculty members. In consultation with their PAC,
students will design their own individualized program structured by the requirements listed below. For more detailed information, please see the department’s Graduate Handbook found under the Policies tab.

**PhD Degree Program**

To gain admission to PhD candidacy, students must satisfy the first six of the following requirements. To earn a PhD in English, candidates also must complete the last two requirements. Students must:

1. Satisfactorily complete a minimum of 13 graduate courses, of which at least 10 must be graduate seminars. With the approval of the PAC, students may enroll in ENGL 621, either as a traditional directed reading course or in conjunction with a 400-level English course to which a graduate component has been added. ENGL 621 counts toward the 13 required graduate courses but does not count as a graduate seminar. Students also are encouraged to take graduate courses in other departments related to their areas of interest. These will count toward the 13-course requirement but not usually for distribution.

2. Satisfactorily complete the following three required courses: ENGL 600, ENGL 610, and ENGL 605. These count toward the 13-course requirement.

3. Satisfactorily complete the distribution requirement, which consists of two courses before 1800 and two after 1800. These count toward the 13-course requirement.

4. Satisfactorily complete the teaching requirement by serving twice as a teaching assistant, completing ENGL 510, and teaching at least one lower-level course designed in conjunction with the instructor of ENGL 510. ENGL 510 counts toward the 13-course requirement.

5. Pass a qualifying exam that consists of two qualifying papers, and pass an oral exam. Refer to the department’s Graduate Handbook found under the Policies tab.

6. Complete a dissertation prospectus that defines the topic of the dissertation, the particular thesis that the dissertation hopes to develop about the topic, and the relevance and importance of the dissertation’s thesis debates to the student’s chosen field(s). The dissertation prospectus and a satisfactory draft of a chapter must be approved for the student to advance to candidacy. Refer to english.rice.edu for further details.

7. Complete a dissertation that demonstrates a capacity for independent and original work of high quality.


**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the PhD Degree in the field of English</td>
<td>90</td>
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**Degree Requirements**

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<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Required Courses</td>
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<tr>
<td>ENGL 510</td>
<td>PEDAGOGY SEMINAR</td>
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<tr>
<td>ENGL 600</td>
<td>TOPICS IN LITERARY STUDIES</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 605</td>
<td>THIRD-YEAR WRITING WORKSHOP</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 610</td>
<td>TOPICS IN LITERARY STUDIES PART 2</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 800</td>
<td>PHD RESEARCH AND THESIS</td>
<td>1-9</td>
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**Distribution Requirements**

<table>
<thead>
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<th>Code</th>
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<tr>
<td></td>
<td>Elective Requirements</td>
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<td></td>
<td>5 Additional Courses at the 500-level or above.</td>
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<td></td>
<td>Total Credit Hours Minimum of 90</td>
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</table>

**Footnotes and Additional Information**

1 The distribution requirements consist of two courses before 1800 and two courses after 1800. These four courses count toward the 13-course requirement.

---

**MA Degree Program**

The MA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). The English department does not have an MA program, but offers the MA degree to those PhD students who have achieved candidacy and are in the process of completing the doctorate, and to qualified PhD students who leave the program before completing the doctorate. To receive an MA students must:

- Satisfactorily complete at least 33 hours of graduate work in English at Rice University. Courses must be those that count towards the PhD in English. Students must satisfactorily complete ENGL 600 and distribution requirements for the PhD (see above).
- Satisfactorily complete two teaching assistantships (ENGL 601/ENGL 602) and two research assistantships. These do not count toward the 33-hour requirement.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MA Degree in the field of English</td>
<td>33</td>
</tr>
</tbody>
</table>

**Degree Requirements**

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Required Courses</td>
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</tr>
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<td>ENGL 510</td>
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<td>3</td>
</tr>
<tr>
<td>ENGL 600</td>
<td>TOPICS IN LITERARY STUDIES</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 605</td>
<td>THIRD-YEAR WRITING WORKSHOP</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 610</td>
<td>TOPICS IN LITERARY STUDIES PART 2</td>
<td>3</td>
</tr>
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</table>

**Distribution Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Elective Requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7 Additional Courses at the 500-level or above.</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Minimum of 33</td>
<td></td>
</tr>
</tbody>
</table>

**Footnotes and Additional Information**

1 The distribution requirements consist of two courses before 1800 and two courses after 1800. These four courses count toward the 13-course requirement.
Policies for the PhD Degree in the field of English

Department of English Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Department of English publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/English_Graduate_Handbook.pdf

Financial Support

Financial support depends upon satisfactory progress towards the degree.

For additional information, please see the English website: http://english.rice.edu/

Opportunities for the PhD Degree in the field of English

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this degree.

Environmental Analysis and Decision Making

Contact Information

Environmental Analysis and Decision Making
https://profms.rice.edu/
203 Keck Hall
713-348-3188

Dagmar Beck
Program Director
dkbeck@rice.edu

Janet Braam
Faculty Director
braam@rice.edu

Rice University introduced the Master of Science in Environmental Analysis and Decision Making (MSEADM) degree in fall 2002. This professional master's degree teaches students rigorous methods that are needed by business and governmental organizations to deal with environmental issues. As an interdisciplinary program, it aims to give students the ability to predict environmental problems, not just solve them. It emphasizes core quantitative topics such as statistics, remote sensing, data analysis, and modeling. In addition, it teaches laboratory and computer skills and allows students to focus their education by taking electives in relevant fields.

The degree in Environmental Analysis and Decision Making is 1 of 5 tracks in the professional master's (PSM) program at Rice University housed in the Wiess School of Natural Sciences. These master's degrees are designed for students seeking to gain further scientific core expertise coupled with enhanced management and communications skills. These degrees instill a level of scholastic proficiency that exceeds that of the bachelor's level, and they create the cross-functional aptitudes needed in modern industry. Skills acquired in this program will allow students to move more easily into management careers in consulting or research and development, design, and marketing of new science-based products.

A coordinated MBA/MSEADM degree is offered in conjunction with the Jesse H. Jones Graduate School of Business.

Environmental Analysis and Decision Making does not currently offer an academic program at the undergraduate level.

Master's Program

• Master of Science in Environmental Analysis and Decision Making (MSEADM) Degree (p. 395)

Coordinated Program

• Master of Business Administration (MBA) Degree / Master of Science in Environmental Analysis and Decision Making (MSEADM) Degree (p. 395)

Director

Evan Siemann

Track Advising Committee

Daniel Cohan
Scott Egan
Michael Kohn
Loren Raun

Professors

Pedro Alvarez
Andrew R. Barron
Phil Bedient
Dale Sawyer

Associate Professors

Daniel Cohan

Professor in the Practice

Jim Blackburn
Loren Raun

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

• Course offerings/subject codes: Courses from various subjects may apply toward the graduate program.

Department Description and Code

• Biosciences: BIOS

Graduate Degree Description and Code

• Master of Science in Environmental Analysis and Decision Making degree: MSEADM
Graduate Degree Program Description and Code

- Degree Program in Environmental Analysis and Decision Making: EADM

Master of Business Administration (MBA) Degree / Master of Science in Environmental Analysis and Decision Making (MSEADM) Degree

Program Learning Outcomes for the MBA/MSEADM Coordinated Degree Program

Upon completing the MBA/MSEADM Coordinated Degree Program, students will:

1. Be able to apply technical, analytical skills, and scientific evaluation methods to help solve problems affecting the environment.
2. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
3. Develop, evaluate, and implement business strategies and operational solutions holistically, effectively integrating management principles across the functional areas both as a leader and a contributor.

Requirements for the MBA/MSEADM Coordinated Degree Program

Students may earn a Master of Science degree from the Weiss School of Natural Sciences Professional Science Master’s (PSM) program in the following fields:

- Bioscience and Health Policy
- Environmental Analysis and Decision Making
- Nanoscale Science
- Space Studies
- Subsurface Geoscience

For the coordinated MBA/Master of Science degree from the professional master’s program, students must complete:

- a minimum of 75 credit hours of coursework, including:
  - a minimum of 30 credit hours in a science discipline
  - a minimum of 45 credit hours of business course work
- Satisfy all MBA core curriculum requirements
- Satisfy all PSM track-specific requirements
- Complete a summer internship

Students plan their course schedules in consultation with the Weiss School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degree candidates can fulfill requirements for both degrees within 3 academic years.

Policies for the MBA/MSEADM Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Environmental Analysis and Decision Making website: https://profms.rice.edu/

Opportunities for the MBA/MSEADM Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Environmental Analysis and Decision Making website: https://profms.rice.edu/

Master of Science in Environmental Analysis and Decision Making (MSEADM) Degree

Program Learning Outcomes for the MSEADM Degree

Upon completing the MSEADM Degree, students will:

1. Be able to apply technical and analytical skills and scientific evaluation methods to help solve problems affecting the environment.
2. Demonstrate written, oral, and visual communication strategies required to work effectively across science, business, and government.
3. Possess business and management skills and professional ethics to be effective in a business environment.

Requirements for the MSEADM Degree

The MSEADM degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MSEADM degree must complete:

- A minimum of 14 courses (39 credit hours) to satisfy degree requirements.
- A 3-6 month internship. At the conclusion of their internship, students must present a summary of their internship project in both oral and written form as part of the professional master’s seminar.
- A minimum of 30 credit hours at the 500-level or above.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the PSM (Professional Science Masters) program director and the MSEADM advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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# Degree Requirements

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<td><strong>Core Requirements</strong></td>
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<td><strong>Required Science Core Courses</strong></td>
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<tr>
<td>CEVE 501</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE</td>
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<tr>
<td>or CEVE 510</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
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<tr>
<td>EBI 570</td>
<td>ECOSYSTEM MANAGEMENT</td>
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<td>STAT 685</td>
<td>ENVIRONMENTAL STATISTICS AND DECISION MAKING</td>
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<td></td>
<td><strong>Required Cohort Courses</strong></td>
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<tr>
<td>NSCI 501</td>
<td>PROFESSIONAL MASTER’S SEMINAR (2 semesters required, 1st semester)</td>
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<td>NSCI 501</td>
<td>PROFESSIONAL MASTER’S SEMINAR (2 semesters required, 2nd semester)</td>
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<td>NSCI 511</td>
<td>SCIENCE POLICY, AND ETHICS</td>
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<td>NSCI 512</td>
<td>PROFESSIONAL MASTER’S PROJECT</td>
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<td>NSCI 610 / ENGI 610</td>
<td>MANAGEMENT FOR SCIENCE AND ENGINEERING</td>
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<tr>
<td></td>
<td><strong>Three to Six Month Internship</strong></td>
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</tr>
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<td></td>
<td>A three to six month internship is required.</td>
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<td><strong>Elective Requirements</strong></td>
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<td>Select a minimum of 7 courses as electives from the 3 focus areas listed below:</td>
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<tr>
<td></td>
<td><strong>Environmental Sustainability</strong></td>
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<tr>
<td>CEVE 501</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE</td>
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<tr>
<td>CEVE 502</td>
<td>SUSTAINABLE DESIGN</td>
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<tr>
<td>CEVE 507</td>
<td>ENERGY AND THE ENVIRONMENT</td>
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<tr>
<td>CEVE 508</td>
<td>INTRODUCTION TO AIR POLLUTION CONTROL</td>
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<tr>
<td>CEVE 509</td>
<td>HYDROLOGY AND WATER RESOURCES ENGINEERING</td>
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<tr>
<td>CEVE 511</td>
<td>ATMOSPHERIC PROCESSES</td>
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<td>CEVE 512</td>
<td>ADVANCED HYDROLOGY AND HYDRAULICS</td>
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<tr>
<td>CEVE 520</td>
<td>ENVIRONMENTAL REMEDIATION RESTORATION</td>
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<tr>
<td>CEVE 534</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
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<tr>
<td>CEVE 536</td>
<td>ENVIRONMENTAL BIOTECHNOLOGY AND BIOREMEDATION</td>
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<tr>
<td>CEVE 550</td>
<td>ENVIRONMENTAL ORGANIC CHEMISTRY</td>
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<tr>
<td>EBI 329</td>
<td>ANIMAL BIOLOGY AND PHYSIOLOGY</td>
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<tr>
<td>EBI 336</td>
<td>PLANT DIVERSITY</td>
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<td>EBI 523</td>
<td>CONSERVATION BIOLOGY</td>
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<td>EBI 524</td>
<td>CONSERVATION BIOLOGY LAB</td>
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<td>EBI 525</td>
<td>ECOLOGY</td>
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<td>EBI 540</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
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<td>EBI 560</td>
<td>ENVIRONMENTAL IMPACT STATEMENTS AND PERMITTING</td>
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<td>EBI 563</td>
<td>TOPICS IN ECOLOGY</td>
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<td>EBI 566</td>
<td>APPLIED PHYCOLOGY</td>
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<td>EBI 568</td>
<td>TOPICS IN BIOLOGICAL DIVERSITY</td>
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<td>EBI 569</td>
<td>CORE COURSE IN ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
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<td>EBI 579</td>
<td>LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA</td>
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<tr>
<td>EBI 580</td>
<td>SUSTAINABILITY DEVELOPMENT AND REPORTING</td>
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<tr>
<td>ESCI 618</td>
<td>QUANTITATIVE HYDROGEOLOGY</td>
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<tr>
<td>ESCI 650</td>
<td>REMOTE SENSING</td>
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<tr>
<td>ESCI 654</td>
<td>GEOGRAPHIC INFORMATION SCIENCE</td>
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<tr>
<td>GLHT 411</td>
<td>INTEGRATED APPROACHES TO SUSTAINABLE DEVELOPMENT</td>
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<tr>
<td>STAT 684 / CEVE 684</td>
<td>ENVIRONMENTAL RISK ASSESSMENT &amp; HUMAN HEALTH</td>
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<tr>
<td></td>
<td><strong>Management and Policy</strong></td>
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<tr>
<td>CEVE 505 / ENGI 505</td>
<td>ENGINEERING PROJECT MANAGEMENT AND ECONOMICS</td>
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<td>CEVE 528 / ENGI 528</td>
<td>ENGINEERING ECONOMICS</td>
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<td>CEVE 529 / ENGI 529</td>
<td>ETHICS AND ENGINEERING LEADERSHIP</td>
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<td>ECON 437 / ENST 437</td>
<td>ENERGY ECONOMICS</td>
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<td>ECON 480 / ENST 480</td>
<td>ENVIRONMENTAL ECONOMICS</td>
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<tr>
<td>ESCI 617</td>
<td>PETROLEUM INDUSTRY ECONOMICS AND MANAGEMENT</td>
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<tr>
<td>GLBL 543</td>
<td>ENERGY POLICY</td>
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<tr>
<td>MGMT 609</td>
<td>MANAGING ENERGY TRANSITIONS</td>
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<td>MGMT 610</td>
<td>FUNDAMENTALS OF THE ENERGY INDUSTRY</td>
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<tr>
<td>MGMT 661</td>
<td>INTERNATIONAL BUSINESS LAW</td>
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<td>MGMT 670</td>
<td>OPERATIONS STRATEGY</td>
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<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
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<tr>
<td>MGMT 721</td>
<td>BUSINESS LAW</td>
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<td></td>
<td><strong>Quantitative Decision-Making</strong></td>
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<tr>
<td>CEVE 313 / STAT 313</td>
<td>UNCERTAINTY AND RISK IN URBAN INFRASTRUCTURES</td>
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<tr>
<td>CEVE 528 / ENGI 528</td>
<td>ENGINEERING ECONOMICS</td>
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<td>ECON 480 / ENST 480</td>
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<td>ESCI 654</td>
<td>GEOGRAPHIC INFORMATION SCIENCE</td>
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<tr>
<td>STAT 553</td>
<td>BIOSTATISTICS</td>
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<td>STAT 605</td>
<td>R FOR DATA SCIENCE</td>
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<td>STAT 606</td>
<td>SAS STATISTICAL PROGRAMMING</td>
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<td>STAT 615</td>
<td>REGRESSION AND LINEAR MODELS</td>
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<tr>
<td>STAT 684 / CEVE 684</td>
<td>ENVIRONMENTAL RISK ASSESSMENT &amp; HUMAN HEALTH</td>
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</tr>
<tr>
<td></td>
<td><strong>Total Credit Hours</strong></td>
<td>39</td>
</tr>
</tbody>
</table>
Footnotes and Additional Information

1 At the conclusion of the internship, students must present a summary of their internship project in both oral and written form as part of the professional master’s seminar. Part-time students who already work in their area of study may fulfill the internship requirements by working on an approved project with their current employer.

2 3 additional courses (9 credit hours) must be selected from one of the focus areas listed. At least 1 course (3 credit hours) must be completed from CEVE, EBIO, and STAT course offerings for a total of 3 courses (9 credit hours). At least 1 course (3 credit hours) must be completed from the Management and Policy focus area.

3 Only 1 of these 2 courses may be counted toward the degree.

Policies for the MSEADM Degree

Environmental Analysis and Decision Making Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Environmental Analysis and Decision Making publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Professional_Science_Masters_Handbook.pdf

Admission
Admission to graduate study in Environmental Analysis and Decision Making is open to qualified students holding a bachelor’s degree in a related field that includes general biology, chemistry, calculus, differential equations, and linear algebra. Department faculty evaluate the previous academic record and credentials of each applicant individually.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

For additional information, please see the Environmental Analysis and Decision Making website: https://profms.rice.edu/

Opportunities for the MSEADM Degree

Fifth-Year MSEADM Degree Option for Rice Undergraduate Students
Rice undergraduate students have an option to pursue the MSEADM degree by adding an additional fifth year to their four undergraduate years of science studies. Advanced Rice students in good academic standing may apply to the graduate program during their junior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking required core courses of the Environmental Analysis and Decision Making program during their senior year. A plan of study based on their particular focus area will need to be approved by the PSM (Professional Science Masters) program director and the MSEADM advisor.

As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for their bachelor’s degree and the MSEADM degree independently of each other (i.e., no course may be counted toward the fulfillment of both degrees).
• should be aware that there could be financial aid implications, if the conversion of undergraduate coursework to that of graduate-level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).

For additional information, please see the Environmental Analysis and Decision Making website: https://profms.rice.edu/

Environmental Science

Contact Information
Environmental Science
http://earthscience.rice.edu/academics/undergraduate-program/
713-348-4880

Andre Droxler
Undergraduate Advisor
andre@rice.edu

Juli Morgan
Undergraduate Advisor
morganj@rice.edu

Environmental Science is an interdisciplinary field that explores the interconnection between humans and the natural environment. Modern environmental issues reflect the complex interactions of natural and social systems at global and local scales, and the resulting impacts on the Earth have led many to ask whether humankind has entered into a new epoch in the planet’s history, one in which humans are now a key driver in the change of Earth systems. The Environmental Science program fosters the critical, integrative thinking required to better understand the complexities of this human-nature relationship and the resultant scales of impact, and to assess and develop solutions that meet intergenerational human needs without compromising the natural systems upon which humans depend.

The Environmental Science program offers a major in Environmental Science for both the BA and BS degrees and several interdisciplinary courses for students interested in broadening their understanding of environmental issues. These courses often are team-taught by faculty from various areas of study.

Students desiring a major with an environmental emphasis have multiple options:

• the aforementioned environmental science major (through the pursuit of the BA or BS degree)
• environmental engineering (a major concentration in the Chemical and Biomolecular Engineering major)
• environmental engineering (a major concentration in the Civil and Environmental Engineering major)
• environmental earth science track (a track in the BS degree with a major in Earth Science)

Students seeking information or advice on the Environmental Science major should contact:

• Dr. Andre Droxler (andre@rice.edu) for the major concentration in Earth Science, or
• Dr. Evan Siemann (siemann@rice.edu) for the major concentration in Ecology and Evolutionary Biology.
Bachelor’s Programs

• Bachelor of Arts (BA) Degree with a Major in Environmental Science
  • and a Major Concentration in Earth Science (p. 398)
  • and a Major Concentration in Ecology and Evolutionary Biology (p. 401)
• Bachelor of Science (BS) Degree with a Major in Environmental Science
  • and a Major Concentration in Earth Science (p. 404)
  • and a Major Concentration in Ecology and Evolutionary Biology (p. 407)

Environmental Science does not currently offer an academic program at the graduate level.

Environmental Science Major Advisors
Andre Droxler
Evan Siemann

Descriptions and Codes Legend

Note: Internally the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

• Course offerings/subject code: Courses from various subjects may apply toward the degree

Department Description and Code

• Environmental Studies: ENST

Undergraduate Degree Descriptions and Codes

• Bachelor of Arts degree: BA
• Bachelor of Science degree: BS

Undergraduate Major Description and Code

• Major in Environmental Science (both the BA and BS Degrees): ENVS

Undergraduate Major Concentration Descriptions and Codes

• Major concentration in Earth Science (both the BA and BS Degrees): ESEA
• Major concentration in Ecology and Evolutionary Biology (both the BA and BS Degrees): ESEC

Bachelor of Arts (BA) Degree with a Major in Environmental Science and a Major Concentration in Earth Science

Program Learning Outcomes for the BA Degree with a Major in Environmental Science

Upon completing the BA degree with a major in Environmental Science, students will be able to:

1. Demonstrate foundational knowledge in the natural sciences that is fundamental to the Environmental Sciences. This understanding should be adequate to support the incorporation of environmental science knowledge into the study and practice of a field other than environmental science.

2. Integrate knowledge of natural and applied sciences to understand complex natural systems and cycles.

3. Synthesize knowledge from natural sciences and engineering and understand how it applies to the study of the environment.

4. Understand environmental issues from a scientific perspective and be able to solve issues using a variety of interdisciplinary perspectives (e.g., social sciences, economics, humanities, and/or architecture).

Requirements for the BA Degree with a Major in Environmental Science

For general university requirements, see Graduation Requirements (p. 25).

Students pursuing the BA degree with a major in Environmental Science must complete:

• A minimum of 22-24 courses (a minimum of 62-64 credit hours) depending on course selection to satisfy major requirements.
• A minimum of 122-124 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 4-6 courses (a minimum of 12-18 credit hours, depending on declared major concentration) taken at the 300-level or above.
• The requirements of a major concentration. When students declare the major (p. 12) in Environmental Science, students must additionally identify and declare one of two major concentrations, either in:

  • Earth Science (p. 400), or
  • Ecology and Evolutionary Biology (p. 403)

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

Environmental science is an interdisciplinary major that addresses environmental issues in the context of what we know about earth, ecology, and society. In addition to its science core, the major also seeks to provide students with some appreciation of social, cultural, and policy dimensions of environmental issues.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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<th>Credit Hours</th>
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<td>Total Credit Hours Required for the BA Degree with a Major in Environmental Science</td>
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2017-2018 General Announcements
# Degree Requirements

## Core Requirements

### Foundation Coursework

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<tr>
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<td>INTRODUCTORY BIOLOGY</td>
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<td>EBIO 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
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<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
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<td>&amp; CHEM 123</td>
<td>and GENERAL CHEMISTRY LABORATORY I</td>
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<tr>
<td>CHEM 122</td>
<td>GENERAL CHEMISTRY II</td>
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<tr>
<td>&amp; CHEM 124</td>
<td>and GENERAL CHEMISTRY LABORATORY II</td>
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<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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<td>or MATH 111</td>
<td>CALCULUS: DIFFERENTIATION AND ITS</td>
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<td>APPLICATIONS</td>
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<td>SINGLE VARIABLE CALCULUS II</td>
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<td>or MATH 112</td>
<td>CALCULUS: INTEGRATION AND ITS APPLICATIONS</td>
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<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS</td>
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<tr>
<td>or STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
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## Core Courses

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<tr>
<td>ARCH 105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESCI 115</td>
<td>INTRODUCTION TO THE EARTH</td>
<td>4</td>
</tr>
</tbody>
</table>

### Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 107</td>
<td>OCEANS AND GLOBAL CHANGE</td>
<td>3</td>
</tr>
<tr>
<td>ESCI 109</td>
<td>OCEANOGRAPHY</td>
<td></td>
</tr>
<tr>
<td>ESCI 201</td>
<td>THE SCIENCE BEHIND EARTH GLOBAL WARMING AND CLIMATE CHANGE</td>
<td>2</td>
</tr>
<tr>
<td>ENST 201</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBIO 213</td>
<td>INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
<td>2</td>
</tr>
<tr>
<td>EBIO 325</td>
<td>ECOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>ENST 4XX</td>
<td>SEMINAR: Topics in Environmental Science</td>
<td>3</td>
</tr>
</tbody>
</table>

## Field Experience

### Select 1-2 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIO 306</td>
<td>INDEPENDENT RESEARCH FOR ECOLOGY &amp; EVOLUTIONARY BIOLOGY UNDERGRADUATES</td>
<td>2-3</td>
</tr>
<tr>
<td>EBIO 316</td>
<td>LAB MODULE IN ECOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 317</td>
<td>LAB MODULE IN BEHAVIOR</td>
<td></td>
</tr>
<tr>
<td>EBIO 319</td>
<td>TROPICAL FIELD BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 320</td>
<td>ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY</td>
<td>2</td>
</tr>
<tr>
<td>EBIO 324</td>
<td>CONSERVATION BIOLOGY LAB</td>
<td></td>
</tr>
<tr>
<td>EBIO 327</td>
<td>BIOLOGICAL DIVERSITY</td>
<td></td>
</tr>
<tr>
<td>EBIO 330</td>
<td>INSECT BIOLOGY LAB</td>
<td></td>
</tr>
<tr>
<td>EBIO 337</td>
<td>FIELD BIRD BIOLOGY LAB</td>
<td></td>
</tr>
<tr>
<td>ENST 379</td>
<td>LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA</td>
<td></td>
</tr>
<tr>
<td>EBIO 379</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESCI 103</td>
<td>FIELD TRIPS FOR THE EARTH</td>
<td></td>
</tr>
<tr>
<td>ESCI 334</td>
<td>GEOLOGICAL TECHNIQUES</td>
<td></td>
</tr>
<tr>
<td>ESCI 380</td>
<td>VISUALIZING NATURE</td>
<td></td>
</tr>
<tr>
<td>FOTO 390</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESCI 390</td>
<td>GEOLOGY FIELD CAMP</td>
<td></td>
</tr>
</tbody>
</table>

## Major Concentration

Select 1 from the following Major Concentrations (see below for Major Concentration requirements):

- Earth Science
- Ecology and Evolutionary Biology

### Advanced Electives

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 348</td>
<td>ANTHROPOLOGIES OF NATURE</td>
<td></td>
</tr>
<tr>
<td>ANTH 381</td>
<td>MEDICAL ANTHROPOLOGY</td>
<td></td>
</tr>
<tr>
<td>ENST 302</td>
<td>ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE</td>
<td></td>
</tr>
<tr>
<td>ENST 332</td>
<td>THE SOCIAL LIFE OF CLEAN ENERGY</td>
<td></td>
</tr>
<tr>
<td>ESCI 367</td>
<td>ENVIRONMENTAL SOCIOLGY</td>
<td></td>
</tr>
<tr>
<td>ENST 437</td>
<td>ENERGY ECONOMICS</td>
<td></td>
</tr>
<tr>
<td>ENST 480</td>
<td>ENVIRONMENTAL AND ENERGY ECONOMICS</td>
<td></td>
</tr>
<tr>
<td>POLI 331</td>
<td>ENVIRONMENTAL POLITICS AND POLICY</td>
<td></td>
</tr>
<tr>
<td>POLI 332</td>
<td>URBAN POLITICS</td>
<td></td>
</tr>
<tr>
<td>POLI 362</td>
<td>COMPARATIVE URBAN POLITICS AND POLICY</td>
<td></td>
</tr>
<tr>
<td>SOCI 313</td>
<td>DEMOGRAPHY</td>
<td></td>
</tr>
<tr>
<td>SOCI 423</td>
<td>SOCIOLOGY OF FOOD</td>
<td></td>
</tr>
</tbody>
</table>

## Social Sciences

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 358</td>
<td>CONSUMPTION AND CONSUMERISM</td>
<td></td>
</tr>
<tr>
<td>ENGL 367</td>
<td>LITERATURE AND CULTURE OF THE US-MEXICO BORDERLANDS</td>
<td>2</td>
</tr>
<tr>
<td>ENST 202</td>
<td>CULTURE, ENERGY, AND THE ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES</td>
<td>3</td>
</tr>
<tr>
<td>ENST 313</td>
<td>SUSTAINABLE DESIGN</td>
<td></td>
</tr>
<tr>
<td>ARCH 313</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENST 322</td>
<td>CASE STUDIES IN SUSTAINABILITY: THE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>REGENERATIVE REPOSITIONING OF NEW OR EXISING RICE CAMPUS BU</td>
<td>3</td>
</tr>
<tr>
<td>ENST 368</td>
<td>LITERATURE AND THE ENVIRONMENT</td>
<td></td>
</tr>
<tr>
<td>ENGL 368</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL 459</td>
<td>TOPICS IN LITERATURE AND ECOLOGY</td>
<td></td>
</tr>
<tr>
<td>HIST 376</td>
<td>NATURAL DISASTERS IN THE CARIBBEAN</td>
<td></td>
</tr>
<tr>
<td>HIST 425</td>
<td>20TH CENTURY AMERICAN CONSERVATION MOVEMENT</td>
<td></td>
</tr>
</tbody>
</table>

## Humanities and Architecture

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 381</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL 391</td>
<td>EARTH SCIENCE FIELD EXPERIENCE</td>
<td></td>
</tr>
<tr>
<td>FWIS 187</td>
<td>EXPLORING THE SCIENCE AND HISTORY OF HOUSTON'S BAYOUS</td>
<td>3</td>
</tr>
</tbody>
</table>

## Natural Sciences and Engineering

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 302</td>
<td>SUSTAINABLE DESIGN</td>
<td></td>
</tr>
<tr>
<td>ENGI 302</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEVE 308</td>
<td>INTRODUCTION TO AIR POLLUTION CONTROL</td>
<td></td>
</tr>
</tbody>
</table>

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2017-2018 General Announcements
Bachelor of Arts (BA) Degree with a Major in Environmental Science and a Major Concentration in Earth Science

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 310</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>CEVE 401</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB</td>
<td></td>
</tr>
<tr>
<td>CEVE 404</td>
<td>ATMOSPHERIC PARTICULATE MATTER</td>
<td></td>
</tr>
<tr>
<td>CEVE 411</td>
<td>ATMOSPHERIC PROCESSES</td>
<td></td>
</tr>
<tr>
<td>CEVE 412</td>
<td>HYDROLOGY AND WATER RESOURCES ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>CEVE 420</td>
<td>ENVIRONMENTAL REMEDIATION RESTORATION</td>
<td></td>
</tr>
<tr>
<td>CEVE 434</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
<td></td>
</tr>
<tr>
<td>CEVE 484 / STAT 484</td>
<td>ENVIRONMENTAL RISK ASSESSMENT &amp; HUMAN HEALTH</td>
<td></td>
</tr>
<tr>
<td>CHEM 211 &amp; CHEM 213</td>
<td>ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>ENST 307 / CEVE 307 / ESCI 307</td>
<td>ENERGY AND THE ENVIRONMENT</td>
<td></td>
</tr>
<tr>
<td>ENST 406 / CEVE 406</td>
<td>INTRODUCTION TO ENVIRONMENTAL LAW</td>
<td></td>
</tr>
<tr>
<td>PHYS 101 &amp; PHYS 103</td>
<td>MECHANICS (WITH LAB) and MECHANICS DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>PHYS 102 &amp; PHYS 104</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours Required for the Major in Environmental Science 62-64

University Graduation Requirements (p. 25) * 60

Total Credit Hours 122-124

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1. CHEM 121 and CHEM 123 can be satisfied by completing CHEM 151 and CHEM 153. Similarly, CHEM 122 and CHEM 124 can be satisfied by completing CHEM 152 and CHEM 154.

2. The core courses acquaint students with a range of environmental topics encountered by scientists, engineers, managers, and policy makers. Core courses stress the components of the global environment and their interactions, culminating with a tropical seminar that integrates across the field.

3. Students may also petition to complete alternative courses to be applied toward the Advanced Electives requirement.

4. In addition to the courses in the Natural Sciences and Engineering electives list, students may complete 1 course listed in the major concentration requirements outside of the student’s declared concentration.

Major Concentration: Earth Science

Students must complete a total of 3 courses (minimum of 9 credit hours) as listed below to satisfy the requirements for the major concentration in Earth Science.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCH 321</td>
<td>EARTH SYSTEM EVOLUTION AND CYCLES</td>
<td>6-7</td>
</tr>
<tr>
<td>ESCH 323</td>
<td>EARTH STRUCTURE AND DEFORMATION</td>
<td></td>
</tr>
<tr>
<td>ESCH 340 / EBIO 340 / ENST 340</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
<td></td>
</tr>
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</table>

Elective Requirements

Select at least 1 from the following: 3 3-4

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCH 321</td>
<td>EARTH SYSTEM EVOLUTION AND CYCLES</td>
<td></td>
</tr>
<tr>
<td>ESCH 322</td>
<td>EARTH CHEMISTRY AND MATERIALS</td>
<td></td>
</tr>
<tr>
<td>ESCH 323</td>
<td>EARTH STRUCTURE AND DEFORMATION</td>
<td></td>
</tr>
<tr>
<td>ESCH 340 / EBIO 340 / ENST 340</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
<td></td>
</tr>
<tr>
<td>ESCH 380 / FOTO 390</td>
<td>VISUALIZING NATURE</td>
<td></td>
</tr>
<tr>
<td>ESCH 418 / CEVE 418</td>
<td>QUANTITATIVE HYDROGEOLOGY</td>
<td></td>
</tr>
<tr>
<td>ESCH 421</td>
<td>PALEOCEANOGRAPHY</td>
<td></td>
</tr>
<tr>
<td>ESCH 425 / CHEM 425 / ENST 425</td>
<td>ORGANIC GEOCHEMISTRY</td>
<td></td>
</tr>
<tr>
<td>ESCH 430</td>
<td>TRACE-ELEMENT AND ISOTOPE GEOCHEMISTRY FOR EARTH AND ENVIRONMENTAL SCIENCE</td>
<td></td>
</tr>
<tr>
<td>ESCH 431</td>
<td>GEOMORPHOLOGY</td>
<td></td>
</tr>
<tr>
<td>ESCH 435</td>
<td>MECHANICS OF SEDIMENT TRANSPORT</td>
<td></td>
</tr>
<tr>
<td>ESCH 452</td>
<td>GIS FOR SCIENTISTS AND ENGINEERS</td>
<td></td>
</tr>
<tr>
<td>ESCH 467</td>
<td>GEOMECHANICS</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 9-11

Footnotes and Additional Information

1. Note that the course not completed in the Core Requirements list for the major concentration in Earth Science may be completed to apply towards the major concentration’s Elective Requirements.

Policies for the BA Degree with a Major in Environmental Science and a Major Concentration in Earth Science

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the major in Environmental Science should be aware of the following program transfer credit guidelines:
• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Department of Earth, Environmental, and Planetary Sciences website, and specifically the Environmental Science major page, at: http://earthscience.rice.edu/academics/undergraduate-program/

Opportunities for the BA Degree with a Major in Environmental Science and a Major Concentration in Earth Science

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Independent Research
Students are encouraged to undertake independent research on environmentally related topics as part of their degree programs, in cooperation with one or more faculty. Course options for independent research, repeatable for credit, include: EBIO 403, EBIO 404, and ESCI 481.

Students also can enroll in senior honors thesis programs within their major concentrations, or by arrangement with other departments, and/or through the Rice Undergraduate Scholars Program. Students completing a thesis will also be eligible for the Distinction in Research and Creative Work, a university honor. Details for each program can be found here:

• EBIO Honors Research (https://biosciences.rice.edu/Content.aspx?id=2147484071)
• ESCI Senior Honors Thesis (http://earthscience.rice.edu/academics/undergraduate-program/honors-thesis)
• Rice Undergraduate Scholars Program (https://ccl.rice.edu/students/learn/undergraduate-research/rice-undergraduate-scholars-program-rusp/)

For additional information, please see the Department of Earth, Environmental, and Planetary Sciences website, and specifically the Environmental Science major page, at: http://earthscience.rice.edu/academics/undergraduate-program/

Bachelor of Arts (BA) Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology

Program Learning Outcomes for the BA Degree with a Major in Environmental Science

Upon completing the BA degree with a major in Environmental Science, students will be able to:

1. Demonstrate foundational knowledge in the natural sciences that is fundamental to the Environmental Sciences. This understanding should be adequate to support the incorporation of environmental science knowledge into the study and practice of a field other than environmental science.
2. Integrate knowledge of natural and applied sciences to understand complex natural systems and cycles.
3. Synthesize knowledge from natural sciences and engineering and understand how it applies to the study of the environment.
4. Understand environmental issues from a scientific perspective and be able to solve issues using a variety of interdisciplinary perspectives (e.g., social sciences, economics, humanities, and/or architecture).

Requirements for the BA Degree with a Major in Environmental Science

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Environmental Science must complete:

• A minimum of 22-24 courses (a minimum of 62-64 credit hours) depending on course selection to satisfy major requirements.
• A minimum of 122-124 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 4-6 courses (a minimum of 12-18 credit hours, depending on declared major concentration) taken at the 300-level or above.
• The requirements of a major concentration. When students declare the major (p. 12) in Environmental Science, students must additionally identify and declare one of two major concentrations, either:

  • Earth Science (p. 400), or
  • Ecology and Evolutionary Biology (p. 403)

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

Environmental science is an interdisciplinary major that addresses environmental issues in the context of what we know about earth, ecology, and society. In addition to its science core, the major also seeks to provide students with some appreciation of social, cultural, and policy dimensions of environmental issues.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Environmental Science</td>
<td>62-64</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Environmental Science</td>
<td>122-124</td>
</tr>
</tbody>
</table>
## Degree Requirements

### Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>EBIO 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 121 &amp; CHEM 123</td>
<td>GENERAL CHEMISTRY I and GENERAL CHEMISTRY LABORATORY</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 122 &amp; CHEM 124</td>
<td>GENERAL CHEMISTRY II and GENERAL CHEMISTRY LABORATORY II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 101 or MATH 111</td>
<td>SINGLE VARIABLE CALCULUS I or CALCULUS: DIFFERENTIATION AND ITS APPLICATIONS</td>
<td>3</td>
</tr>
<tr>
<td>MATH 102 or MATH 112</td>
<td>SINGLE VARIABLE CALCULUS II or CALCULUS: INTEGRATION AND ITS APPLICATIONS</td>
<td>3</td>
</tr>
<tr>
<td>STAT 280 or STAT 305</td>
<td>ELEMENTARY APPLIED STATISTICS or INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
<td>4</td>
</tr>
</tbody>
</table>

### Major Concentration

Select 1 from the following Major Concentrations (see below for Major Concentration requirements):

- Earth Science
- Ecology and Evolutionary Biology

### Advanced Electives

Select 1 from the following:

- ANTH 348 ANTHROPOLOGIES OF NATURE
- ANTH 381 MEDICAL ANTHROPOLOGY
- ENST 302 / ENST 304 ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE
- ENST 332 / ANTH 332 THE SOCIAL LIFE OF CLEAN ENERGY
- ENST 367 / SOCI 367 ENVIRONMENTAL SOCIOLOGY
- ENST 437 / ECON 437 ENERGY ECONOMICS
- ENST 480 / ECON 480 ECONOMICS
- POLI 331 ENVIRONMENTAL POLITICS AND POLICY
- POLI 332 URBAN POLITICS
- POLI 362 COMPARATIVE URBAN POLITICS AND POLICY
- SOCI 313 DEMOGRAPHY
- SOCI 423 SOCIOLOGY OF FOOD

### Field Experience

Select 1 course from the following:

- ENST 100 / ARCH 105 ENVIRONMENT, CULTURE AND SOCIETY
- ESCI 115 INTRODUCTION TO THE EARTH

### Other Concentrations

Select 1-2 courses from the following:

- EBIO 306 INDEPENDENT RESEARCH FOR ECOLOGY & EVOLUTIONARY BIOLOGY UNDERGRADUATES
- EBIO 316 LAB MODULE IN ECOLOGY
- EBIO 317 LAB MODULE IN BEHAVIOR
- EBIO 319 TROPICAL FIELD BIOLOGY
- EBIO 320 ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY
- EBIO 324 CONSERVATION BIOLOGY LAB
- EBIO 327 BIOLOGICAL DIVERSITY
- EBIO 330 INSECT BIOLOGY LAB
- EBIO 337 FIELD BIRD BIOLOGY LAB
- ENST 379 / EBIO 379 LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA
- ESCI 103 FIELD TRIPS FOR THE EARTH
- ESCI 334 GEOLOGICAL TECHNIQUES
- ESCI 380 / FOTO 390 VISUALIZING NATURE
- ESCI 390 GEOLOGY FIELD CAMP
- ESCI 391 EARTH SCIENCE FIELD EXPERIENCE
- FWIS 187 EXPLORING THE SCIENCE AND HISTORY OF HOUSTON'S BAYOUS
CEVE 310 PRINCIPLES OF ENVIRONMENTAL ENGINEERING
CEVE 401 CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB
CEVE 404 ATMOSPHERIC PARTICULATE MATTER
CEVE 411 ATMOSPHERIC PROCESSES
CEVE 412 HYDROLOGY AND WATER RESOURCES ENGINEERING
CEVE 420 ENVIRONMENTAL REMEDIATION RESTORATION
CEVE 434 FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT
CEVE 484 / STAT 484 ENVIRONMENTAL RISK ASSESSMENT & HUMAN HEALTH
CHEM 211 ORGANIC CHEMISTRY I
CHEM 213 and ORGANIC CHEMISTRY DISCUSSION
ENST 307 / CEVE 307 / ESCI 307 ENERGY AND THE ENVIRONMENT
ENST 406 / CEVE 406 INTRODUCTION TO ENVIRONMENTAL LAW
PHYS 101 MECHANICS (WITH LAB) and MECHANICS DISCUSSION
PHYS 102 ELECTRICITY & MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION

Total Credit Hours Required for the Major in Environmental Science 62-64
University Graduation Requirements (p. 25) 60

Total Credit Hours 122-124

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 CHEM 121 and CHEM 123 can be satisfied by completing CHEM 151 and CHEM 153. Similarly, CHEM 122 and CHEM 124 can be satisfied by completing CHEM 152 and CHEM 154.

2 The core courses acquaint students with a range of environmental topics encountered by scientists, engineers, managers, and policy makers. Core courses stress the components of the global environment and their interactions, culminating with a tropical seminar that integrates across the field.

3 Students may also petition to complete alternative courses to be applied toward the Advanced Electives requirement.

4 In addition to the courses in the Natural Sciences and Engineering electives list, students may complete 1 course listed in the major concentration requirements outside of the student's declared concentration.

Major Concentration: Ecology and Evolutionary Biology

Students must complete a total of 3 courses (minimum of 9 credit hours) as listed below to satisfy the requirements for the major concentration in Ecology and Evolutionary Biology.

Total Credit Hours 9

Footnotes and Additional Information
1 Note that the course not completed in the Core Requirements list for the major concentration in Ecology and Evolutionary Biology may be completed to apply towards the major concentration's Electives requirement.

Policies for the BA Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the major in Environmental Science should be aware of the following program transfer credit guidelines:
Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Department of Earth, Environmental, and Planetary Sciences website, and specifically the Environmental Science major page, at: http://earthscience.rice.edu/academics/undergraduate-program/

**Opportunities for the BA Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

**Independent Research**

Students are encouraged to undertake independent research on environmentally related topics as part of their degree programs, in cooperation with one or more faculty. Course options for independent research, repeatable for credit, include: EBIO 403, EBIO 404, and ESCI 481.

Students also can enroll in senior honors thesis programs within their major concentrations, or by arrangement with other departments, and/or through the Rice Undergraduate Scholars Program. Students completing a thesis will also be eligible for the Distinction in Research and Creative Work, a university honor. Details for each program can be found here:

- [EBIO Honors Research](https://biosciences.rice.edu/Content.aspx?id=2147484071)
- [ESCI Senior Honors Thesis](http://earthscience.rice.edu/academics/undergraduate-program/honors-thesis)
- [Rice Undergraduate Scholars Program](https://ccl.rice.edu/students/learn/undergraduate-research/rice-undergraduate-scholars-program-rusp/)

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**Bachelor of Science (BS) Degree with a Major in Environmental Science and a Major Concentration in Earth Science**

**Program Learning Outcomes for the BS Degree with a Major in Environmental Science**

Upon completing the BS degree with a major in Environmental Science, students will be able to:

1. Demonstrate foundational knowledge in the natural sciences that is fundamental to the Environmental Sciences.
2. Integrate knowledge of natural and applied sciences to understand complex natural systems and cycles.
3. Synthesize knowledge from natural sciences and engineering and apply it to the study of the environment.
4. Understand environmental issues from a scientific perspective and be able to solve issues using a variety of interdisciplinary perspectives (e.g., social sciences, economics, humanities, and/or architecture).
5. Apply methods and theories to develop and test hypotheses or to propose and analyze solutions to environmental issues, using sound experimental, statistical, and/or design practices.

**Requirements for the BS Degree with a Major in Environmental Science**

For graduation requirements, see Graduation Requirements (p. 25). Students pursuing the BS degree with a major in Environmental Science must complete:

- A minimum of 25-28 courses (a minimum of 73-75 credit hours) depending on course selection to satisfy major requirements.
- A minimum of 133-135 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 5-7 courses (15-21 credit hours, depending on declared major concentration) taken at the 300-level or above.
- The requirements of a major concentration. When students declare the major (p. 12) in Environmental Science, students must additionally identify and declare one of two major concentrations, either:
  - Earth Science (p. 406), or
  - Ecology and Evolutionary Biology (p. 409)

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

Environmental Science is an interdisciplinary major that addresses environmental issues in the context of what we know about earth, ecology, and society. In addition to its science core, the major also seeks to provide students with some appreciation of social, cultural, and policy dimensions of environmental issues.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.
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<tr>
<th>Code</th>
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### Degree Requirements

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<td>Foundation Coursework</td>
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<td>INTRODUCTORY BIOLOGY</td>
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<td>EBIO 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
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<tr>
<td>CHEM 122 &amp; &amp; CHEM 124</td>
<td>GENERAL CHEMISTRY II and GENERAL CHEMISTRY LABORATORY II</td>
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<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I or MATH 111 CALCULUS: DIFFERENTIATION AND ITS APPLICATIONS</td>
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<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II or MATH 112 CALCULUS: INTEGRATION AND ITS APPLICATIONS</td>
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<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS or STAT 305 INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
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<td>MECHANICS (WITH LAB) and MECHANICS DISCUSSION</td>
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<td>HONORS MECHANICS (WITH LAB)</td>
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<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
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<td>ELECTRICITY &amp; MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION</td>
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<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
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<td>PHYS 126</td>
<td>GENERAL PHYSICS II (WITH LAB)</td>
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<td>ENST 100 &amp; &amp; ARCH 105</td>
<td>ENVIRONMENT, CULTURE AND SOCIETY</td>
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<td>ESCI 115</td>
<td>INTRODUCTION TO THE EARTH</td>
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<td>OCEANOGRAPHY</td>
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<td>THE SCIENCE BEHIND EARTH GLOBAL WARMING AND CLIMATE CHANGE</td>
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<td>EBIO 213</td>
<td>INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
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<td>EBIO 325</td>
<td>ECOLOGY</td>
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<td>SEMINAR: Topics in Environmental Science</td>
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<td>Field Experience</td>
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<td>Select 1-2 from the following</td>
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</table>

**Major Concentration**

Select 1 from the following major concentrations (see below for major concentration requirements):

- Earth Science
- Ecology and Evolutionary Biology

**Advanced Electives**

**Social Sciences**

Select 1 from the following: 3

- ANTH 348 ANTHROPOLOGIES OF NATURE
- ANTH 381 MEDICAL ANTHROPOLOGY
- ENST 302 / & SOCI 304 ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE
- ENST 332 / & ANTH 332 THE SOCIAL LIFE OF CLEAN ENERGY
- ENST 367 / & SOCI 367 ENVIRONMENTAL SOCIOLOGY
- ENST 437 / & ECON 437 ENERGY ECONOMICS
- ENST 480 / & ECON 480 ENVIRONMENTAL AND ENERGY ECONOMICS
- POLI 331 ENVIRONMENTAL POLITICS AND POLICY
- POLI 332 URBAN POLITICS
- POLI 362 COMPARATIVE URBAN POLITICS AND POLICY
- SOCI 313 DEMOGRAPHY
- SOCI 423 SOCIOLOGY OF FOOD

**Humanities and Architecture**

Select 1 from the following: 3

- ENGL 358 CONSUMPTION AND CONSUMERISM
- ENGL 367 / & SWGS 367 LITERATURE AND CULTURE OF THE US-MEXICO BORDERLANDS
- ENGL 459 TOPICS IN LITERATURE AND ECOLOGY
- ENST 202 / & HUMA 202 CULTURE, ENERGY, AND THE ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES
Bachelor of Science (BS) Degree with a Major in Environmental Science and a Major Concentration in Earth Science

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<thead>
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<th>Code</th>
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<tr>
<td>ENST 313</td>
<td>SUSTAINABLE DESIGN</td>
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<tr>
<td>ARCH 313</td>
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<tr>
<td>ENST 322</td>
<td>CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISTING RICE CAMPUS BU</td>
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<tr>
<td>ARCH 322</td>
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<td>ENST 368</td>
<td>LITERATURE AND THE ENVIRONMENT</td>
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<td>ENGL 368</td>
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<td>HIST 376</td>
<td>NATURAL DISASTERS IN THE CARIBBEAN</td>
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<td>HIST 425</td>
<td>20TH CENTURY AMERICAN CONSERVATION MOVEMENT</td>
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### Natural Sciences and Engineering

Select 1 from the following:

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<td>CEVE 404</td>
<td>ATMOSPHERIC PARTICULATE MATTER</td>
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<td>CEVE 411</td>
<td>ATMOSPHERIC PROCESSES</td>
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<td>CEVE 412</td>
<td>HYDROLOGY AND WATER RESOURCES ENGINEERING</td>
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<td>CEVE 420</td>
<td>ENVIRONMENTAL REMEDIATION RESTORATION</td>
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<td>CEVE 434</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
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<td>CEVE 484</td>
<td>ENVIRONMENTAL RISK ASSESSMENT &amp; HUMAN HEALTH</td>
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<td>STAT 484</td>
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<td>CHEM 211</td>
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<td>&amp; CHEM 213</td>
<td>and ORGANIC CHEMISTRY DISCUSSION</td>
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<td>ENST 281</td>
<td>ENGINEERING SOLUTIONS FOR SUSTAINABLE COMMUNITIES</td>
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<td>ENERGY AND THE ENVIRONMENT</td>
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<td>CEVE 307</td>
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<td>ESCI 307</td>
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<td>ENST 406</td>
<td>INTRODUCTION TO ENVIRONMENTAL LAW</td>
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<td>CEVE 406</td>
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Independent Research (see the “Opportunities tab” for additional information).

### Capstone Requirement

Select 1 from the following:

<table>
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<td>EBIO 403</td>
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<td>or EBIO 404</td>
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<td>ESCI 390</td>
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<td>ESCI 391</td>
<td>EARTH SCIENCE FIELD EXPERIENCE</td>
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<tr>
<td>ESCI 481</td>
<td>UNDERGRADUATE RESEARCH IN EARTH SCIENCE</td>
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### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1. CHEM 121 and CHEM 123 can be satisfied by completing CHEM 151 and CHEM 153. Similarly, CHEM 122 and CHEM 124 can be satisfied by completing CHEM 152 and CHEM 154.

2. The core courses acquaint students with a range of environmental topics encountered by scientists, engineers, managers, and policy makers. Core courses stress the components of the global environment and their interactions, culminating with a tropical seminar that integrates across the field.

3. Students may also petition to complete alternative courses to be applied toward the Advanced Electives requirement.

4. In addition, students may complete 1 course listed in the major concentration requirements outside of the student’s declared concentration.

5. Students are encouraged, but not required, to undertake independent research on environmentally related topics.

### Major Concentration: Earth Science

Students must complete a total of 3 courses (minimum of 9 credit hours) as listed below to satisfy requirements for the major concentration in Earth Science. #Earth_Science (p. 406)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td>ESCI 321</td>
<td>EARTH SYSTEM EVOLUTION AND CYCLES</td>
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<td>ESCI 323</td>
<td>EARTH STRUCTURE AND DEFORMATION</td>
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<td>ESCI 340</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
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<td>EBIO 340</td>
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<td>ENST 340</td>
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### Elective Requirements

Select at least 1 from the following:

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<th>Title</th>
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<td>ESCI 322</td>
<td>EARTH CHEMISTRY AND MATERIALS</td>
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<td>ESCI 323</td>
<td>EARTH STRUCTURE AND DEFORMATION</td>
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<td>ESCI 340</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
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<td>ESCI 418</td>
<td>QUANTITATIVE HYDROGEOLOGY</td>
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<td>ESCI 421</td>
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<td>ENST 425</td>
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<td>ESCI 430</td>
<td>TRACE-ELEMENT AND ISOTOPES GEOCHEMISTRY FOR EARTH AND ENVIRONMENTAL SCIENCE</td>
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<td>ESCI 431</td>
<td>GEOMORPHOLOGY</td>
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<td>ESCI 435</td>
<td>MECHANICS OF SEDIMENT TRANSPORT</td>
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<td>ESCI 452</td>
<td>GIS FOR SCIENTISTS AND ENGINEERS</td>
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Bachelor of Science (BS) Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology

Program Learning Outcomes for the BS Degree with a Major in Environmental Science

Upon completing the BS degree with a major in Environmental Science, students will be able to:

1. Demonstrate foundational knowledge in the natural sciences that is fundamental to the Environmental Sciences.
2. Integrate knowledge of natural and applied sciences to understand complex natural systems and cycles.
3. Synthesize knowledge from natural sciences and engineering and apply it to the study of the environment.
4. Understand environmental issues from a scientific perspective and be able to solve issues using a variety of interdisciplinary perspectives (e.g., social sciences, economics, humanities, and/or architecture).
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</table>

Foundation Coursework

- **BIOC 201** INTRODUCTORY BIOLOGY 3
- **EBIO 202** INTRODUCTORY BIOLOGY II 3
- **CHEM 121** GENERAL CHEMISTRY I 1
- **CHEM 122** GENERAL CHEMISTRY II 1
- **CHEM 123** GENERAL CHEMISTRY LABORATORY I 1
- **CHEM 124** GENERAL CHEMISTRY LABORATORY II 1
- **MATH 101** SINGLE VARIABLE CALCULUS I 3
- **MATH 102** SINGLE VARIABLE CALCULUS II 3
- **MATH 111** CALCULUS: DIFFERENTIATION AND ITS APPLICATIONS
- **MATH 112** CALCULUS: INTEGRATION AND ITS APPLICATIONS
- **STAT 280** ELEMENTARY APPLIED STATISTICS 4
- **STAT 305** INTRODUCTION TO STATISTICS FOR BIOSCIENCES 4

Select 1 from the following:

- **PHYS 101** MECHANICS (WITH LAB) 4
- **PHYS 103** MECHANICS DISCUSSION
- **PHYS 111** HONORS MECHANICS (WITH LAB)
- **PHYS 125** GENERAL PHYSICS (WITH LAB)

Select 1 from the following:

- **PHYS 102** ELECTRICITY & MAGNETISM (WITH LAB) 4
- **PHYS 104** ELECTRICITY AND MAGNETISM DISCUSSION
- **PHYS 112** HONORS ELECTRICITY & MAGNETISM (WITH LAB)
- **PHYS 126** GENERAL PHYSICS II (WITH LAB)

Core Courses

- **ENST 100** / **ARCH 105** ENVIRONMENT, CULTURE AND SOCIETY 3
- **ESCI 115** INTRODUCTION TO THE EARTH 4

Select 1 from the following:

- **ESCI 107** OCEANS AND GLOBAL CHANGE
- **ESCI 109** OCEANOGRAPHY

**Total Credit Hours Required for the Major in Environmental Science** 73-75

**Total Credit Hours Required for the BS Degree with a Major in Environmental Science** 133-135

**Earth Science**

- **ESCI 201** / **ENST 201** THE SCIENCE BEHIND EARTH GLOBAL WARMING AND CLIMATE CHANGE 2
- **EBIO 213** INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY 2
- **EBIO 325** ECOLOGY 3
- **ENST 4XX** SEMINAR: Topics in Environmental Science 3

Field Experience

Select 1-2 from the following 2-3

- **EBIO 306** INDEPENDENT RESEARCH FOR ECOLOGY & EVOLUTIONARY BIOLOGY UNDERGRADUATES
- **EBIO 316** LAB MODULE IN ECOLOGY
- **EBIO 317** LAB MODULE IN BEHAVIOR
- **EBIO 319** TROPICAL FIELD BIOLOGY
- **EBIO 320** ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY
- **EBIO 324** CONSERVATION BIOLOGY LAB
- **EBIO 327** BIOLOGICAL DIVERSITY
- **EBIO 330** INSECT BIOLOGY LAB
- **EBIO 337** FIELD BIRD BIOLOGY LAB
- **ENST 379** / **EBIO 379** LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA
- **ESCI 103** FIELD TRIPS FOR THE EARTH
- **ESCI 334** GEOLOGICAL TECHNIQUES
- **ESCI 380** / **FOTO 390** VISUALIZING NATURE
- **FWIS 187** EXPLORING THE SCIENCE AND HISTORY OF HOUSTON'S BAYOUS

**Major Concentration**

Select 1 from the following major concentrations (see below for major concentration requirements): 9

- **Earth Science**
- **Ecology and Evolutionary Biology**

**Advanced Electives**

Social Sciences

Select 1 from the following:

- **ANTH 348** ANTHROPOLOGIES OF NATURE
- **ANTH 381** MEDICAL ANTHROPOLOGY
- **ENST 302** / **SOCI 304** ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE
- **ENST 332** / **ANTH 332** THE SOCIAL LIFE OF CLEAN ENERGY
- **ENST 367** / **SOCI 367** ENVIRONMENTAL SOCIOLOGY
- **ENST 437** / **ECON 437** ENERGY ECONOMICS
- **ENST 480** / **ECON 480** ENVIRONMENTAL AND ENERGY ECONOMICS
- **POLI 331** ENVIRONMENTAL POLITICS AND POLICY
- **POLI 332** URBAN POLITICS
- **POLI 362** COMPARATIVE URBAN POLITICS AND POLICY
- **SOCI 313** DEMOGRAPHY
- **SOCI 423** SOCIOLOGY OF FOOD
Humanities and Architecture

Select 1 from the following: 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>ENGL 358</td>
<td>CONSUMPTION AND CONSUMERISM</td>
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<tr>
<td>ENGL 367 / SWGS 367</td>
<td>LITERATURE AND CULTURE OF THE US-MEXICO BORDERLANDS</td>
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<td>ENGL 459</td>
<td>TOPICS IN LITERATURE AND ECOLOGY</td>
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<tr>
<td>ENST 202 / HUMA 202</td>
<td>CULTURE, ENERGY, AND THE ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES</td>
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<tr>
<td>ENST 313 / ARCH 313</td>
<td>SUSTAINABLE DESIGN</td>
<td></td>
</tr>
<tr>
<td>ENST 322 / ARCH 322</td>
<td>CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISTING RICE CAMPUS</td>
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<tr>
<td>ENST 368 / ENGL 368</td>
<td>LITERATURE AND THE ENVIRONMENT</td>
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<td>HIST 376</td>
<td>NATURAL DISASTERS IN THE CARIBBEAN</td>
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<tr>
<td>HIST 425</td>
<td>20TH CENTURY AMERICAN CONSERVATION MOVEMENT</td>
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Natural Sciences and Engineering

Select 1 from the following: 4-3

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>CEVE 302 / ENGI 302</td>
<td>SUSTAINABLE DESIGN</td>
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<tr>
<td>CEVE 308</td>
<td>INTRODUCTION TO AIR POLLUTION CONTROL</td>
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<td>CEVE 401</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB</td>
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<td>CEVE 404</td>
<td>ATMOSPHERIC PARTICULATE MATTER</td>
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<td>CEVE 411</td>
<td>ATMOSPHERIC PROCESSES</td>
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<td>CEVE 412</td>
<td>HYDROLOGY AND WATER RESOURCES ENGINEERING</td>
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<tr>
<td>CEVE 420</td>
<td>ENVIRONMENTAL REMEDIATION RESTORATION</td>
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<td>CEVE 434</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
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<tr>
<td>CEVE 484 / STAT 484</td>
<td>ENVIRONMENTAL RISK ASSESSMENT &amp; HUMAN HEALTH</td>
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<tr>
<td>CHEM 211 &amp; CHEM 213</td>
<td>ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY DISCUSSION</td>
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<tr>
<td>ENST 281</td>
<td>ENGINEERING SOLUTIONS FOR SUSTAINABLE COMMUNITIES</td>
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<td>ENST 307 / CEVE 307 / ESCI 307</td>
<td>ENERGY AND THE ENVIRONMENT</td>
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<tr>
<td>ENST 406 / CEVE 406</td>
<td>INTRODUCTION TO ENVIRONMENTAL LAW</td>
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Independent Research (see the "Opportunities tab" for additional information). 5

Capstone Requirement

Select 1 from the following: 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td>EBIO 403</td>
<td>UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
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</tr>
<tr>
<td>or EBIO 404</td>
<td>UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
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<tr>
<td>ESCI 390</td>
<td>GEOLOGY FIELD CAMP</td>
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<tr>
<td>ESCI 391</td>
<td>EARTH SCIENCE FIELD EXPERIENCE</td>
<td></td>
</tr>
</tbody>
</table>

ESCI 481 UNDERGRADUATE RESEARCH IN EARTH SCIENCE

Total Credit Hours Required for the Major in Environmental Science 73-75

University Graduation Requirements (p. 25) 60

Total Credit Hours 133-135

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.
1 CHEM 121 and CHEM 123 can be satisfied by completing CHEM 151 and CHEM 153. Similarly, CHEM 122 and CHEM 124 can be satisfied by completing CHEM 152 and CHEM 154
2 The core courses acquaint students with a range of environmental topics encountered by scientists, engineers, managers, and policy makers. Core courses stress the components of the global environment and their interactions, culminating with a tropical seminar that integrates across the field.
3 Students may also petition to complete alternative courses to be applied toward the Advanced Electives requirement.
4 In addition, students may complete 1 course listed in the major concentration requirements outside of the student’s declared concentration.
5 Students are encouraged, but not required, to undertake independent research on environmentally related topics.

Major Concentration: Ecology and Evolutionary Biology

Students must complete a total of 3 courses (9 credit hours) as listed below to satisfy the requirements for the major concentration in Ecology and Evolutionary Biology. #Ecology_Evolutionary (p. 409)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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Core Requirements

Select 2 from the following: 6

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>EBIO 270</td>
<td>ECOSYSTEM MANAGEMENT</td>
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<tr>
<td>EBIO 323 / ENST 323</td>
<td>CONSERVATION BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 372</td>
<td>CORAL REEF ECOSYSTEMS</td>
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Elective Requirements

Select at least 1 from the following: 3

<table>
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<td>EBIO 270</td>
<td>ECOSYSTEM MANAGEMENT</td>
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<tr>
<td>EBIO 321</td>
<td>ANIMAL BEHAVIOR</td>
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<tr>
<td>EBIO 323 / ENST 323</td>
<td>CONSERVATION BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>EBIO 326</td>
<td>INSECT BIOLOGY</td>
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<tr>
<td>EBIO 331 / BIOL 331</td>
<td>BIOLOGY OF INFECTIOUS DISEASES</td>
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<td>EBIO 334 / BIOL 334</td>
<td>EVOLUTION</td>
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<td>EBIO 336</td>
<td>PLANT DIVERSITY</td>
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<td>EBIO 338</td>
<td>DESIGN AND ANALYSIS OF BIOLOGICAL EXPERIMENTS</td>
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<tr>
<td>EBIO 365</td>
<td>INTRODUCTORY PHYCOLOGY</td>
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</tbody>
</table>
EBIO 366  APPLIED PHYCOLOGY
EBIO 372  CORAL REEF ECOSYSTEMS
ESCI 340 / GLOBAL BIOGEOCHEMICAL CYCLES
EBIO 340 /

Total Credit Hours  9

Footnotes and Additional Information
Note that the course not completed in the Core Requirements list for the major concentration in Ecology and Evolutionary Biology may be completed to apply towards the major concentration's Elective Requirement.

Policies for the BS Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the major in Environmental Science should be aware of the following program transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Department of Earth, Environmental, and Planetary Sciences website, and specifically the Environmental Science major page, at: http://earthscience.rice.edu/academics/undergraduate-program/

Opportunities for the BS Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Independent Research
Students are encouraged to undertake independent research on environmentally related topics as part of their degree programs, in cooperation with one or more faculty. Course options for independent research, repeatable for credit, include: EBIO 403, EBIO 404, and ESCI 481.

Students also can enroll in senior honors thesis programs within their major concentrations, or by arrangement with other departments, and/or through the Rice Undergraduate Scholars Program. Students completing a thesis will also be eligible for the Distinction in Research and Creative Work, a university honor. Details for each program can be found here:

• EBIO Honors Research (https://biosciences.rice.edu/Content.aspx?id=2147484071)
• ESCI Senior Honors Thesis (http://earthscience.rice.edu/academics/undergraduate-program/honors-thesis)
• Rice Undergraduate Scholars Program (https://ccl.rice.edu/students/learn/undergraduate-research/rice-undergraduate-scholars-program-rusp/)

For additional information, please see the Department of Earth, Environmental, and Planetary Sciences website, and specifically the Environmental Science major page, at: http://earthscience.rice.edu/academics/undergraduate-program/

Environmental Studies

Contact Information

Dominic Boyer
Program Director
dominic.c.boyer@rice.edu

Environmental Studies is an interdisciplinary field that explores the interconnection between humans and the natural environment. Modern environmental issues reflect the complex interactions of natural and social systems at global and local scales, and the resulting impacts on the Earth have led many to ask whether humankind has entered into a new epoch in the planet’s history, one in which humans are now a key driver in the change of Earth systems.

The Environmental Studies program fosters the critical, integrative thinking required to better understand the complexities of this human-nature relationship and the resultant scales of impact, and to assess and develop solutions that meet intergenerational human needs without compromising the natural systems upon which humans depend.

The Environmental Studies program offers an undergraduate minor in Environmental Studies and several interdisciplinary courses for students interested in broadening their understanding of environmental issues. These courses often are team-taught by faculty from various areas of study.

Minor

• Minor in Environmental Studies (p. 411)

Environmental Studies does not currently offer an academic program at the graduate level.

Director

Dominic Boyer
Environmental Studies Minor Advisor
Dominic Boyer

ENST Steering Committee
Jim Blackburn
Dominic Boyer
Richard Johnson
Jeff Kripal
Elizabeth Long
Julia Morgan
Timothy Morton
Evan Siemann
Albert Pope

Descriptions and Codes Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: ENST

Program Description and Code
• Environmental Studies: ENST

Undergraduate Minor Description and Code
• Minor in Environmental Studies: ENST

Minor in Environmental Studies
Program Learning Outcomes for the Minor in Environmental Studies
Upon completing the minor in Environmental Studies, students will be able to:

1. Understand the fundamental science that drives earth/natural systems, and that frames and makes comprehensible current environmental issues.
2. Evaluate the nexus of human activity with environmental processes to examine and understand sustainable (or unsustainable) practices.
3. Develop a cross-disciplinary perspective to better understand environmental issues and solutions through a focus within the natural sciences and/or engineering and a focus within the humanities, social sciences, and/or architecture.

Requirements for the Minor in Environmental Studies
Students pursuing the minor in Environmental Studies must complete:

• A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
• A minimum of four courses (12 credit hours) at the 300-level or above.

The Environmental Studies minor was specifically created to provide undergraduates from a broad range of academic backgrounds with a cohesive program offering foundational literacy in the social, cultural, and scientific dimensions of environmental issues, and a cross-disciplinary holistic understanding of the challenges and solutions for creating a sustainable world. Students completing the minor will be able to synthesize frameworks, tools, and perspectives from multiple disciplines; master sustainability terminology; understand major environmental issues from multiple perspectives; develop and assess environmental solutions in an informed and logical manner; and convey knowledge and insights about environmental issues in multiple formats.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
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<td>Total Credit Hours Required for the Minor in Environmental Studies</td>
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Minor Requirements

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
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</table>

Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>

Introductory Course
Select 1 from the following:¹

<table>
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<tr>
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Elective Requirements ²

Schools of Architecture, Humanities, and Social Sciences
Select 2 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>

² Undergraduate students from Schools of Architecture, Humanities, and Social Sciences
¹ Undergraduate students from Schools of Engineering and Science
HART 302  FROM THE SUBLIME TO THE SUSTAINABLE: ART, ARCHITECTURE AND NATURE
HIST 425  20TH CENTURY AMERICAN CONSERVATION MOVEMENT
HUMA 202 / ENST 202  CULTURE, ENERGY AND THE ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES
SOCI 304 / ENST 302  ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE

| Schools of Engineering and Natural Sciences | | |
|---------------------------------------------|------------------------------------------|
| Select 2 from the following: | 6 |
| CEVE 302 / ENGI 302 | SUSTAINABLE DESIGN |
| CEVE 307 / ENST 307 / ESCI 307 | ENERGY AND THE ENVIRONMENT |
| CEVE 310 | PRINCIPLES OF ENVIRONMENTAL ENGINEERING |
| CEVE 406 / ENST 406 | INTRODUCTION TO ENVIRONMENTAL LAW |
| CHBE 281 / ENST 281 | ENGINEERING SUSTAINABLE COMMUNITIES |
| EBIO 204 / ENST 204 | ENVIRONMENTAL SUSTAINABILITY: THE DESIGN & PRACTICE OF COMMUNITY AGRICULTURE |
| EBIO 270 | ECOSYSTEM MANAGEMENT |
| EBIO 319 | TROPICAL FIELD BIOLOGY |
| EBIO 320 | ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY |
| EBIO 323 / ENST 323 | CONSERVATION BIOLOGY |
| EBIO 325 | ECOLOGY |
| EBIO 327 | BIOLOGICAL DIVERSITY |
| EBIO 372 | CORAL REEF ECOSYSTEMS |
| EBIO 379 / ENST 379 | LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA |
| ELEC 365 / MSNE 365 | NANOMATERIALS FOR ENERGY |
| ESCI 321 | EARTH SYSTEM EVOLUTION AND CYCLES |
| ESCI 340 / EBIO 340 / ENST 340 | GLOBAL BIOGEOCHEMICAL CYCLES |
| ESCI 380 / FOTO 390 | VISUALIZING NATURE |
| ESCI 407 | INTRODUCTION TO BIOGEOCHEMISTRY II |
| ESCI 425 / CHEM 425 / ENST 425 | ORGANIC GEOCHEMISTRY |
| ESCI 450 / CEVE 450 | REMOTE SENSING |
| ESCI 452 | GIS FOR SCIENTISTS AND ENGINEERS |

Total Credit Hours 18

Footnotes and Additional Information

1 Current/former EBIO majors are eligible to substitute EBIO 325 in place of EBIO 124 to meet the introductory course requirement from the natural sciences.
2 Given the wide range of courses at Rice related to Environmental Studies, students are encouraged to contact the Minor Director to suggest courses to include on the list of approved electives.

Policies for the Minor in Environmental Studies

Program Restrictions and Exclusions

Students pursuing the minor in Environmental Studies should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the minor in Environmental Studies should be aware of the following program-specific transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Environmental Studies Minor page, on the Center for Energy and Environmental Research in the Human Sciences website: http://culturesofenergy.com/enst-minor/.

Opportunities for the Minor in Environmental Studies

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Environmental Studies Minor page, on the Center for Energy and Environmental Research in the Human Sciences website: http://culturesofenergy.com/enst-minor/.

Financial Computation and Modeling

Contact Information

Financial Computation and Modeling
http://www.cofes-rice.org/
The interdisciplinary Financial Computation and Modeling (FCAM) program is offered through a collaboration of the departments of Statistics and Economics. The FCAM minor consists of six courses focusing on the strategies and computational technologies used in the financial industry. The minor is designed for those undergraduate students with strong computational skills and an interest in finance. Many students pursuing the FCAM minor enter careers in the financial industry, either immediately after completion of their undergraduate studies or after graduate studies. Students completing the FCAM minor will understand the complexities of financial markets and their role in and impact on world economies.

The basic tools component of the FCAM curriculum will equip students with the economic, probability, and statistical tools necessary to pursue the advanced analytical courses. In the advanced courses, students will be exposed to state-of-the-art models and methodologies based on long-standing assumptions about the behavior of financial markets. They will also be exposed to alternative views of market behavior and investment strategies. The goal is to educate students to question basic assumptions as well as utilize and understand technologies based on these important assumptions. In the financial industry, a large suite of solutions are implemented and continually enhanced. A goal of the FCAM program is to train leaders in this industry who not only will understand the financial technologies but also will understand the role, impact, and potential pitfalls of these technologies.

Minor
• Minor in Financial Computation and Modeling (p. 413)

Financial Computation and Modeling does not currently offer an academic program at the graduate level.

Director
Katherine B. Ensor, Statistics

Steering Committee and Undergraduate Advisors
Ted Loch-Temzelides, Economics
James R. Thompson, Statistics

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: Courses from various subjects may apply toward this program

Program Description and Code
• Financial Computation and Modeling: FCAM

Undergraduate Minor Description and Code
• Minor in Financial Computation and Modeling: FCAM

Minor in Financial Computation and Modeling

Program Learning Outcomes for the Minor in Financial Computation and Modeling

Upon completing the minor in Financial Computation and Modeling, students will be able to:

1. Demonstrate knowledge of statistical techniques and methods and how to choose and apply appropriate methods to questions or problems in the field of finance.
2. Understand the basic concepts of Economic Theory and how they apply to financial markets as well as how financial markets impact global economies.
3. Demonstrate an understanding of basic financial databases and the ability to use technologies, like R and Excel, to model and solve financial problems.
4. Understand core quantitative modeling concepts and demonstrate key skills necessary for working in the field of finance and investing.
5. Demonstrate the ability to understand, interpret, and critically evaluate empirical financial studies and investment strategies.

Requirements for the Minor in Financial Computation and Modeling

Students pursuing the minor in Financial Computation and Modeling must complete:

• A minimum of 6 courses (19 credit hours) to satisfy minor requirements.
• A minimum of 5 courses (16 credit hours) at the 300-level or above.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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Minor Requirements

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<tr>
<td></td>
<td>Required Courses</td>
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<tr>
<td></td>
<td>ECON 100  PRINCIPLES OF ECONOMICS</td>
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<td>STAT 310 / ECON 307</td>
<td>3</td>
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<td>ECON 310 / STAT 376</td>
<td>4</td>
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<tr>
<td></td>
<td>or STAT 410  LINEAR REGRESSION</td>
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</table>
Elective Requirements

Select 3 courses from the following 4 groups:

**Group I**
- ECON 418 ECONOMIC FORECASTING
- or STAT 421 APPLIED TIME SERIES AND FORECASTING

**Group II**
- ECON 449 PRINCIPLES OF FINANCIAL ENGINEERING
- or STAT 449 QUANTITATIVE FINANCIAL RISK MANAGEMENT

**Group III**
- STAT 486 MARKET MODELS

**Group IV**
- BUSI 343 FINANCIAL MANAGEMENT
- or ECON 343 CORPORATE FINANCE
- or ECON 355 FINANCIAL MARKETS
- or ECON 443 FINANCIAL ECONOMICS
- or ECON 455 MONEY AND BANKING
- or STAT 482 QUANTITATIVE FINANCIAL ANALYTICS

Total Credit Hours: 19

Footnotes and Additional Information

1. No more than 1 course can be taken from each group to satisfy the Elective requirements.

Policies for the Minor in Financial Computation and Modeling

Program Restrictions and Exclusions

Students pursuing the minor in Financial Computation and Modeling should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the minor in Financial Computation and Modeling should be aware of the following program-specific transfer credit guidelines:

- Request for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Undergraduate Resources page on the Center for Computational Finance and Economic Systems website: http://www.cofes-rice.org/academic-programs/undergraduate/.

Opportunities for the Minor in Financial Computation and Modeling

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Finance Seminar

Students pursuing the FCAM minor have the opportunity to participate in STAT 499 Computational Finance Seminar for 1 credit hour. Students are also encouraged to take part in the annual Eubank Conference on Real World Markets.

For additional information, please see the Undergraduate Resources page on the Center for Computational Finance and Economic Systems website: http://www.cofes-rice.org/academic-programs/undergraduate/.

Global Affairs

Contact Information

Global Affairs
http://mga.rice.edu/
180 Baker Hall
713-348-2367

Mark Jones
Faculty Director
mpjones@rice.edu

Abbey Godley
Assistant Dean for Student Programs
agodley@rice.edu

The Master of Arts in Global Affairs is a co-sponsored degree between Rice University’s Baker Institute for Public Policy and the School of Social Sciences. The program offers graduate students a professional Master of Arts degree that simultaneously requires high standards of scholarship and practical training for careers in government, the private sector, and international organizations.

The Master of Global Affairs is a two-year, 36 credit hour degree program. The program requires a non-credit bearing pre-term math boot camp held in the evenings before classes begin. The first year core-curriculum requires a sequence of 18 credit hours exposing students to a variety of topics in global affairs. The second year is reserved for pursuit of an Area of Study, participation in a required internship, and completion of a capstone project. The program is considered full-time with classes offered in the evening.

Global Affairs does not currently offer an academic program at the undergraduate level.

Master’s Program

- Master of Arts in Global Affairs (MAGA) Degree (p. 415)
Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: GLBL

Program Description and Code
• Global Affairs: GLBL

Graduate Degree Description and Code
• Master of Arts in Global Affairs degree: MAGA

Graduate Degree Program Description and Code
• Degree Program in Global Affairs: GLBL

Master of Arts in Global Affairs (MAGA) Degree

Program Learning Outcomes for the MAGA Degree

Upon completing the MAGA degree, students will be able to:

1. Demonstrate leadership, communication, and research skills to conduct independent studies enabling them to understand and formulate public policy recommendations in the international arena.
2. Apply quantitative skills to data analysis to make policy recommendations.
3. Describe real-life experience in international public policy development by participating in an internship.
4. Assess the social responsibilities of governments, non-governmental organizations, corporations, and individuals in the global twenty-first century.
5. Analyze and develop new and innovative solutions to emerging challenges in the global community.

Requirements for the MAGA Degree

The MAGA degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MAGA degree must complete:

• A minimum of 36 credit hours to satisfy degree requirements.
• The required Internship.
• The required Capstone project.

Note: Courses offerings may vary. Some listed courses may not be offered every year, and others may be offered that satisfy the requirements with pre-approval. Students should consult their academic advisors before enrolling and check for any course pre-requisites.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLBL 501</td>
<td>GLOBAL SYSTEMS I</td>
<td>1.5</td>
</tr>
<tr>
<td>GLBL 502</td>
<td>INSTITUTIONS &amp; DEVELOPMENT</td>
<td>1.5</td>
</tr>
<tr>
<td>GLBL 507</td>
<td>DECISION MAKING UNDER UNCERTAINTY</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 513</td>
<td>INTERNATIONAL COOPERATION</td>
<td>1.5</td>
</tr>
<tr>
<td>GLBL 514</td>
<td>THE MIDDLE EAST CAULDRON AND UNITED STATES POLICY</td>
<td>1.5</td>
</tr>
<tr>
<td>GLBL 523</td>
<td>QUANTITATIVE APPLICATIONS IN GLOBAL AFFAIRS</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 524</td>
<td>MACROECONOMICS IN A GLOBAL ECONOMY</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 525</td>
<td>INTERNATIONAL SECURITY</td>
<td>3</td>
</tr>
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</table>

Select 1 from the following (see below for Areas of Specialization requirements):

International Political Development
International Political Economy
International Security

Internship

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLBL 519</td>
<td>MASTER OF GLOBAL AFFAIRS INTERNSHIP ¹</td>
<td>6</td>
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</table>

Capstone

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLBL 520</td>
<td>MASTER OF GLOBAL AFFAIRS CAPSTONE ²</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours

36
Footnotes and Additional Information

1 Students are required to complete a minimum eight-week extensive field experience in which they intern at one of a variety of internationally-based or internationally-focused governmental and nongovernmental organizations, international commissions, embassies, agencies, or corporations. The internship will provide students valuable real-world application of their degree with the goal of facilitating their employment in these organizations.

2 In the second year, students must select a topic of concentration and pursue in-depth research which delves into the real-world, policy aspects of the topic.

Second-Year Area of Specialization Electives

Students must complete 3 courses (a minimum of 9 credit hours) from one area of specialization. Students will choose their electives according to their individual academic interests and career goals. No more than 3 credit hours at the 400-level (one course) can be used toward the Area of Study.

Area of Specialization: International Political Development

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLBL 531</td>
<td>WORLD POLITICS AND GLOBAL GOVERNANCE</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 532</td>
<td>INTERNATIONAL BUSINESS ENVIRONMENT AND GLOBAL ECONOMIC GOVERNANCE</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 542</td>
<td>INTERNATIONAL MACROECONOMIC POLICY FOR MASTER'S STUDENTS</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 543</td>
<td>ENERGY POLICY</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 553</td>
<td>INTERNATIONAL CRISIS MANAGEMENT IN A MULTI-RISK, INTER-CONNECTED WORLD</td>
<td>3</td>
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<tr>
<td>HIST 372</td>
<td>IMMIGRATION AND THE STATE: 19TH &amp; 20TH CENTURY</td>
<td>3</td>
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<tr>
<td>HIST 572</td>
<td>AMERICA IN THE MIDDLE EAST</td>
<td>4</td>
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<tr>
<td>POLI 354</td>
<td>LATIN AMERICAN POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 450</td>
<td>ELECTIONS IN THE AMERICAS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 459</td>
<td>SEX, GENDER, AND POLITICAL REPRESENTATION IN LATIN AMERICA</td>
<td>3</td>
</tr>
<tr>
<td>SOCI 368</td>
<td>SOCIOLOGY OF DISASTER</td>
<td>3</td>
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</table>

Area of Specialization: International Political Economy

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLBL 531</td>
<td>WORLD POLITICS AND GLOBAL GOVERNANCE</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 532</td>
<td>INTERNATIONAL BUSINESS ENVIRONMENT AND GLOBAL ECONOMIC GOVERNANCE</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 542</td>
<td>INTERNATIONAL MACROECONOMIC POLICY FOR MASTER'S STUDENTS</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 543</td>
<td>ENERGY POLICY</td>
<td>3</td>
</tr>
<tr>
<td>ECON 435</td>
<td>INDUSTRIAL ORGANIZATION</td>
<td>3</td>
</tr>
<tr>
<td>ECON 437 / ENST 437</td>
<td>ENERGY ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>ECON 479</td>
<td>ECONOMIC MODELING AND PUBLIC POLICY</td>
<td>3</td>
</tr>
<tr>
<td>ECON 483</td>
<td>PUBLIC FINANCE</td>
<td>3</td>
</tr>
</tbody>
</table>

HIST 372 | IMMIGRATION AND THE STATE: 19TH & 20TH CENTURY | 3 |
HIST 436 | AMERICA IN THE MIDDLE EAST                      | 3 |
POLI 335 | POLITICAL ENVIRONMENT OF BUSINESS               | 3 |
POLI 354 | LATIN AMERICAN POLITICS                         | 3 |
POLI 374 | STRATEGIC INTERACTIONS IN INTERNATIONAL RELATIONS | 3 |
POLI 466 | POLITICAL PARTIES AND VOTING BEHAVIOR IN WESTERN DEMOCRACIES | 3 |

Area of Specialization: International Security

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 437 / ENST 437</td>
<td>ENERGY ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 531</td>
<td>WORLD POLITICS AND GLOBAL GOVERNANCE</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 543</td>
<td>ENERGY POLICY</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 551</td>
<td>CYBERPOLITIK: INTERNATIONAL AFFAIRS IN TECHNOLOGY AND INFORMATION</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 552</td>
<td>INTERNATIONAL SECURITY: DE-RISKING NATIONAL THREATS AND BUSINESS THREATS</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 553</td>
<td>INTERNATIONAL CRISIS MANAGEMENT IN A MULTI-RISK, INTER-CONNECTED WORLD</td>
<td>3</td>
</tr>
<tr>
<td>HIST 436</td>
<td>AMERICA IN THE MIDDLE EAST</td>
<td>3</td>
</tr>
<tr>
<td>POLI 373</td>
<td>WAR AND POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 374</td>
<td>STRATEGIC INTERACTIONS IN INTERNATIONAL RELATIONS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 478</td>
<td>US - CHINA: CONFLICT AND COOPERATION</td>
<td>3</td>
</tr>
</tbody>
</table>

Policies for the MAGA Degree

Admission

Applicants to the Master of Arts in Global Affairs degree program are required to submit:

- Statement of purpose
- Professional resume
- Three letters of recommendation
- Official transcripts from all colleges and universities attended, with official degree conferral date
- Applicants are recommended, but not required to submit scores from either the Graduate Record Examination (GRE) or the Graduate Management Admissions Test (GMAT).
- Approved TOEFL scores for applicants whose native language is not English and who did not receive a degree from a country in which English is the official language of communication.

Foreign Language Proficiency

Students who expect to complete their degree program with a particular regional focus in mind are expected to be proficient in one of the primary languages of that region. Proficiency is defined as the ability to read and speak the language. This requirement can be met in one of three ways:

- By passing a language proficiency exam administered by the Rice Language Center.
• By achieving a grade of B+ or better in an intermediate language course at Rice. Taking this class does not count toward the 36 credit hours total for degree completion.
• By graduating from a high school or university where a language other than English was the primary language of instruction.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

For additional information, please see the Global Affairs website: http://mga.rice.edu/

Opportunities for the MAGA Degree
Fifth-Year Master’s Degree Option for Rice Undergraduate Students
Rice students have an option to achieve the Master of Arts in Global Affairs degree by adding an additional fifth year to the four undergraduate years of studies. Advanced Rice students in good academic standing may apply during their junior year to the graduate program. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking required core courses of the global affairs program during their senior year. A plan of study based on their particular focus area will need to be approved by the program director.

As part of this option and opportunity, Rice undergraduate students:
• must complete the requirements for a baccalaureate degree and the Master of Arts in Global Affairs independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
• should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).

For additional information, please see the Global Affairs website: http://mga.rice.edu/

Global Health Technologies
Contact Information
Global Health Technologies
http://www.rice360.rice.edu/
BioScience Research Collaborative
713-348-4174

Rebecca Richards-Kortum
Director, Rice 360º
rkortum@rice.edu

Veronica Leautaud
Director of Education, Rice 360º
vl2@rice.edu

Global Health Technologies does not currently offer an academic program at the graduate level.

Minor
• Minor in Global Health Technologies (p. 418)

Director and Advisor
Rebecca Richards-Kortum

Steering Committee
Pedro Alvarez
Rachel Kimbro
Douglas Shuler
Tomasz S. Tkaczyk

Undergraduate Advisors
Elias K. Bongmba
Maria Oden

Minor Advisor
Veronica Leautaud

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: GLHT

Program Description and Code
• Global Health Technologies: GLHT
Program Learning Outcomes for the Minor in Global Health Technologies

Upon completing the minor in Global Health Technologies, students will be able to:

1. Demonstrate the ability to prototype and build appropriate technologies that respond to global health design challenges or problems, and/or develop a community health plan or strategy to address these challenges. They will conduct independent research and design—from developing a research question and completing a literature review, to analyzing and interpreting data—to demonstrate the effectiveness of their proposed solution.

2. Demonstrate a broad understanding of the issue of human health, disease, and health care planning from Natural Science, Humanities, and Social Sciences perspectives.

3. Understand the basic elements of human health and disease from evolutionary, biological, and epidemiological perspectives.

4. Demonstrate critical thinking and analysis skills within the realm of global health and its related disciplines, including the ability to critically and responsibly synthesize materials and methods from a range of disciplines to address global health problems or questions.

5. Demonstrate a knowledge of how health and disease are, in part, social and cultural constructs; students will be able to explain how different populations of individuals within the same geographic locale or in very different geographic locales may understand health and disease differently. They will also demonstrate the ability to assess and explain how different kinds of health planning, delivery systems, institutions, and health products would be more or less effective for different populations.

6. Communicate effectively at the college level by demonstrating the ability to write research papers, literature reviews, and other scholarly papers and by being able to verbally present this information effectively and correctly.

Requirements for the Minor in Global Health Technologies

Students pursuing the minor Global Health Technologies must complete:

- A minimum of 7 courses (21 credit hours) to satisfy minor requirements.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Minor in Global Health Technologies</td>
<td>21</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 All core courses will be offered each year:
   • GLHT 201, PSYC 370, SOCI 381, ANTH 381, GLHT 392 and GLHT 451 in the fall.
   • GLHT 360, SOCI 345, GLHT 464, GLHT 314, and GLHT 452 in the spring.

The sequence indicated is the required sequence, as prerequisites do apply.

If not selected as a Core course, some courses are also available as Electives (see course list below).

2 Prior to enrollment in the capstone courses GLHT 451 and GLHT 452, students must successfully complete all other GLHT minor core course requirements, although electives may be taken concurrently.

Elective Requirements

To fulfill the remaining Global Health Technologies minor requirements, students must complete a total of 2 additional electives courses (6 credit hours) as listed below.

Elective Requirements

Select 1 elective course from Science/Engineering Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>21</td>
</tr>
</tbody>
</table>

Science/Engineering Electives

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 318</td>
<td>MICROBIOLOGY LABORATORY</td>
<td>3-4</td>
</tr>
<tr>
<td>BIOC 372</td>
<td>IMMUNOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 424</td>
<td>MICROBIOLOGY AND BIOTECHNOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 447</td>
<td>EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE</td>
<td></td>
</tr>
<tr>
<td>BIOC 450</td>
<td>VIRUSES AND INFECTIOUS DISEASES</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Title</td>
<td>Credit Hours</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>BIOC 460</td>
<td>CANCER BIOLOGY</td>
<td>3-4</td>
</tr>
<tr>
<td>BIOE 449 / GLHT 449</td>
<td>TROUBLESHOOTING WORKSHOP FOR CLINICALLY-RELEVANT BIOMEDICAL EQUIPMENT</td>
<td>3-4</td>
</tr>
<tr>
<td>CEVE 302 / ENGI 302</td>
<td>SUSTAINABLE DESIGN</td>
<td>3-4</td>
</tr>
<tr>
<td>ELEC 446 / COMP 446</td>
<td>MOBILE DEVICE APPLICATIONS PROJECT</td>
<td>3-4</td>
</tr>
<tr>
<td>GLHT 314 / BIOE 365 / CEVE 314</td>
<td>SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD</td>
<td>3-4</td>
</tr>
<tr>
<td>GLHT 400</td>
<td>GLOBAL HEALTH TECHNOLOGIES INDEPENDENT RESEARCH PROJECTS</td>
<td>3-4</td>
</tr>
<tr>
<td>GLHT 401</td>
<td>GLHT RESEARCH PAPER WRITING AND SUBMISSION</td>
<td>3-4</td>
</tr>
<tr>
<td>GLHT 510 / BIOE 510</td>
<td>SEMINAR IN TROPICAL MEDICINE</td>
<td>3-4</td>
</tr>
<tr>
<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS</td>
<td>3-4</td>
</tr>
<tr>
<td>STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
<td>3-4</td>
</tr>
</tbody>
</table>

### Humanities/Social Science Electives

Select 1 from the following:

- ANTH 381  MEDICAL ANTHROPOLOGY
- ANTH 443  ANTHROPOLOGY OF RACE, ETHNICITY AND HEALTH
- BUSI 464  SOCIAL ENTREPRENEURSHIP
- ECON 450  ECONOMIC DEVELOPMENT
- ECON 481  HEALTH ECONOMICS
- ECON 484  PUBLIC ECONOMICS
- ENGL 372  THE AMERICAN WEST/AMERICAS
- ENGL 273 / SWGS 273  MEDICINE AND MEDIA
- ENGL 386 / FILM 381  MEDICAL MEDIA ARTS LAB
- ENST 313 / ARCH 313  SUSTAINABLE DESIGN
- ENST 315  ENVIRONMENTAL HEALTH
- GLHT 464 / BUSI 464  SOCIAL ENTREPRENEURSHIP
- HEAL 222  PRINCIPLES OF PUBLIC AND COMMUNITY HEALTH
- HEAL 313  FOUNDATIONS OF HEALTH PROMOTION AND EDUCATION
- HEAL 407  EPIDEMIOLOGY
- HEAL 422  THEORIES AND MODELS OF HEALTH BEHAVIOR
- HEAL 460  PLANNING AND EVALUATION OF HEALTH PROMOTION AND EDUCATION
- HIST 231  INTRODUCTION TO AFRICAN HISTORY: NORTH, WEST, AND CENTRAL AFRICA: EARLY TIMES TO PRESENT
- HIST 232  INTRODUCTION TO AFRICAN HISTORY: EAST, CENTRAL, AND SOUTHERN AFRICA, EARLY TIMES TO PRESENT
- PSYC 345  HEALTH PSYCHOLOGY
- PSYC 370  INTRODUCTION TO HUMAN FACTORS AND ERGONOMICS
- PSYC 409  METHODS IN HUMAN-COMPUTER INTERACTION
- PSYC 480  ADVANCED TOPICS
- RELI 424  RELIGION AND POLITICS IN AFRICA
- SOCI 313  DEMOGRAPHY
- SOCI 345  MEDICAL SOCIOLOGY
- SOCI 371 / HUMA 371  POVERTY, JUSTICE, AND HUMAN CAPABILITIES
- SOCI 381  RESEARCH METHODS
- SOCI 394  HUMAN DEVELOPMENT IN GLOBAL AND LOCAL COMMUNITIES
- SOCI 406  BASIC DEMOGRAPHIC TECHNIQUES
- SOCI 465 / SWGS 465  GENDER AND HEALTH

### Policies for the Minor in Global Health Technologies

#### Admission

Courses with the GLHT subject code are open to all Rice students, including those not pursing the GLHT minor, with the exception of GLHT 360 and the capstone course GLHT 451/452. While GLHT 451/452 senior capstone is restricted to students completing the GLHT minor, for GLHT 360, students are required to submit a 250-word statement explaining their interests in and reasons for taking the course to beyondtraditionalborders@rice.edu to gain special permission from the instructor to register for the course. Preferential admission to GLHT 360 will be given to students who formally declared or state their intention to pursue the GLHT minor. For information on the declaration of minor process for the GLHT minor, please visit this website [http://www.rice360.rice.edu/minor/#Declaration](http://www.rice360.rice.edu/minor/#Declaration).

There is no requirement to initiate or declare the GLHT minor in the freshman year. It can be formally declared as late as the junior year (beginning of the fifth semester). It will be possible for students to receive credit for GLHT minor courses that also fulfill a requirement within their major.

#### Program Restrictions and Exclusions

Students pursuing the minor in Global Health Technologies should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare a minor only after they have first declared a major; and ii.) students may not major and minor in the same subject.

#### Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic advisor before registering for transfer credit.
Program's transfer credit advisor when considering transfer credit possibilities.

**Program Transfer Credit Guidelines**

Students pursuing the minor in Global Health Technologies should be aware of the following program-specific transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Global Health Technologies website: http://www.rice360.rice.edu/qlht-minor.

**Opportunities for the Minor in Global Health Technologies**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (**summa cum laude**, **magna cum laude**, and **cum laude**) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

**Departmental Internships and Competition**

**Rice 360° Global Health Summer Internship Program**

The Rice 360° Global Health Technologies Summer Internship Program gives Rice University undergraduate students - both science and non-science majors - first-hand exposure to health care in resource constrained settings. In partnership with clinics, schools, and organizations working in developing countries, the internships allow students to advance their solutions to a global health design challenge in a real-world setting.

The summer internships are held in a number of national and international locations, exposing students to health care challenges and solutions in the developed and developing world. In the past, our students have visited Malawi, Brazil, and the Rio Grande Valley in Texas among other locations. During the internship, students are responsible for the implementation of a GLHT project and a site specific project, both of which are assigned to them. In addition, participants select a project of their choice and work on identifying and documenting five novel ideas or technology ideas at the site.

Summer internships are fully funded experiences, covering the cost of your travel (airfare, visa, and traveler's insurance), immunizations, housing and a stipend for day to day living expenses (eg. food and local transportation).

For more information visit: [http://www.rice360.rice.edu/internships](http://www.rice360.rice.edu/internships).

**Global Health Technologies Design Competition**

The Rice 360° Annual Undergraduate Global Health Technologies Design Competition is held each Spring at Rice University. It features over 20 student teams from national and international universities who present their low-cost global health technologies. Entries are judged on the quality of the problem definition, the effectiveness and potential impact of the design solution, and the likelihood that the solution can be successful in improving healthcare delivery in low-resource settings by faculty, clinicians, and private and public sector partners from around the country.

Information on the application process and competition guidelines can be found here: [http://www.rice360.rice.edu/design-competition](http://www.rice360.rice.edu/design-competition).

**Gnosticism, Esotericism and Mysticism**

**Contact Information**

Gnosticism, Esotericism and Mysticism
[http://reli.rice.edu/](http://reli.rice.edu/)
225 Humanities Building
713-348-2092

April DeConick
Department Chair
adeconick@rice.edu

The Department of Religion offers the Certificate in Gnosticism, Esotericism and Mysticism (GEM). The GEM certificate provides graduate students with a theoretical orientation, which they then can apply to their chosen concentrations (i.e., African-American religions; African religions; Bible and Beyond; Buddhism; Christianity; Hinduism; Islam; Judaism; American Religion; New Age and New Religious Movements; etc.). Traditionally the study of religion has privileged the authoritative voices of the religious experts and the scriptural texts that uphold orthodox faith traditions.

GEM is a new approach to the study of religion that does not privilege the public orthodox framings but takes seriously the heterodox and esoteric currents that have been actively repressed, censored, or marginalized in a variety of sociological, psychological, philosophical, and political ways. GEM takes into account the plurality of religious voices and expressions, including the neglected currents, in order to reconceive religion. This approach also engages the psychology and the phenomenology of religious experience, rather than relying exclusively on the authoritative framings taught by the faith traditions and transmitted in their scriptural texts, interpretations and rituals.

Gnosticism, Esotericism and Mysticism does not currently offer an academic program at the undergraduate level.

**Certificate**

- Certificate in Gnosticism, Esotericism and Mysticism (p. 421)

**Advisors**

April D. DeConick
Jeffrey J. Kripal

**Professors**

Marcia Brennan
April D. DeConick
Anne C. Klein
Jeffrey J. Kripal
William Parsons
Associate Professors
David Cook
Claire Fanger

Assistant Professors
Niki Kasumi Clements
Brian Ogren

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject codes: Courses from various subjects may apply towards this program

Department Description and Code
- Religion: RELI

Graduate Certificate Description and Code
- Certificate in Gnosticism, Esotericism and Mysticism: GEM

Certificate in Gnosticism, Esotericism and Mysticism

Program Learning Outcomes for the Certificate in Gnosticism, Esotericism and Mysticism
Upon completing the Certificate in Gnosticism, Esotericism and Mysticism, students will be able to:

1. Understand and interpret religious traditions by examining the plurality of religious voices and expressions, including currents that have been marginalized, neglected, repressed, and censored in a variety of sociological, psychological, philosophical, and political ways.

Requirements for the Certificate in Gnosticism, Esotericism and Mysticism
The Certificate in Gnosticism, Esotericism, and Mysticism is a graduate certificate. For general university requirements, please see Graduate Certificates (p. 53).

Students pursuing the certificate in Gnosticism, Esotericism and Mysticism must complete:

- A minimum of 6 courses (14 credit hours) to satisfy certificate requirements.
- A minimum grade of ‘B-’ (2.67 grade points) or better for all courses taken for a letter grade.
- All required coursework associated with the student’s corresponding degree program.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student’s Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary
<table>
<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
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Certificate Requirements

Theoretical-Intensive Courses
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<th>Title</th>
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<tbody>
<tr>
<td>RELI 558</td>
<td>MYSTICISM: THEORIES AND METHODS</td>
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<tr>
<td>RELI 581</td>
<td>GNOSTICISM SEMINAR</td>
<td>3</td>
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<tr>
<td>RELI 587</td>
<td>WESTERN ESOTERICISM: METHOD AND THEORY</td>
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Thematic Courses
Select 1 from the following:
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<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>RELI 505</td>
<td>AMERICAN METAPHYSICAL RELIGION</td>
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<tr>
<td>RELI 522</td>
<td>ISLAM’S MYSTICAL AND ESOTERIC TRADITION</td>
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<td>RELI 531</td>
<td>RELIGION AND COGNITIVE SCIENCE</td>
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<tr>
<td>RELI 532</td>
<td>ADVANCED TIBETAN LANGUAGE AND CULTURE</td>
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<tr>
<td>RELI 551</td>
<td>DIVINE SEX</td>
<td></td>
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<tr>
<td>RELI 566</td>
<td>PAIN, ECSTASY AND EMBODIMENT IN RELIGIOUS EXPERIENCE</td>
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<tr>
<td>RELI 570</td>
<td>BUDDHIST WISDOM TEXTS</td>
<td></td>
</tr>
<tr>
<td>RELI 588</td>
<td>THE HISTORY OF RELIGIONS SCHOOL</td>
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<tr>
<td>RELI 589</td>
<td>MUTANTS AND MYSTICS: THE PARANORMAL AND POPULAR CULTURE</td>
<td></td>
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<tr>
<td>RELI 602</td>
<td>THE SACRED ARTS OF SECULAR MODERNISM</td>
<td></td>
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<tr>
<td>RELI 615</td>
<td>SECRET RELIGION</td>
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Gnosticism, Esotericism and Mysticism (GEM) Research Forum
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>RELI 600</td>
<td>GEM RESEARCH FORUM</td>
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Total Credit Hours
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Research Forum</td>
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</tr>
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</table>

Footnotes and Additional Information
1 Students must complete 2 consecutive Fall and Spring semesters of RELI 600 (1 credit hour each semester for 2 credit hours total). This forum meets monthly throughout the semester.
Policies for the Certificate in Gnosticism, Esotericism and Mysticism

Program Restrictions and Exclusions

Students pursuing this certificate should be aware of the following program restriction:

- Graduate students may declare their intent to pursue a university certificate only after they have first been admitted into a graduate-level Rice degree-granting program.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

For additional information, please see the Gnosticism, Esotericism and Mysticism’s page on the Department of Religion website: http://reli.rice.edu/GEM

Opportunities for the Certificate in Gnosticism, Esotericism and Mysticism

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this program.

History

Contact Information

History
http://history.rice.edu/
326 Humanities Building
713-348-4947

Peter C. Caldwell
Department Chair
caldwell@rice.edu

The study of history informs students about the many worlds of the past from which our diverse community has come, providing analytical tools with which to understand the present in terms of the past, and creating a knowledgeable citizenry that can confront the challenges of the future with confidence and historical insight. History lies at the heart of the Humanities, which provides the moral core of all great universities.

The department of History at Rice offers a diverse and exciting range of undergraduate electives that encourage engagement with the past as a way to understand the present and that foster appreciation of past societies for their own sake as important elements of the human experience. Our undergraduate major emphasizes critical skills in communication, writing, and especially research skills, and our department funds travel to archives and libraries as students prepare senior seminar papers and honors theses. The history major is flexible and offers an International Concentration that recognizes study abroad experience and research competency in languages other than English. The Honors Program offers highly motivated students the chance to engage deeply with historical research and writing.

The graduate program, which trains a limited number of carefully selected students, offers these fields: United States (including colonial America, the U.S. South, and United States and the World), Latin America and the Caribbean, the Atlantic World, transnational Asia, and the Middle East. PhD students may concurrently pursue a graduate certificate through the Center for the Study of Women, Gender and Sexuality, or the Center for Critical and Cultural Theory.

Through graduate reciprocal agreements with the Universidade Estadual de Campinas (UNICAMP) and the Instituto Mora, the department offers highly qualified graduate students the opportunity to earn a second PhD at a top-ranked university in Brazil or Mexico. Students in the dual degree program study in Brazil or Mexico, and write dissertations that are co-supervised by faculty at Rice, UNICAMP, or Mora.

Bachelor’s Programs

- Bachelor of Arts (BA) Degree with a Major in History (p. 423)
- and a Major Concentration in History: International Concentration (p. 428)

Master’s Program

- Master of Arts (MA) Degree in the field of History*

Doctoral Programs

- Doctor of Philosophy (PhD) Degree in the field of History (p. 432)

Coordinated Programs

- Doctor of Philosophy (PhD) Degree in the field of History, with Instituto Mora, in Mexico (Dual Degree) (p. 433)
- Doctor of Philosophy (PhD) Degree in the field of History, with Universidade Estadual de Campinas (UNICAMP), in Brazil (Dual Degree) (p. 434)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Chair

Peter C. Caldwell

Director of Undergraduate Studies

Fay Yarbrough

Director of Graduate Studies

Sayuri Guthrie Shimizu

Professors

Tani E. Barlow
John B. Boles
Douglas B. Brinkley
Peter C. Caldwell
Sayuri Guthrie Shimizu
Michael Maas
Ussama Makdisi
Alida C. Metcalf
Paula A. Sanders
James Sidbury
Martin J. Wiener
Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: HIST

Department Description and Code
• History: HIST

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in History: HIST

Undergraduate Major Concentration Description and Code
• Major Concentration in History: International Concentration: HINT

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in History: HIST

Bachelor of Arts (BA) Degree with a Major in History

Program Learning Outcomes for the BA Degree with a Major in History

Upon completing the BA degree with a major in History, students will be able to:

1. Identify and connect the ways that people, ideas, and technologies have circulated across the range of geographic regions and historical periods.

2. Apply historical questions to concrete cases and demonstrate analytical skills through the use of historical evidence, rigorous logic, and persuasive argument.

3. Exhibit a solid understanding of historical methodologies and research skills, including the careful and creative use of primary and secondary sources that are read critically and weighed carefully as historical evidence.

4. Demonstrate an awareness of the scholarly literature on a given research topic and identify the position of their research within that literature.

5. Exhibit mastery in writing persuasive and analytical prose following the conventions of the discipline.

Requirements for the BA Degree with a Major in History

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in History must complete:

• A minimum of 10 courses (30 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 6 courses (18 credit hours) at the 300-level or above.
• A minimum of 6 courses (18 credit hours) at Rice.
• A minimum of 2 courses (6 credit hours) from departmental course offerings of 400-level seminars.
• A maximum of 4 courses (12 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

Some foreign language proficiency is desirable and the department highly recommends that students contemplating graduate work in history study at least one foreign language in some depth.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.
Bachelor of Arts (BA) Degree with a Major in History

### Summary

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in History</td>
<td>120</td>
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</table>

### Degree Requirements

#### Core Requirements

*Select at least 1 course from at least 4 of the 5 following fields (see below for course lists):*

- **Premodern**
- **Europe**
- **United States**
- **Africa, Asia, Latin America, Middle East**
- **Transnational, Comparative, World**

**Seminar**

Select 2 courses from departmental (HIST) course offerings.

**Elective Requirements**

Select 4 additional courses from departmental (HIST) course offerings.

**Total Credit Hours Required for the Major in History**

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1. Any departmental (HIST) course offerings between HIST 400 and HIST 499, with the exception of HIST 403 and HIST 404.

2. AP credit for history, HIST 403, and HIST 404 do not fulfill History major requirements as Electives or as Seminar. Additionally, students may take HIST 390 only once to fulfill History major requirements.

### Core Requirements

Of the 10 required courses to satisfy the History major requirements, a minimum of 6 courses total (18 credit hours) must be completed at the 300-level or above.

#### Premodern Courses

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<tr>
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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>FSEM 151 / HIST 151</td>
<td>THE HERO AND HIS COMPANION FROM GILGAMESH TO SAM SPADE</td>
<td>3</td>
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<tr>
<td>HIST 120 / MDEM 120</td>
<td>MEDIEVAL CIVILIZATIONS</td>
<td>3</td>
</tr>
<tr>
<td>HIST 186</td>
<td>HISTORICAL SURVEY OF JEWISH CIVILIZATION FROM ITS ORIGINS TO THE PRESENT</td>
<td>3</td>
</tr>
<tr>
<td>HIST 190</td>
<td>OCEANS IN WORLD HISTORY</td>
<td>3</td>
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</tbody>
</table>

#### Europe Courses

<table>
<thead>
<tr>
<th>Code Courses</th>
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<tr>
<td>HIST 101</td>
<td>MODERN EUROPE, 1500-1789</td>
<td>3</td>
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<tr>
<td>HIST 102</td>
<td>MODERN EUROPE, 1789-PRESENT</td>
<td>3</td>
</tr>
<tr>
<td>HIST 120 / MDEM 120</td>
<td>MEDIEVAL CIVILIZATIONS</td>
<td>3</td>
</tr>
<tr>
<td>Code</td>
<td>Title</td>
<td>Credit Hours</td>
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<tr>
<td>----------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>HIST 144 / FSEM 144</td>
<td>THE ARAB-ISRAELI CONFLICT</td>
<td>3</td>
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<tr>
<td>HIST 190</td>
<td>OCEANS IN WORLD HISTORY</td>
<td>3</td>
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<tr>
<td>HIST 205 / MDEM 205</td>
<td>MEDIEVAL MEDITERRANEAN WORLD</td>
<td>3</td>
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<tr>
<td>HIST 225</td>
<td>EUROPE SINCE 1945</td>
<td>3</td>
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<td>HIST 256</td>
<td>EUROPEAN POLITICS AND SOCIETY, 1890-1945</td>
<td>3</td>
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<tr>
<td>HIST 324 / MDEM 324</td>
<td>COEXISTENCE IN MEDIEVAL SPAIN</td>
<td>3</td>
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<tr>
<td>HIST 327 / MDEM 327</td>
<td>MEDIEVAL BORDERLANDS</td>
<td>3</td>
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<tr>
<td>HIST 329 / ARCH 329 / HART 329</td>
<td>STREETS AND URBAN LIFE: PARIS TO ISTANBUL</td>
<td>3</td>
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<td>HIST 344</td>
<td>EUROPEAN REFORMATIONS</td>
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<td>HIST 352</td>
<td>HISTORY OF THE COLD WAR</td>
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<tr>
<td>HIST 354 / GERM 344</td>
<td>GERMAN HISTORY, 1648-1890</td>
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<td>HIST 355 / GERM 345</td>
<td>FROM DEMOCRACY TO DICTATORSHIP: GERMAN HISTORY, 1890-1945</td>
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<td>HIST 356</td>
<td>AFTER NAZISM: GERMAN HISTORY, 1945 - PRESENT</td>
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<td>HIST 357 / MDEM 357</td>
<td>JEWS AND CHRISTIANS IN MEDIEVAL EUROPE</td>
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<td>HIST 358</td>
<td>HUMANITARIANISM FROM THE 19TH CENTURY TO THE PRESENT</td>
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<td>HIST 361</td>
<td>HISTORY OF PREMODERN BRITAIN: TUDORS AND STUARTS, 1485 - 1707</td>
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<td>HIST 362</td>
<td>BRITAIN FROM THE INDUSTRIAL REVOLUTION TO THE PRESENT</td>
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<td>HIST 370</td>
<td>EUROPEAN INTELLECTUAL HISTORY: BACON TO HEGEL</td>
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<td>HIST 371</td>
<td>HISTORY OF MODERN FRANCE</td>
<td>3</td>
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<td>HIST 372</td>
<td>IMMIGRATION AND THE STATE: 19TH &amp; 20TH CENTURY</td>
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<td>HIST 373</td>
<td>SOCIAL AND POLITICAL THOUGHT IN 19TH CENTURY EUROPE</td>
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<td>HIST 374</td>
<td>JEWISH HISTORY, 1500-1948</td>
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<td>HIST 375</td>
<td>EUROPEAN ROMANTICISM, 1750-1850</td>
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<td>HIST 428</td>
<td>MODERN SLAVERY AND HUMAN TRAFFICKING: GLOBAL AND LOCAL</td>
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<td>HIST 429</td>
<td>RELIGIOUS VIOLENCE AND IDENTITY IN THE MIDDLE EAST</td>
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<td>HIST 433</td>
<td>THE ARAB-ISRAELI CONFLICT</td>
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<td>HIST 434</td>
<td>ISLAM AND THE WEST</td>
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<td>HIST 439</td>
<td>COMPARATIVE SLAVERY FROM ANTIQUITY TO THE PRESENT: AFRICA, ASIA, AND EUROPE</td>
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<td>HIST 443 / HART 435 / MDEM 435</td>
<td>MULTICULTURAL EUROPE, 1400-1700</td>
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<tr>
<td>HIST 448</td>
<td>WESTERN EUROPEAN WELFARE STATE, 1880-1980: ORIGINS, CONSOLIDATIONS, CRISIS</td>
<td>3</td>
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<td>HIST 457</td>
<td>FOUR MODERN REVOLUTIONS: 1776, 1789, 1917, 1989</td>
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<td>HIST 459</td>
<td>TOPICS IN MODERN GERMAN HISTORY: NAZISM AND THE HOLOCAUST</td>
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<tr>
<td>HIST 461</td>
<td>THE SECOND WORLD WAR: A POLITICAL HISTORY</td>
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### United States Courses

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<tr>
<td>HIST 111</td>
<td>RED, WHITE AND BLACK IN EARLY AMERICA CREATING RACIAL IDENTITIES IN THE ERA OF THE AMERICAN REVOLUTION</td>
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<tr>
<td>HIST 117</td>
<td>EARLY AMERICA</td>
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<tr>
<td>HIST 118</td>
<td>THE UNITED STATES, 1848 TO THE PRESENT</td>
<td>3</td>
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<td>HIST 144 / FSEM 144</td>
<td>THE ARAB-ISRAELI CONFLICT</td>
<td>3</td>
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<td>HIST 190</td>
<td>OCEANS IN WORLD HISTORY</td>
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<tr>
<td>HIST 215</td>
<td>BLACKS IN THE AMERICAS</td>
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<td>HIST 216</td>
<td>BLACK LIFE IN THE NINETEENTH-CENTURY UNITED STATES</td>
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<td>HIST 241 / SWGS 234</td>
<td>U.S. WOMEN'S HISTORY I: COLONIAL BEGINNINGS TO THE CIVIL WAR</td>
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<td>HIST 242 / SWGS 235</td>
<td>U.S. WOMEN'S HISTORY II: CIVIL WAR TO THE PRESENT</td>
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<td>HIST 246</td>
<td>AMERICAN CIVIL WAR ERA</td>
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<td>HIST 266</td>
<td>SLAVERY AND THE FOUNDING FATHERS</td>
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<td>HIST 268</td>
<td>MODERN SLAVERY</td>
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<td>HIST 291</td>
<td>20TH CENTURY AMERICAN PRESIDENTS</td>
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<td>HIST 295</td>
<td>THE AMERICAN SOUTH</td>
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<td>HIST 315</td>
<td>BLACKS IN THE AMERICAS</td>
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<td>HIST 318</td>
<td>DIGITAL HISTORY METHODS</td>
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<td>HIST 321</td>
<td>US ENVIRONMENTAL HISTORY</td>
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<td>HIST 330</td>
<td>ATLANTIC SLAVE TRADE AND THE ORIGINS OF AFRO AMERICA</td>
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<td>HIST 347</td>
<td>BLACK AMERICA: FROM NADIR THROUGH THE GREAT DEPRESSION</td>
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<td>HIST 350</td>
<td>AMERICA, 1900-1940</td>
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<td>AMERICA SINCE 1945</td>
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<td>HIST 352</td>
<td>HISTORY OF THE COLD WAR</td>
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<tr>
<td>HIST 380 / ASIA 380</td>
<td>ASIAN AMERICAN EXPERIENCES</td>
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<tr>
<td>HIST 386</td>
<td>CARTER, REagan, AND THE END OF THE COLD WAR</td>
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<tr>
<td>HIST 387</td>
<td>THE UNITED STATES IN THE WORLD: AGE OF EMPIRE AND REVOLUTION</td>
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<tr>
<td>HIST 395</td>
<td>THE AMERICAN SOUTH</td>
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<tr>
<td>HIST 398 / SWGS 398</td>
<td>THE TEN MOST IMPORTANT SUPREME COURT DECISIONS IN U.S. HISTORY</td>
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<td>HIST 411</td>
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2017-2018 General Announcements
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<td>ISLAM AND THE WEST</td>
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**Africa, Asia, Latin America, Middle East Courses**

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<td>OCEANS IN WORLD HISTORY</td>
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<td>HIST 205 / MDEM 205</td>
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<td>CARIBBEAN NATION BUILDING</td>
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<td>BLACKS IN THE AMERICAS</td>
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<td>LATIN AMERICAN CULTURAL TRADITIONS</td>
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<td>HIST 229</td>
<td>HISTORY OF SOUTH AFRICA</td>
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<td>HIST 231</td>
<td>INTRODUCTION TO AFRICAN HISTORY: NORTH, WEST, AND CENTRAL AFRICA: EARLY TIMES TO PRESENT</td>
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<td>SLAVERY AND THE FOUNDING FATHERS</td>
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<td>HISTORY OF SOUTH ASIA</td>
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<td>PRE-MODERN CHINA</td>
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<td>CHINESE WOMEN THROUGH TIME</td>
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<td>A TURBULENT TIME: THE WORLD OF THE HAITIAN REVOLUTION</td>
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**Transnational, Comparative, World Courses**

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HIST 188 THE ATLANTIC WORLD: ORIGINS TO THE AGE OF REVOLUTION 3
HIST 190 OCEANS IN WORLD HISTORY 3
HIST 200 ANCIENT EMPIRES: ORIGINS OF WESTERN CIVILIZATIONS 3
HIST 204 THE IDEA OF AFRICA 3
HIST 205 / MDEM 205 MEDIEVAL MEDITERRANEAN WORLD 3
HIST 218 / ASIA 218 / FILM 218 HISTORY THROUGH FILM IN EAST AND NORTHEAST ASIA 3
HIST 226 COLONIAL SPANISH AMERICA 3
HIST 227 LATIN AMERICAN CULTURAL TRADITIONS 3
HIST 268 MODERN SLAVERY 3
HIST 271 HISTORY OF SOUTH ASIA 3
HIST 302 TRADITIONAL CHINESE CULTURE 3
HIST 307 IMPERIAL ROME FROM CAESAR TO DIOCLETIAN 3
HIST 308 / MDEM 308 THE WORLD OF LATE ANTIQUITY 3
HIST 320 IMPERIAL GARDENS: A CULTURAL COMPARISON 3
HIST 327 / MDEM 327 MEDIEVAL BORDERLANDS 3
HIST 340 / SWGS 345 HISTORY OF FEMINISM 3
HIST 357 / MDEM 357 JEWS AND CHRISTIANS IN MEDIEVAL EUROPE 3
HIST 358 HUMANITARIANISM FROM THE 19TH CENTURY TO THE PRESENT 3
HIST 372 IMMIGRATION AND THE STATE: 19TH & 20TH CENTURY 3
HIST 378 MODERN ARAB HISTORY 3
HIST 381 / RELI 385 GOD, TIME AND HISTORY 3
HIST 384 / ASIA 328 / SWGS 384 MODERN GIRL AND ASIA IN THE WORLD 3
HIST 387 THE UNITED STATES IN THE WORLD: AGE OF EMPIRE AND REVOLUTION 3
HIST 389 / ASIA 389 MIGRATIONS AND DIASPORAS IN THE INDIAN OCEAN WORLD 3
HIST 411 SLAVE REBELLIONS IN THE AMERICAS 3
HIST 424 RAJ AND RESISTANCE 3
HIST 428 MODERN SLAVERY AND HUMAN TRAFFICKING: GLOBAL AND LOCAL 3
HIST 429 RELIGIOUS VIOLENCE AND IDENTITY IN THE MIDDLE EAST 3
HIST 433 THE ARAB-ISRAELI CONFLICT 3
HIST 436 AMERICA IN THE MIDDLE EAST 3
HIST 439 COMPARATIVE SLAVERY FROM ANTIQUITY TO THE PRESENT: AFRICA, ASIA, AND EUROPE 3
HIST 455 HISTORY OF HUMAN RIGHTS 3
HIST 457 FOUR MODERN REVOLUTIONS: 1776, 1789, 1917, 1989 3
HIST 493 EARLY MODERN EMPIRES 3
HIST 494 MUGHAL HISTORY 3
HIST 495 COMPARATIVE MODERNIZATION OF CHINA AND JAPAN 3

Policies for the BA Degree with a Major in History

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaas.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in History should be aware of the following departmental transfer credit guidelines:

- No more than 4 courses (12 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
- Requests for transfer credit will be considered by the departmental Director of Undergraduate Studies (and/or the program's official transfer credit advisor) on an individual case-by-case basis.
- Courses taken at another university must be equivalent in required reading, writing, research and testing, as well as classroom hours, of a Rice history course. Regarding subject matter, however, there does not have to be an equivalent course in the Rice history course offerings, unless the student requires distribution credit.
- Rice students planning to study at a foreign university must also obtain pre-approval from the Rice Study Abroad Office.
- AP, IB or A-level credit (and the corresponding Rice transfer credit) may not be used to satisfy any requirements for the history major (even though a student may be able to use the articulated credit hours toward general university requirements).

For additional information, please see the History website: http://history.rice.edu/.

Opportunities for the BA Degree with a Major in History

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honors Program in History
Qualified undergraduates may enroll for 6 semester credit hours of directed honors research and writing, completing an honors thesis in their senior year (these 6 credit hours are in addition to the 30 hours required for the major). Accepted students enroll in HIST 403 for 3 credits in the Fall of their senior year and in HIST 404 for 3 credits in the Spring of their senior year. Application to the program is required. For current procedures, see the department website (http://history.rice.edu).
Financial assistance is available to conduct related research during the summer between the junior and senior year for all students accepted into the Honors Program.

See [https://humanities.rice.edu/student-life](https://humanities.rice.edu/student-life) for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

**Bachelor of Arts (BA) Degree with a Major in History and a Major Concentration in History: International Concentration**

Program Learning Outcomes for the BA Degree with a Major in History and an International Major Concentration

Upon completing the BA degree with a major in History and an International Major Concentration, students will be able to:

1. Identify and connect the ways that people, ideas, and technologies have circulated across the range of geographic regions and historical periods.
2. Apply historical questions to concrete cases and demonstrate analytical skills through the use of historical evidence, rigorous logic, and persuasive argument.
3. Exhibit a solid understanding of historical methodologies and research skills, including the careful and creative use of primary and secondary sources that are read critically and weighed carefully as historical evidence.
4. Demonstrate an awareness of the scholarly literature on a given research topic and identify the position of their research within that literature.
5. Exhibit mastery in writing persuasive and analytical prose following the conventions of the discipline.
6. Experience a different language and culture in situ.
7. Demonstrate the ability to use a second language for research.

**Requirements for the BA Degree with a Major in History**

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in History must complete:

- A minimum of 10 courses (30 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 6 courses (18 credit hours) taken at the 300-level or above.
- A minimum of 6 courses (18 credit hours) at Rice.
- A minimum of 2 courses (6 credit hours) from departmental course offerings of 400-level seminars.
- A maximum of 4 courses (12 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

Some foreign language proficiency is desirable and the department highly recommends that students contemplating graduate work in history study at least one foreign language in some depth.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
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<th>Code</th>
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<th>Credit Hours</th>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in History</td>
<td>120</td>
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</table>

**Degree Requirements**

**Core Requirements**

Select at least 1 course from at least 4 of the 5 following fields (see below for course lists):

- Premodern
- Europe
- United States
- Africa, Asia, Latin America, Middle East
- Transnational, Comparative, World

Seminar

Select 2 courses from departmental (HIST) course offerings.  

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<tr>
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Elective Requirements

Select 4 additional courses from departmental (HIST) course offerings.  

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**Total Credit Hours Required for the Major in History**

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**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Any departmental (HIST) course offerings between HIST 400 and HIST 499, with the exception of HIST 403 and HIST 404.

2 AP credit for history, HIST 403, and HIST 404 do not fulfill History major requirements as Electives or as Seminar. Additionally, students may take HIST 390 only once to fulfill History major requirements.

**Core Requirements**

Of the 10 required courses to satisfy the History major requirements, a minimum of 6 courses total (18 credit hours) must be completed at the 300-level or above.
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**United States Courses**

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**Africa, Asia, Latin America, Middle East Courses**

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<td>RAJ AND RESISTANCE</td>
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**Transnational, Comparative, World Courses**

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<td>HIST 226</td>
<td>COLONIAL SPANISH AMERICA</td>
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<td>HIST 227</td>
<td>LATIN AMERICAN CULTURAL TRADITIONS</td>
<td>3</td>
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<tr>
<td>HIST 268</td>
<td>MODERN SLAVERY</td>
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<td>HIST 271</td>
<td>HISTORY OF SOUTH ASIA</td>
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<td>HIST 302</td>
<td>TRADITIONAL CHINESE CULTURE</td>
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<td>HIST 307</td>
<td>IMPERIAL ROME FROM CAESAR TO DIOCLETIAN</td>
<td>3</td>
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<tr>
<td>HIST 308 / MDEM 308</td>
<td>THE WORLD OF LATE ANTIQUITY</td>
<td>3</td>
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<tr>
<td>HIST 320</td>
<td>IMPERIAL GARDENS: A CULTURAL COMPARISON</td>
<td>3</td>
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<tr>
<td>HIST 327 / MDEM 327</td>
<td>MEDIEVAL BORDERLANDS</td>
<td>3</td>
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<tr>
<td>HIST 340 / SWGS 345</td>
<td>HISTORY OF FEMINISM</td>
<td>3</td>
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<td>HIST 357 / MDEM 357</td>
<td>JEWS AND CHRISTIANS IN MEDIEVAL EUROPE</td>
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<td>HIST 358</td>
<td>HUMANITARIANISM FROM THE 19TH CENTURY TO THE PRESENT</td>
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<tr>
<td>HIST 372</td>
<td>IMMIGRATION AND THE STATE: 19TH &amp; 20TH CENTURY</td>
<td>3</td>
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<tr>
<td>HIST 378</td>
<td>MODERN ARAB HISTORY</td>
<td>3</td>
</tr>
<tr>
<td>HIST 381 / RELI 385</td>
<td>GOD, TIME AND HISTORY</td>
<td>3</td>
</tr>
<tr>
<td>HIST 384 / ASIA 328 / SWGS 384</td>
<td>MODERN GIRL AND ASIA IN THE WORLD</td>
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<tr>
<td>HIST 387</td>
<td>THE UNITED STATES IN THE WORLD: AGE OF EMPIRE AND REVOLUTION</td>
<td>3</td>
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<td>HIST 389 / ASIA 389</td>
<td>MIGRATIONS AND DIASPORAS IN THE INDIAN OCEAN WORLD</td>
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<tr>
<td>HIST 411</td>
<td>SLAVE REBELLIONS IN THE AMERICAS</td>
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</table>
Major Concentration: (Department of History)
International Concentration

To guide and recognize the work of history majors who choose to devote a part of their studies to international historical issues and questions, the History department has established an optional major concentration in History: International Concentration. In addition to the standard BA degree and history major requirements, students following this major concentration are required to:

- Complete a significant study abroad experience (such as those regularly recommended by the Rice Study Abroad Office), to be pre-approved by the History department's Director of Undergraduate Studies.
- Demonstrate research competency in a language other than English. Students may demonstrate language competence in one of the following two ways:
  - Students who pass a departmental language exam will be certified as having met the language requirement.
  - Students who complete a history honors thesis or a 400-level seminar paper that draws on a significant number of non-English secondary or primary sources will also be certified as having met the requirement.

Upon completion of all requirements for the major in History, students who complete the additional requirements of the major concentration in History: International Concentration will have this accomplishment noted on their final transcript. For more information, see the department website (http://history.rice.edu).

### Policies for the BA Degree with a Major in History and an International Major Concentration

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

Students pursuing the major in History should be aware of the following departmental transfer credit guidelines:

- No more than 4 courses (12 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
- Requests for transfer credit will be considered by the departmental Director of Undergraduate Studies (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
- Courses taken at another university must be equivalent in required reading, writing, research and testing, as well as classroom hours, of a Rice history course. Regarding subject matter, however, there does not have to be an equivalent course in the Rice history course offerings, unless the student requires distribution credit.
- Rice students planning to study at a foreign university must also obtain pre-approval from the Rice Study Abroad Office.
- AP, IB or A-level credit (and the corresponding Rice transfer credit) may not be used to satisfy any requirements for the history major (even though a student may be able to use the articulated credit hours toward general university requirements).

For additional information, please see the History website: http://history.rice.edu/.

### Opportunities for the BA Degree with a Major in History and an International Major Concentration

#### Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

#### Departmental Honors Program in History

Qualified undergraduates may enroll for 6 semester credit hours of directed honors research and writing, completing an honors thesis in their senior year (these 6 credit hours are in addition to the 30 hours required for the major). Accepted students enroll in HIST 403 for 3 credits in the Fall of their senior year and in HIST 404 for 3 credits in the Spring of their senior year. Application to the program is required. For current procedures, see the department website (http://history.rice.edu). Financial assistance is available to conduct related research during the summer between the junior and senior year for all students accepted into the Honors Program.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practicum that may be relevant to this major.

### Doctor of Philosophy (PhD) Degree in the field of History
Program Learning Outcomes for the MA and PhD Degrees in the field of History

Upon completing the MA and PhD Degrees in the field of History, students will be able to:

1. Develop analytic skills in critical thinking and writing that are of value both inside and outside the academy.
2. Conduct original research that makes a contribution to the field.
3. Write a dissertation that makes an original contribution to their field.
4. Be equipped to enter the historical profession as academics who can teach, present work to peers, and communicate effectively with the public.
5. Acquire expertise in their major field of historical inquiry and learn the skills necessary to write historical monographs.

Requirements for the MA and PhD Degrees in the field of History

MA Degree Program

The MA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). The department gives priority to applicants for the PhD. Completion of the MA degree usually takes two years; no more than three years may elapse between graduate admission and the completion of the MA degree unless the department graduate committee approves an extension. MA degrees are awarded in three ways:

1. completion of one year of course work (18 credit hours) and a thesis written and defended in an oral examination during the second year;
2. completion of two years of course work (36 credit hours), normally including at least two seminar research papers, and
3. for students continuing to the PhD, completion of all requirements for candidacy, including written and oral examinations.

PhD Degree Program

For general university requirements, please see Doctoral Degrees (p. 64). Doctoral candidates must prepare themselves in three fields of history: two in their major area of specialization, whether U.S. or other history, and a third in an area not included in the first two fields. Students who wish to pursue a third field in an area outside the department should petition the graduate committee by the end of their second semester.

The requirements for completing the degree will be administered as flexibly as possible within the bounds of general university requirements (p. 49). These requirements state that the PhD degree will be awarded after successful completion of at least 90 semester hours of advanced study and an original investigation reported in an approved thesis. The student may apply for formal admission to candidacy for the PhD degree after passing the qualifying exam.

For the PhD degree, candidates must:

- Prepare themselves thoroughly in three examination fields.
- Take 8 graduate seminars, including HIST 575.
- Pass an examination in the principal language of research and in one additional language. If the principal language of research is English, candidates must pass an examination in one other language.
- Perform satisfactorily on written and oral examinations.
- Complete a dissertation presenting the results of original research.
- Defend the thesis in a public oral examination.

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td></td>
<td></td>
<td>36</td>
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</table>

Total Credit Hours Required for the PhD Degree in the field of History

90

Policies for the PhD Degree in the field of History

Department of History Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Department of History publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/History_Graduate_Handbook.pdf.

Admission

The Rice University graduate program in history is primarily a PhD program. Students who have a BA in history (or its equivalent) are eligible to apply to the PhD program. Although many successful candidates to the PhD program have an MA or other advanced degree, advanced study is not a requirement for admission. Graduate study is offered in these fields: United States (including colonial America, the U.S. South, and the United States and the World), Latin America and the Caribbean, the Atlantic World, transnational Asia, and the Middle East. Further information is available at the department website (http://history.rice.edu). For general university requirements, see Graduate Degrees (p. 49).

Financial Support

The department awards graduate tuition waivers and fellowship stipends, within the limits of available funds, to qualified PhD candidates with demonstrated ability. University funding is not available for master’s program study only. All graduate students in the history department are expected to participate in the professional activities of the department as part of their training. These include, but are not limited to, assisting with the Journal of Southern History or serving as research assistants or teaching assistants for department members. As far as possible, these assignments are kept consistent with the areas of interests of the students.

For additional information, please see the History website: http://history.rice.edu/

Opportunities for the PhD Degree in the field of History

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this degree.

Dual Doctor of Philosophy (PhD) Degree in the field of History, with Instituto Mora, in Mexico
Program Learning Outcomes for the Dual PhD Degree in the field of History, with Instituto Mora, in Mexico

Upon completing the Dual PhD program in the field of History with Instituto Mora, students will:

1. Be able to write and present orally at the level expected for PhD students at Instituto Mora and Rice.
2. Be widely read in historical literature relevant to their research topic in English and Spanish.
3. Be able to work in archives and libraries in the United States and Mexico.
4. Be able to do original research in relevant primary sources in both languages.
5. Understand two distinct academic traditions and learn from both.

Requirements for the Dual PhD Degree in the field of History, with Instituto Mora, in Mexico

For general university requirements, please see Doctoral Degrees (p. 64).

Rice will award the PhD Degree in the field of History to Instituto Mora students who have successfully completed the following requirements:

1. Passed their comprehensive examinations and been admitted to candidacy at Instituto Mora.
2. Completed 6 graduate level courses at Rice, of which one must be HIST 575, one must be a History Graduate Research seminar, and one must be a History Graduate Reading seminar.
3. Written a dissertation in the language of their home institution and a summary in English that is equivalent in style, scholarship, and length to an academic journal article.
4. Successfully presented the dissertation, and the summary, in English, to a faculty panel at Rice.
5. Successfully defended the dissertation at Instituto Mora.

The Instituto Mora will award the Doctorado en Historia Moderna y Contemporánea to Rice students who have successfully completed the following requirements:

1. Passed their comprehensive examinations and been admitted to candidacy at Rice.
2. Completed 8 graduate-level courses at Mora, of which must include Teoría de la Historia; Seminarios de tesis I and II; 2 courses chosen from any of these categories: Teoría Antropológica, Teoría Social, Teoría del Derecho, or Teoría Económica, and 3 additional graduate seminars.
3. Written a dissertation in the language of their home institution and a summary in Spanish that is equivalent in style, scholarship and length to an academic journal article.
4. Successfully defended the doctoral dissertation at Rice.

Summary

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<th>Code</th>
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</table>

Policies for the Dual PhD Degree in the field of History, with Instituto Mora, in Mexico

Department of History Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Department of History publishes a graduate program handbook, which can be found here:


For additional information, please see the History website: http://history.rice.edu/

Opportunities for the Dual PhD Degree in the field of History, with Instituto Mora, in Mexico

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this degree.

Dual Doctor of Philosophy (PhD) Degree in the field of History, with Universidade Estadual de Campinas (UNICAMP), in Brazil

Program Learning Outcomes for the Dual PhD Degree in the field of History, with Universidade Estadual de Campinas (UNICAMP), in Brazil

Upon completing the Dual PhD program in the field of History with the UniversidadeEstadual de Campinas (UNICAMP), students will be able to:

- Demonstrate oral and written fluency at the graduate level in the target languages.
- Demonstrate knowledge of the historiography on their research topic(s) in the two target languages.
- Demonstrate the ability to work with archives and libraries abroad; and demonstrate the ability to do research in the primary sources in the target languages.
- Demonstrate the ability to work with two advisors showing an understanding of two distinct academic communities.
Requirements for the Dual PhD Degree in the field of History, with Universidade Estadual de Campinas (UNICAMP), in Brazil

For general university requirements, please see Doctoral Degrees (p. 64).

Rice will award a PhD degree in the field of History to UNICAMP students who have successfully completed the following requirements:

1. Passed their comprehensive examinations and been admitted to candidacy at UNICAMP.
2. Completed 6 graduate-level courses at Rice, which one must be HIST 575, one must be a History research seminar, and one must be a History reading seminar. Students must be enrolled in at least 9 credit hours per semester while at Rice University.
3. Written a dissertation in the language of their home institution and a summary in English that is equivalent in style, scholarship, and length to an academic journal article.
4. Successfully presented the dissertation and the summary in English to a faculty panel at Rice.
5. Successfully defended the dissertation at UNICAMP.

UNICAMP will award the Doutor em História to Rice students who have successfully completed the following requirements:

1. Passed their comprehensive examinations and been admitted to candidacy at Rice.
2. Completed 2 semesters of coursework at UNICAMP, including all required courses for UNICAMP Ph.D students in History.
3. Written a dissertation in the language of their home institution and a summary in Portuguese, that is equivalent in style, scholarship, and length to an academic journal article.
4. Successfully presented the dissertation, and the summary, in Portuguese, to a faculty panel at UNICAMP.
5. Successfully defended the dissertation at Rice.

Summary

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
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<td>Total Credit Hours Required for the PhD Degree in the field of History</td>
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</table>

Policies for the Dual PhD Degree in the field of History, with Universidade Estadual de Campinas (UNICAMP), in Brazil

Department of History Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Department of History publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/History_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/History_Graduate_Handbook.pdf).

For additional information, please see the History website: [http://history.rice.edu/](http://history.rice.edu/)

Opportunities for the Dual PhD Degree in the field of History, with Universidade Estadual de Campinas (UNICAMP), in Brazil

See [https://humanities.rice.edu/student-life](https://humanities.rice.edu/student-life) for tables of fellowships, prizes, and internships/practica that may be relevant to this degree.

Humanities Research Center

Contact Information

Humanities Research Center
http://hrc.rice.edu/
Herring Hall 306
713-348-4227
Farès el-Dahdah
Director
fdahdah@rice.edu

The Humanities Research Center (HRC) identifies, encourages, and funds innovative research projects by faculty, visiting scholars, graduate, and undergraduate students in the School of Humanities and beyond. This involves fostering scholarly work, facilitating research between the School of Humanities and other areas of Rice University, as well as leading institutional change by partnering with other foundations, centers, research institutions, and universities. Independent initiatives are also taken by the HRC in order to incubate ideas and detect disciplinary changes that shape the future of the university.

The HRC has recently launched initiatives in Public Humanities with focus areas in Cultural Heritage, Medical Humanities, and Spatial Humanities. Interdisciplinary minors in Medical Humanities and in Museums and Cultural Heritage are now overseen by the HRC. Other ongoing programs include research project funding, visiting scholarships, seminars, courses, conferences, workshops, lecture series, practicums, exhibitions, performances, and film series.

As interdisciplinary minors, Medical Humanities and Museums and Cultural Heritage use new and existing courses from across Rice's schools to promote exploration of their complex subject matter through a number of disciplinary lenses. The Medical Humanities minor examines medicine through humanistic disciplines such as history, ethics, religion, literature, cultural anthropology, media studies, and the visual and dramatic arts. The Museums and Cultural Heritage minor examines the history, politics, materiality, and aesthetics of museum curation practices, technologies of cultural preservation and dissemination, as well as the place of tangible and intangible collective heritage in human social life.

For additional information, please see the HRC website at: [http://hrc.rice.edu/](http://hrc.rice.edu/).

Minor

- Minor in Medical Humanities (p. 485)
- Minor in Museums and Cultural Heritage (p. 493)

The Humanities Research Center does not currently offer an academic program at the graduate level.
Jewish Studies is an interdisciplinary field that crosses traditional boundaries between academic fields and departments. Courses in Jewish Studies allow students to study Judaism as it has evolved from an ancient set of shared religious practices into the pluralistic religion and culture that it is today. In both the humanities and social sciences, Jewish Studies broadly examines the texts, history, languages, philosophy, literature, and culture of the Jewish people from the ancient to the modern. The study of Jewish life and culture provides an opportunity to explore the continuities and diversity of Judaism as it has been lived and practiced for over three millennia all over the world.

Diversity of thought is a hallmark of Jewish culture dating back to the earliest Jewish texts, and we strive to follow this model in our courses. The diverse and interdisciplinary nature of the Program in Jewish Studies allows undergraduates the opportunity to enrich their major fields of study with a specific focus on Judaism and Jewish culture. The Program in Jewish Studies at Rice also forms an important bridge to the community, making use of the rich resources available in Houston, engaging with local institutions, and participating in timely public discussions.

Minor

• Minor in Jewish Studies (p. 437)

Jewish Studies does not currently offer an academic program at the graduate level.

Professor in the Practice

Melissa Bailar

Lecturer

John Mulligan

Adjunct Professor in the Practice

Brian Spector

Adjunct Lecturer

Melissa Kean

Postdoctoral Fellows

Frederic Clark
Christopher Hallett
Kathryn Langenfeld
Elisabeth Narkin
Laura Richardson
Marie Saldaña
Sebastian Schmidt
Kyle Sweeney
Erin Thompson

Contact Information

Jewish Studies
http://jewishstudies.rice.edu/
225 Humanities Building
713-348-4512

Matthias Henze
Program Director
Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: Courses from various subjects may apply towards this program

Program Description and Code
• Jewish Studies: JWST

Undergraduate Minor Description and Code
• Minor in Jewish Studies: JWST

Minor in Jewish Studies

Program Learning Outcomes for the Minor in Jewish Studies

Upon completing the minor in Jewish Studies, students will be able to:

1. Demonstrate knowledge of key Jewish religious traditions, texts, and figures throughout history, from the ancient to the contemporary, as well as the place of those traditions, texts, and figures within specific historical, geographical, or sociopolitical contexts.
2. Demonstrate knowledge of Jewish history and culture during different time periods and in different geographical locations.
3. Demonstrate the ability to understand and apply theories and methods from multiple disciplines—including religious studies, literature, history, film, and sociology—to address key issues or undertake research in the field of Jewish studies; synthesize theories and methods from multiple disciplines to address questions within the field of Jewish studies.
4. Demonstrate the ability to read and interpret primary and secondary texts critically, including ancient as well as modern literature, religious texts, film, and modern scholarship; demonstrate the ability to use these texts to develop and support evidence-based research questions and arguments in discussions, verbal presentations, and in research papers.
5. Demonstrate the ability to communicate effectively in writing and orally at the college level; this includes demonstrating the ability to communicate in a critical, scholarly manner by developing evidence-based research questions and arguments, using and citing evidence to support argumentation, and writing and speaking clearly and correctly.

Requirements for the Minor in Jewish Studies

Students pursuing the minor in Jewish Studies must complete:

• A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
• A minimum of 3 courses (9 credit hours) at the 300-level or above.
• A maximum of 3 courses (9 credit hours) from study abroad or other transfer credits. For additional program guidelines regarding transfer credit, see the Policies tab.
• A maximum of 2 Hebrew (HEBR) courses.
• A maximum of 2 Religion (RELI) courses.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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<th>Credit Hours</th>
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Minor Requirements

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<td>Core Requirement</td>
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<tr>
<td>JWST 120</td>
<td>ISRAEL: LANGUAGE AND CULTURE I</td>
<td></td>
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<tr>
<td>HIST 374</td>
<td>JEWISH HISTORY, 1500-1948</td>
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<tr>
<td>RELI 108</td>
<td>INTRODUCTION TO JUDAISM</td>
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<tr>
<td>RELI 392</td>
<td>JERUSALEM: HOLY CITY IN TIME AND IMAGINATION</td>
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</tbody>
</table>

Elective Requirements

Select 5 elective courses

Total Credit Hours 15

Total Credit Hours 18-19

Elective Requirements

To fulfill the remaining Jewish Studies minor requirements, students must complete a total of 5 additional courses (15 credit hours) from the following categories as listed below. At least 1 course (3 credit hours) must be completed from each of the three categories. If a course is listed in more than one category, students can elect a category for which the course counts, yet each course can apply to only one category. Two additional electives (6 credit hours) must be selected from any of the approved Jewish Studies coursework to total 5 elective courses (15 credit hours).

Language and Literature

Select at least 1 from the following:

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<td>ISRAEL: LANGUAGE AND CULTURE I</td>
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<td>JWST 121</td>
<td>ISRAEL: LANGUAGE AND CULTURE II</td>
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<tr>
<td>JWST 318 / SWGS 318</td>
<td>ISRAELI WOMEN WRITERS</td>
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<td>JWST 348 / SWGS 348</td>
<td>SEX AND GENDER IN MODERN JEWISH CULTURE</td>
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<td>JWST 351 / FILM 351</td>
<td>HOLOCAUST REPRESENTATION IN LITERATURE, ART, AND FILM</td>
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<td>ENGL 265</td>
<td>JEWISH-AMERICAN LITERATURE AND CULTURE</td>
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<td>FWIS 177</td>
<td>BIZARRE BIBLICAL STORIES</td>
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<td>GERM 325 / HUMA 325</td>
<td>MODERN GERMAN WRITERS: KAFKA</td>
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<td>GERM 329 / HUMA 329</td>
<td>LITERATURE OF THE HOLOCAUST AND EXILE</td>
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<td>GERM 351 / HART 387</td>
<td>HOLOCAUST MEMORY IN MODERN</td>
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### History and Culture

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<th>Title</th>
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<tr>
<td>HIST 201</td>
<td>JUDAISM OF JESUS AND HILLEL</td>
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<td>RELI 203</td>
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<td>HIST 205</td>
<td>MEDIEVAL MEDITERRANEAN WORLD</td>
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<td>MDEM 205</td>
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<td>HIST 324</td>
<td>COEXISTENCE IN MEDIEVAL SPAIN</td>
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<td>MDEM 324</td>
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<td>HIST 357</td>
<td>JEWS AND CHRISTIANS IN MEDIEVAL EUROPE</td>
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<td>MDEM 357</td>
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<td>HIST 374</td>
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<td>GOD, TIME AND HISTORY</td>
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<tr>
<td>JWST 348</td>
<td>SEX AND GENDER IN MODERN JEWISH CULTURE</td>
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<td>SWGS 348</td>
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<td>JWST 351</td>
<td>HOLOCAUST REPRESENTATION IN LITERATURE, ART, AND FILM</td>
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<td>FILM 351</td>
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### Thought, Philosophy, and Ethics

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<td>GERM 425</td>
<td>VIENNA AND ITS PEOPLE</td>
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<td>HIST 201</td>
<td>JUDAISM OF JESUS AND HILLEL</td>
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<td>FILM 351</td>
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</table>

### Policies for the Minor in Jewish Studies

The courses used to meet the Jewish Studies minor are open to all students at Rice from all backgrounds. Our classes meet student interests in Jewish experience and its importance for history, literature, art, politics, law, and philosophy.
Program Restrictions
Students pursuing the minor in Jewish Studies should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the minor in Jewish Studies should be aware of the following program-specific transfer credit guidelines:

- No more than 3 courses (9 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Jewish Studies website: http://jewishstudies.rice.edu

Opportunities for the Minor in Jewish Studies

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this minor.

Kinesiology
Contact Information
Kinesiology
http://kinesiology.rice.edu/
S203 Tudor Fieldhouse
713-348-8816

Nick Iammarino
Department Chair
nki@rice.edu

Rice’s Kinesiology department was one of the first in the nation to institute an academic program structure that allows students to concentrate their efforts in a specific sub-discipline. Within the Kinesiology major, there are two distinct major concentrations: Health Sciences and Sports Medicine.

Major in Kinesiology and a Major Concentration in Health Sciences
The goal of the health sciences program is to provide students with a fundamental background in health promotion and disease prevention. This background will enable them to understand the role that health promotion plays in society and the mechanisms that affect public and community health while also considering the complexities of maintaining an optimal level of personal health. The health science program is viewed as an excellent option for undergraduate students who are preparing to enter graduate school in public health, health promotion, and health education, as well as other health-related graduate or professional programs such as medicine or dentistry.

Major in Kinesiology and a Major Concentration in Sports Medicine
The sports medicine curriculum intends to provide a strong natural science foundation and interface this foundation with application to the human body. Prerequisite courses in chemistry and physics, elective courses in biology and biochemistry, as well as an array of required and elective courses offered within the department provide this foundation. The sports medicine program is the only academic specialization on campus that provides detailed exposure to human anatomy and human physiology. In addition, students receive coursework in foundations of Kinesiology, research methods, motor learning, statistics, exercise physiology, and sports medicine. Practical experience is afforded through several academic labs. Other elective courses include epidemiology, case studies in human performance, motor control, advanced exercise physiology and preventive medicine, sports nutrition, medical terminology, and muscle physiology and plasticity. During advising sessions, students are encouraged to select from these electives according to their respective career goals. Students in the sports medicine program are expected to develop a strong scientific knowledge.

Students who choose the sports medicine program typically continue their education at the graduate level or plan on attending medical school or other medically related professional schools, such as physical therapy. Graduates also may be directly employed in medical and corporate settings, which include both preventative and rehabilitative programs. Graduates who choose not to seek post-baccalaureate education generally are encouraged to obtain certification for exercise testing, physical fitness evaluation, or exercise prescription through the American College of Sports Medicine (http://acsm.org) website.

Bachelor’s Programs
- Bachelor of Arts (BA) Degree with a Major in Kinesiology
  - and a Major Concentration in Health Sciences (p. 440)
  - and a Major Concentration in Sports Medicine (p. 442)

Kinesiology does not currently offer an academic program at the graduate level.

Chair
Nicholas K. Iammarino
Professors
Nicholas K. Iammarino

Professors Emeriti
Bruce Etnyre
Eva J. Lee
Dale W. Spence

Clinical Professor
Brian Gibson

Lecturers
Amanda Perkins Ball
Lisa Basgall
Cassandra S. Diep
Zacharias Papadakis
Heidi Perkins
Augusto X. Rodriguez

Part-Time Lecturers
Roberta Anding
Jaime Aparicio
Daniel C. Hughes
Steven L. Jones
Wendy Schell
P. Burke Wilson

Adjunct Faculty
Karen Basen-Engquist
Daniel C. Hughes
Thomas Krouskop
Alexis Ortiz
Dawn Stuckey
Armin Weinberg

Descriptions and Codes Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code for Kinesiology: KINE
• Course offerings/subject code for Emergency Medical Services/Practice: EMSP
• Course offerings/subject code for Health Sciences: HEAL

Department Description and Code
• Kinesiology: KINE

Undergraduate Degree Description Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in Kinesiology: KINE

Undergraduate Major Concentration Descriptions and Codes
• Major Concentration in Health Sciences: KHSC
• Major Concentration in Sports Medicine: KSPM

Bachelor of Arts (BA) Degree with a Major in Kinesiology and a Major Concentration in Health Sciences

Program Learning Outcomes for the BA Degree with a Major in Kinesiology and a Major Concentration in Health Sciences
Upon completing the BA degree with a major in Kinesiology and a major concentration in Health Sciences, students will be able to:

1. Prepare and deliver presentations effectively and be able to use information technology.
2. Work and collaborate in groups toward a common goal.
3. Read, select, and interpret important information from health sciences literature. They will be able to design and conduct public health research studies using appropriate methodologies.
4. Promote public health education within the framework of legal, ethical, moral, and professional standards.
5. Collaborate with other professionals, staff, and communities in the planning and implementation, and evaluation of health education programs. They will be able to administer and manage health education programs, serve as a health education resource person, and communicate and advocate for health and health education.

Requirements for the BA Degree with a Major in Kinesiology
For general university requirements, see Graduation Requirements (p. 25).

Students pursuing the BA degree with a major in Kinesiology must complete:

• A minimum of 14-15 courses (42-43 credit hours), depending on major concentration declared, to satisfy major requirements.
• A minimum of 120 credit hours satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 5-9 courses (15-25 credit hours), depending on major concentration declared, taken at the 300-level or above.
• The requirements of a major concentration. When students declare the major (p. 12) in Kinesiology, students must additionally identify and declare one of two major concentrations, either in:
  • Health Sciences (p. 440), or
  • Sports Medicine (p. 442)

It is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier).
Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</table>

- Total Credit Hours Required for the Major in Kinesiology and a Major Concentration in Health Sciences: 42
- Total Credit Hours Required for the BA Degree with a Major in Kinesiology and a Major Concentration in Health Sciences: 120

### Degree Requirements

**Core Requirements**

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<tbody>
<tr>
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<td>PRINCIPLES OF PUBLIC AND COMMUNITY HEALTH</td>
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<td>HEAL 313</td>
<td>FOUNDATIONS OF HEALTH PROMOTION AND EDUCATION</td>
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<td>HEAL 407</td>
<td>EPIDEMIOLOGY</td>
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<tr>
<td>HEAL 422</td>
<td>THEORIES AND MODELS OF HEALTH BEHAVIOR</td>
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<td>HEAL 460</td>
<td>PLANNING AND EVALUATION OF HEALTH PROMOTION AND EDUCATION</td>
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<tr>
<td>KINE 319</td>
<td>STATISTICS FOR THE HEALTH PROFESSIONAL</td>
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**Elective Requirements**

Select 8 elective courses (see course list below) 24

### Elective Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<td>ANTH 386</td>
<td>MEDICAL ANTHROPOLOGY OF FOOD AND HEALTH</td>
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<td>ANTH 388 / SWGS 335</td>
<td>THE LIFE CYCLE: A BIOCULTURAL VIEW</td>
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<td>ANTH 446</td>
<td>ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY</td>
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<td>BIOC 122</td>
<td>CURRENT TOPICS IN BIOLOGY</td>
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<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY</td>
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<td>APPROPRIATE DESIGN FOR GLOBAL HEALTH</td>
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<td>INTRODUCTION TO HEALTH AND WELLNESS</td>
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<td>CONSUMER HEALTH AND THE MEDIA</td>
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<td>HEAL 306 / SWGS 306</td>
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<td>HEAL 350</td>
<td>UNDERSTANDING CANCER</td>
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<td>HEAL 360</td>
<td>VIOLENCE IN AMERICA: A PUBLIC HEALTH PERSPECTIVE</td>
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<td>HEAL 379</td>
<td>INTERNSHIP IN HEALTH SCIENCES</td>
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<td>KINE 301</td>
<td>HUMAN PHYSIOLOGY</td>
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<td>EXERCISE EPIDEMIOLOGY</td>
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<td>KINE 440</td>
<td>RESEARCH METHODS</td>
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<td>THE PHILOSOPHY OF MEDICINE</td>
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<td>PHIL 315</td>
<td>ETHICS, MEDICINE, AND PUBLIC POLICY</td>
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<td>TOPICS IN MEDICAL ETHICS</td>
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<td>SOCI 345</td>
<td>MEDICAL SOCIOLOGY</td>
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### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Core Requirements include an introductory course designed to acquaint students with the fundamental concepts of personal health and models of health promotion, understanding and assessing community health needs, methods of understanding the disease process, a course that introduces statistics, a professional preparation course that introduces students to the profession, theories and models commonly used in health promotion research and practice, and an application course in which students plan a health promotion program.

### Elective Requirements

To fulfill the elective requirements for the major concentration in Health Sciences, students must complete a total of 8 additional courses (24 credit hours) from the courses listed below. The remaining credit hours needed are drawn from elective courses that are both within the Department of Kinesiology and, at present, more than 20 courses from other academic departments at Rice. In keeping with the university’s interest in an interdisciplinary approach to undergraduate education, this allows students to choose health-related courses from within the schools of natural sciences, social sciences, and humanities.
Bachelor of Arts (BA) Degree with a Major in Kinesiology and a Major Concentration in Sports Medicine

Program Learning Outcomes for the BA Degree with a Major in Kinesiology and a Major Concentration in Sports Medicine

Upon completing the BA degree with a major in Kinesiology and a major concentration in Sports Medicine, students will be able to:

1. Prepare and deliver presentations effectively and be able to use information technology.
2. Work and collaborate in groups toward a common goal.
3. Read, select, and interpret important information from sports sciences literature. They will be able to design and conduct research studies using appropriate methodologies.
4. Identify and apply ethical standards to the design and execution of research studies.
5. Understand principles of human nutrition and its application to exercise and sport.
6. Understand the principles of sports psychology.
7. Be knowledgeable of anatomy relevant to sport, exercise, and sport injury. They will develop an understanding of principles of biomechanics applied to exercise and sporting activities. Students will be knowledgeable of prevention, diagnosis, and treatment of injuries and diseases related to exercise and sports.
8. Collect and analyze data in a motor learning, exercise physiology, or other sports medicine lab settings.

Requirements for the BA Degree with a Major in Kinesiology

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Kinesiology must complete:

- A minimum of 14-15 courses (42-43 credit hours), depending on major concentration declared, to satisfy major requirements.
- A minimum of 120 credit hours satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 5-9 courses (15-25 credit hours), depending on major concentration declared, taken at the 300-level or above.
- The requirements of a major concentration. When students declare the major (p. 12) in Kinesiology, students must additionally identify and declare one of two major concentrations, either in:
  - Health Sciences (p. 440), or
  - Sports Medicine (p. 442)

It is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<th>Code</th>
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<tr>
<td>HEAL 103</td>
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<tr>
<td>KINE 300</td>
<td>HUMAN ANATOMY</td>
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Core Requirements

Total Credit Hours Required for the Major in Kinesiology and a Major Concentration in Sports Medicine

Total Credit Hours Required for the BA Degree with a Major in Kinesiology and a Major Concentration in Sports Medicine

Degree Requirements
## Elective Requirements

Select 5 elective courses (see course list below).  

### Total Credit Hours Required for the Major in Kinesiology and a Major Concentration in Sports Medicine

<table>
<thead>
<tr>
<th>Code</th>
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<td>KINE 302</td>
<td>BIOMECHANICS</td>
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<td>KINE 310</td>
<td>PSYCHOLOGICAL ASPECTS OF SPORT AND EXERCISE</td>
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<td>KINE 311</td>
<td>MOTOR LEARNING</td>
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<td>KINE 319</td>
<td>STATISTICS FOR THE HEALTH PROFESSION</td>
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<td>KINE 321</td>
<td>EXERCISE PHYSIOLOGY</td>
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<tr>
<td>KINE 323</td>
<td>EXERCISE PHYSIOLOGY LABORATORY</td>
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<tr>
<td>KINE 440</td>
<td>RESEARCH METHODS</td>
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### Additional Credit Hours to Complete BA Degree Requirements

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### University Graduation Requirements (p. 25) *

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<tr>
<th>Code</th>
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</table>

### Total Credit Hours

120

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## Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 The Core Requirements include detailed exposure to human anatomy and human physiology. In addition, students receive coursework in research methods, motor learning, statistics, exercise physiology, and sports psychology.

## Elective Requirements

To fulfill the elective requirements for the major concentration in Sports Medicine, students must complete a total of 5 additional courses (15 credit hours) from the courses listed below. The remaining credit hours needed are drawn from courses that are both within the Department of Kinesiology and from other academic departments. Our elective courses include epidemiology, case studies in human performance, motor control, advanced exercise physiology and preventive medicine, sports nutrition, medical terminology and muscle physiology and plasticity. Other electives include courses in chemistry, physics, biology and biochemistry, which may also be utilized as medical school prerequisites.

### Elective Requirements

Select 5 courses from the following:

- BIOC 201 INTRODUCTORY BIOLOGY
- BIOC 211 INTERMEDIATE EXPERIMENTAL BIOSCIENCES
- BIOC 301 BIOCHEMISTRY I
- BIOC 302 BIOCHEMISTRY II
- BIOC 311 ADVANCED EXPERIMENTAL BIOSCIENCES
- BIOC 313 INTRODUCTORY SYNTHETIC BIOLOGY
- BIOC 372 IMMUNOLOGY
- CHEM 121 GENERAL CHEMISTRY I
  & CHEM 123 and GENERAL CHEMISTRY LABORATORY I
- CHEM 122 GENERAL CHEMISTRY II
  & CHEM 124 and GENERAL CHEMISTRY LABORATORY II

### Policies for the BA Degree with a Major in Kinesiology and a Major Concentration in Sports Medicine

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

Students pursuing the major in Kinesiology should be aware of the following departmental transfer credit guidelines:
Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Kinesiology website: [http://kinesiology.rice.edu/](http://kinesiology.rice.edu/)

Opportunities for the BA Degree with a Major in Kinesiology and a Major Concentration in Sports Medicine

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (*summa cum laude*, *magna cum laude*, and *cum laude*) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Kinesiology website: [http://kinesiology.rice.edu/](http://kinesiology.rice.edu/)

Languages and Intercultural Communication

Contact Information
Languages and Intercultural Communication
[http://clic.rice.edu/](http://clic.rice.edu/)
Rayzor Hall 235
713-348-5844

Rafael Salaberry
Program Director
salaberry@rice.edu

The Center for Languages and Intercultural Communication (CLIC) provides opportunities for the development of:

- Communicative and interactional abilities in a second language through language analysis and language use
- Analytical, critical-thinking competence through the study of linguistic, social, and cultural aspects that define second language communicative-interactional abilities
- A broad educational experience (intercultural awareness and abilities) that will help students become productive members of a society in which multilingualism and multiculturalism are the norm rather than the exception

The Center for Languages and Intercultural Communication supports students pursuing language-related degrees in other departments, including Asian Studies (p. 149), Classical and European Studies (p. 313), History (p. 422), and Spanish, Portuguese and Latin American Studies (p. 705).

Certificate
- Certificate in Language and Intercultural Communication (p. 445)

Director
M. Rafael Salaberry

Associate Directors
Maryam Emami
Hélade Santos
Luziris Pineda Turi
Meng Yeh

Teaching Professor
Meng Yeh

Lecturers in Arabic
Ali Al-Maqtari

Lecturers in Chinese
Yi-Chia Chien
Liang Fu

Lecturers in French
Maryam Emami
S.C. Kaplan

Lecturers in German
Fatima Baig
Katharina Kley

Lecturer in Hindi
Divya Chaudhry

Lecturer in Italian
Cristina Giliberti

Lecturers in Japanese
Yukiko Asano
Naoko Ozaki

Lecturers in Korean
Jin Lee
Jayoung Song

Lecturers in Portuguese
Jonathan Fleck
Hélade Santos

Lecturer in Russian
Larisa Moskvitina

Lecturers in Spanish
Victoria Abad
Charla Bennaji
Aymara Boggiano
Postdoctoral Fellows
Alfred Rue Burch
Alicia Kate White
Wei-Li Hsu

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: CLIC

Center Description and Code
• Center for Languages and Intercultural Communication: CLIC

Undergraduate Certificate Description and Code
• Certificate in Languages and Intercultural Communication: LIC

Certificate in Languages and Intercultural Communication
Program Learning Outcomes for the Certificate in Languages and Intercultural Communication

Upon completing the Certificate in Languages and Intercultural Communication, students will be able to:

1. Communicate and interact with speakers of a second language (in both oral and written modes of communication) at an intermediate-advanced level.
2. Analyze critically both the target language and their native language as systems of communication.
3. Identify structural, conceptual, social, and cultural aspects associated with language use (including their own native language).
4. Understand the implications of cross-cultural understanding and intercultural communication.
5. Function as productive members of a society in which multilingualism and multiculturalism are the norm rather than the exception.

Requirements for the Certificate in Languages and Intercultural Communication

Students pursuing the Certificate in Languages and Intercultural Communication must complete:

• A minimum of 4 courses (12 credit hours) to satisfy certificate requirements.

• An Experiential Learning opportunity (at least 6 credit hours) through an approved study abroad program.
• An Outcomes Assessment to evaluate language proficiency.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student’s Rice degree, along with a formal notation on their academic transcript.

Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>Total Credit Hours Required for the Certificate in Languages and Intercultural Communication</td>
<td>12</td>
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Certificate Requirements

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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</table>

Required Courses in Target Language
Select 2 courses at the 200-level or above
Select 2 courses at the 300-level or above

Experiential Learning
Complete at least 6 of the required 12 credit hours though an approved study abroad program

Outcomes Assessment
Complete an oral exam and a 500-word essay written in the target language

Total Credit Hours
12

Footnotes and Additional Information

1 Students studying Portuguese or Spanish who take two 200-level courses offered by CLIC, must take at least one 300-level course taught by the Department of Spanish, Portuguese, and Latin American Studies (SPLA). If they fulfill any of the 200-level course requirements with a 300-level course, they must register for a minimum of TWO 300-level courses offered by SPLA.

2 In cases when 300-level courses are not offered in the target language, students may take another 200-level course (if available) or submit a request for transfer credit.

3 Rice faculty-led study abroad programs are preferred for meeting the experiential learning component, but in cases when there are no Rice faculty-led programs offered, students should consult with the Certificate advisor for alternative options that include academic content and goals that are similar to Rice faculty-led programs.

4 In order to receive the Certificate, students will complete an examination consisting of oral and written assessments in the target language. Students completing the Certificate are expected to reach level B2 (Independent User) of the Common European Framework of Reference for Languages (CEFR) in the target language. Students receiving the Certificate cannot fail the test; they are simply placed at level of competence obtained after completing the Certificate requirements and assessments. The level reached will be noted through an official letter from CLIC.
Policies for the Certificate in Language and Intercultural Communication

Language Placement Testing
Students are required to take a Language Placement Test to ensure that they are placed in the appropriate course in their target language. Placement tests are administered online prior to and during both fall and spring registration.

Program Restrictions and Exclusions
Students pursuing the certificate in Languages and Intercultural Communication should be aware of the following program restriction:

• As noted in Majors, Minors, and Certificates (p. 12), students may declare their intent to pursue a university certificate only after they have first declared a major.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the certificate in Languages and Intercultural Communication should be aware of the following program-specific transfer credit guidelines:

• The Center for Languages and Intercultural Communication (CLIC) will determine equivalency for foreign language classes taken at other colleges or universities and approve them for transfer credit. Students who study abroad should have their transfer credits pre-approved, when possible, before they commit to a study-abroad program.
• When requesting Rice equivalent credit for foreign language acquisition courses, students should submit no less than the following to CLIC for approval:
  • the appropriate transfer credit request form from the Office of the Registrar.
  • a program description for courses taken abroad or catalog description for courses taken in the United States.
  • a course syllabus for the course they wish to take or have taken, or a web address of the program if one is available.
• Students should be aware that the approval process takes about one week and should plan accordingly.

For additional information, please see the Center for Languages and Intercultural Communication website: http://clic.rice.edu/

Opportunities for the Certificate in Language and Intercultural Communication

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Scholarships
The Center for Languages and Intercultural Communication invests in students participating in CLIC-sponsored study abroad programs by occasionally offering scholarships to offset the cost of tuition, fees, and in some cases, airfare. When funding is available, the scholarships are offered in the spring semester for study abroad programs taking place the following summer.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this program.

Latin American Studies

Contact Information
Latin American Studies
http://spanishandportuguese.rice.edu/
Rayzor Hall 307
713-348-5451
José F. Aranda, Jr.
Program Director
aranda@rice.edu

Latin American Studies is an interdisciplinary major designed to further understanding of the cultures, histories, and politics of Latin America as viewed from regional and global perspectives.

This major draws from courses and faculty from a wide range of departments and programs, including Anthropology, Architecture, Art History, English, French Studies, History, Spanish and Portuguese, and Political Science. This major provides a challenging context for students to develop core skills in interdisciplinarity, language, communication (written and oral), theory, research methodologies, and geography.

The BA degree with a major in Latin American Studies is a degree program in the department of Spanish, Portuguese and Latin American Studies (p. 705).

Bachelor’s Program
• Bachelor of Arts (BA) Degree with a Major in Latin American Studies (p. 447)

Latin American Studies does not currently offer an academic program at the graduate level.

Director
José F. Aranda, Jr.

Professors
Bernard Aresu
Krista Comer
Farès el-Dahdah
Beatriz González-Stephan
Rosemary Hennessy
Carlos Jiménez
Associate Professors
José F. Aranda, Jr.
Alexander X. Byrd
Luis Duno-Gottberg
Gisela Heffes
Cymene Howe
Moramay López-Alonso

Assistant Professors
Fabiola López-Durán
Manuel Gutiérrez

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code for Latin American Studies: LASR

Department Description and Code
• Spanish, Portuguese and Latin American Studies: SPLA

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in Latin American Studies: LASR

Bachelor of Arts (BA) Degree with a Major in Latin American Studies

Program Learning Outcomes for the BA Degree with a Major in Latin American Studies
Upon completing the BA degree, students majoring in Latin American Studies will be able to:

1. Demonstrate the ability to speak and read fluently, and conduct research in a foreign language.
2. Be able to interpret the historic, cultural, and political dynamics that comprise a specific region selected by the student for in-depth study.
3. Be able to apply critical perspectives on legacies and ongoing forces that are local and global in scope from the field of Latin American Studies.
4. Be able to define a research problem and analyze it from several different disciplinary fields, including appropriate theory, methodology, and concepts for the topic.

Requirements for the BA Degree with a Major in Latin American Studies
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Latin American Studies must complete:

• A minimum of 10 courses (30 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 6 courses (18 credit hours) at Rice University.
• A minimum of 6 courses (18 credit hours) taken at the 300-level or above.
• At least 1 semester studying abroad.
• A language competency requirement.
• A capstone project.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Degree Requirements</th>
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<td>Core Requirement</td>
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<td>LASR 158 / SPO 158</td>
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<td>Elective Requirements</td>
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<td>Select 8 department approved electives (see below for course list)²</td>
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<td>Study Abroad ³</td>
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<td>Language Competence ⁴</td>
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<td>Additional Credit Hours to Complete BA Degree Requirements</td>
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<td>Total Credit Hours</td>
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</table>
Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1. This course both introduces and structures the major. This course is taught in English, with discussion sections available in Spanish or Portuguese pending student interest.

2. At least 2 courses (6 credit hours) must be in the humanities and at least 2 courses (6 credit hours) must be in the social sciences.

3. Students must spend at least one semester studying at a Rice-approved, semester-abroad program in which the primary language of instruction is Spanish, Portuguese, or under special circumstances French. Courses taken abroad may count toward completing the Latin American Studies major and toward meeting the distribution requirements. Study abroad courses cannot count for more than 4 courses (12 semester hours) toward the major. While the semester abroad is ideal, under very special circumstances, the advisor to the major can approve a 12-week summer program as the equivalent of a semester, provided the program allows students to complete at least 3 three-credit-hour courses.

4. Students must demonstrate language competence at three different stages:
   - **Prior to study abroad** - students will be examined by Center for Languages and Intercultural Communication (CLIC) faculty trained in proficiency testing to ensure that the students have adequate language competence for studying abroad—adequate at this stage meaning at least Intermediate-High according to proficiency standards set by the American Council on the Teaching of Foreign Languages (ACTFL).
   - **After study abroad** - students will be tested for proficiency at the Advanced-Low level, according to ACTFL Guidelines. Proficiency at the Advanced-Low level is desirable, but not required.
   - **Writing the capstone research paper** - students must demonstrate to the satisfaction of the colloquium director their ability to do research in a foreign language.

5. The Capstone is completed after completing the semester abroad. Students will enroll in a research colloquium directed by a faculty member from either Humanities or Social Sciences. As directed by this faculty member, the colloquium director, students will write a research paper on a Latin American topic of their choice. During the course, students will be exposed to different research methodologies, theories appropriate to their field of study, and instruction on how best to incorporate research and sources that emerged from their study abroad. Interdisciplinary modes of research and writing will be a major feature of this colloquium. Students will be expected to highlight the interdisciplinary nature of their research in their completed paper. In addition, students in the colloquium will be expected to workshop their writing at different times during the semester. The completed research paper will be evaluated by the colloquium director and one other professor appropriate to the topic. With the approval of the colloquium director, this research paper may be written in English.

Elective Requirements

Students must complete a total of 8 courses (24 credit hours) from the following department approved electives, which will focus on a specific region, area, or country in Latin America. This area focus will shape each student’s proposed course of study. Each course of study and an area focus must be approved by the advisor to the major. At least 2 courses (6 credit hours) must be in the humanities and at least 2 courses (6 credit hours) must be in the social sciences.

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<td>ANTH 290</td>
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<td>HIST 333</td>
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<td>LATIN AMERICAN TOPICS</td>
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<td>ANTH 376</td>
<td>ART AND ACTIVISM</td>
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<td>SEMINAR IN ARCHITECTURE</td>
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<td>EUGENICS AND THE MODERN LATIN CITY</td>
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<td>BUILT FORMS</td>
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<td>CASE STUDY IN URBAN DESIGN: BRASILIA</td>
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<td>THE AMERICAN WEST AND ITS OTHERS</td>
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<td>CHICANO/A LITERATURE</td>
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<td>THE CARIBBEAN IN FRENCH</td>
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<td>LATIN-EUROPE/LATIN-AMERICA: THE</td>
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<td>AESTHETICS AND POLITICS OF MODERN CITIES</td>
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<td>BLACKS IN THE AMERICAS</td>
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<td>HIST 315</td>
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<td>HIST 228</td>
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Transfer Credit

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Departmental Transfer Credit Guidelines

Students pursuing the major in Latin American Studies should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Spanish, Portuguese and Latin American Studies website: http://spanishandportuguese.rice.edu/

Opportunities for the BA Degree with a Major in Latin American Studies

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Liberal Studies

Contact Information

Liberal Studies

http://mls.rice.edu/

Anderson-Clarke Center

713-348-4767

Mark Kulstad

Academic Program Director

kulstad@rice.edu

Rebecca Sharp Sanchez

Administrative Program Director

rksharp@rice.edu

The Graduate Liberal Studies program at Rice University is designed for those who crave intellectual challenge at a world-class university. Two unique paths are available: the acclaimed Master of Liberal Studies (MLS) degree and the post-Masters Diploma in Liberal Studies (DLS).

Exploring liberal arts at a highly integrated level is not always possible in a career-focused undergraduate curriculum. MLS and DLS options are tailored toward working adults, retirees, and other non-traditional university students who wish to broaden their knowledge in fields they may not have studied in their earlier education. Courses are taught by distinguished Rice faculty and invited visiting faculty who maintain the high academic standards of Rice University.
Both paths are designed for those who love to learn new ideas, explore new worlds, and enjoy meeting others who are part of the same expedition. By examining timeless, timely human questions within the humanities, social sciences, and natural sciences, students satisfy their curiosity about the world through art, literature, science, politics, human nature, and history.

These programs are designed for working adults and do not follow the traditional university schedule of fall and spring semesters. Classes meet one evening per week for 10–11 weeks, with one or two Saturday morning classes. Sessions are offered in the fall, winter, and spring.

Fall classes begin in September and end before Thanksgiving; winter classes begin in January and end in late March; spring courses begin in April and end in early June. No classes are held in July or August.

**Master of Liberal Studies (MLS)**

Since its inception in 2005, the Rice Master of Liberal Studies (MLS) program has attracted a wide spectrum of students. Medical doctors, attorneys, homemakers, recent college graduates, retirees, teachers, a range of business professionals, and others have been accepted into the program. Such diversity — in both age and profession — adds a level of broad-mindedness not typically found in the traditional classroom.

The MLS program seeks committed, energetic adult students with bachelor's degrees from an accredited college or university, who have significant life experiences and who are able to communicate effectively.

MLS students must take only one course in his or her first semester, MLSC 600. All courses will require research papers; some may require tests or oral presentations. A thesis is not part of the degree program. The program can be completed in approximately four years if one class is completed every session. Students are allowed to take up to seven years to complete the degree.

**Diploma in Liberal Studies (DLS)**

Rice’s Diploma in Liberal Studies (DLS) program complements and extends the educational goals of the Master of Liberal Studies (MLS) program. The DLS is a graduate-level diploma that is currently unique to Rice University.

Exploring liberal arts at a highly integrated level is not always possible in a career-focused undergraduate curriculum. As with MLS, the DLS program is tailored toward working adults, retirees, and other non-traditional university students who wish to broaden their knowledge in fields they may not have studied in their earlier education. Courses are taught by distinguished Rice faculty and invited visiting faculty who maintain the high academic standards of Rice University.

Designed primarily for those who have completed the MLS degree, the DLS allows these graduates to maximize and enhance their academic investment. However, the program also welcomes non-MLS students on a case-by-case basis that considers academic background and future goals. Well-prepared applicants who are accepted into the program can deepen their interdisciplinary knowledge while honing research and writing skills, laying the foundation to improve critical publications, community service, doctoral studies, or career work.

Liberal Studies does not currently offer an academic program at the undergraduate level.

---

**Master’s Program**

- Master of Liberal Studies (MLS) Degree (p. 452)

**Post-Master’s Diploma Program**

- Diploma in Liberal Studies (DLS) (p. 450)

**Dean**

Mary B. McIntire

**Faculty Director**

Mark Kulstad

**Description and Code Legend**

*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**

- Course offerings/subject code: MLSC

**School Description and Code**

- School of Continuing Studies: SOCS

**Graduate Degree Description and Code**

- Master of Liberal Studies degree: MLS
- Diploma of Liberal Studies: DLS

**Graduate Degree Program Description and Code**

- Degree Program in Liberal Studies: LBST

**Diploma in Liberal Studies (DLS)**

**Program Learning Outcomes for the Diploma in Liberal Studies**

Upon completing the Diploma in Liberal Studies, students will be able to:

1. Identify significant interdisciplinary problems or issues and select one that the student can successfully address in a research project.
2. Apply current interdisciplinary research methodologies and techniques, appropriate to the student's selected disciplines, to a problem.
3. Demonstrate a critical and creative use of primary sources and content appropriate for the research topic.
4. Analyze critically and evaluate one's own findings and those of others.
5. Communicate effectively ideas, methodologies, analyses, and interpretations of the research topic.
6. Demonstrate an understanding of the current interdisciplinary work in at least two academic disciplines.

**Requirements for the Diploma in Liberal Studies**

For general university requirements, see Diploma Programs (p. 66). Students pursuing the Diploma in Liberal Studies must complete:

- A minimum of 30 credit hours to satisfy the Diploma in Liberal Studies program requirements.
• MLSC 750 Introduction to Diploma Research in their entering term, before taking any other DLS courses with a grade of B (3.0 grade points) or better. Additionally, students may take only 1 course, MLSC 750 Introduction to Diploma Research, in their entering term. Afterwards, students may take up to 2 courses per term.
• Students must maintain a 3.33 (B+) grade point average (GPA) and all courses must be completed with a grade of B- (2.67 grade points) or better to count toward the diploma.
• Continuous enrollment in the program and are expected to complete successfully at least 2 courses an academic year and be enrolled in at least 2 terms of the academic year unless granted an official leave of absence.

Additionally, students must follow the guidelines listed below:

• With respect to the 2 main disciplines chosen by the student for interdisciplinary work in completing the diploma project, a student must complete a minimum of 3 courses in each before taking the 2 diploma project courses. This is a minimum. Additional courses in the 2 chosen disciplines are recommended. A student may petition to have post-baccalaureate courses taken before entering the DLS program considered as a partial satisfaction of this requirement. An undergraduate degree in 1 of the disciplines could similarly serve as the basis of a petition.
• If 1 of the 2 main disciplines chosen by the student for the interdisciplinary work of the diploma project is outside the humanities, then the humanities discipline is the primary, the non-humanities discipline the secondary discipline. In such a case, the student must complete a minimum of 3 courses in the primary discipline before taking the 2 diploma project courses (MLSC 798 and MLSC 799), and a minimum of 2 courses in the secondary discipline. More are recommended. A student can petition to have post-baccalaureate courses taken before entering the DLS program considered as a partial satisfaction of these requirements. An undergraduate degree in 1 of the disciplines could similarly serve as the basis of a petition.
• Diploma students are allowed to take up to 7 years to complete the diploma.
• Students must successfully complete all content coursework before taking the research coursework of MLSC 798 and MLSC 799.
• Students should refer to the Diploma in Liberal Studies Student Handbook for additional information.

| Total Credit Hours Required for the DLS Program | 30 |

<table>
<thead>
<tr>
<th>Diploma Requirements</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLSC 750</td>
<td>INTRODUCTION TO DIPLOMA RESEARCH</td>
<td>3</td>
</tr>
<tr>
<td>MLSC 798</td>
<td>DIPLOMA PROJECT I</td>
<td>3</td>
</tr>
<tr>
<td>MLSC 799</td>
<td>DIPLOMA PROJECT II</td>
<td>3</td>
</tr>
</tbody>
</table>

Students must complete 7 courses from MLSC course offerings at the 500-level or above.  

**Footnotes and Additional Information**

1. MLSC 798 and MLSC 799 are taken for a Satisfactory/Unsatisfactory grade and must be completed with a Satisfactory grade, however, these courses do not apply to the requirement of a minimum grade of B- (2.67 grade points) in each required course.

2. Students may choose to take up to 6 credit hours of MLSC 797 Advanced Independent Readings to fulfill the Elective Requirements.

Students in the Diploma in Liberal Studies program will complete 24 hours of content coursework from the Liberal Studies catalog of classes, beginning with MLSC 750 Introduction to Diploma Research. Upon completion of these 24 hours, the student will then take 6 hours of research coursework (MLSC 798 and 799) under the direction of 3 readers, a first, second, and third reader. (The first reader is referred to also as "the advisor")

The diploma project will typically take the form of an interdisciplinary diploma thesis. Alternatively, the student may opt to write 2 interdisciplinary academic papers (starred papers) of publishable length and thesis quality.

The interdisciplinary journal of the Association of Graduate Liberal Studies Programs, *Confluence*, serves as an example of the academic research level required. Confluence is a peer-reviewed journal, publishing articles that reflect “the best scholarly and creative work produced by faculty, students and alumni of AGLSP member institutions,” all of which programs offer graduate degrees in liberal studies, in some cases doctoral programs.

In order to complete the DLS program, students must defend their diploma thesis or 2 starred papers in a public diploma project defense and satisfactorily answer questions from their research advisor and readers and others in attendance. The 3 readers will then decide, with the first reader/advisor serving as chair of the discussion, whether the student has met all diploma project requirements, including passing the defense, with all 3 signing the appropriate papers if the decision is positive.

**Policies for the Diploma in Liberal Studies Admission**

Admission to the Diploma in Liberal Studies program requires a 3.5 GPA in successfully-concluded post graduate degree work from either: 1) the Rice MLS program or 2) a liberal arts or liberal studies graduate degree program at an AGLSP member institution. Other post-graduate degrees may be considered (e.g., MA, MD, JD), but only along with evidence of significant academic work in areas relevant to a student’s proposed interdisciplinary work in the Diploma program – for example, an interdisciplinary undergraduate major with relevance to the work proposed for the DLS program or an undergraduate double major in the two disciplines chose for interdisciplinary work in the DLS. Applications will be accepted for Fall admission only and will be due on the March 15 prior. Completed applications will be forwarded to the Graduate Liberal Studies Faculty Steering Committee for review and admission decision. Admitted students will attend a new student orientation.

For additional information, please see the Graduate Liberal Studies website: [http://mls.rice.edu](http://mls.rice.edu)
Opportunities for the Diploma in Liberal Studies

Association of Graduate Liberal Studies National Honor Society

MLS graduates who earn a 3.75 GPA or higher and have demonstrated leadership in the classroom and in the greater community are eligible for nomination to the Association of Graduate Liberal Studies National Honor Society.

For additional information, please see the Graduate Liberal Studies website: http://mls.rice.edu.

Master of Liberal Studies (MLS) Degree

Program Learning Outcomes for the MLS Degree

Upon completing the MLS degree, students will be able to:

1. Appreciate major perspectives and methods of the liberal arts by demonstrating a broadened understanding of some basic concepts in the humanities, social sciences, and sciences.
2. Appreciate the connection of the liberal arts to their lives and the larger world.
3. Demonstrate a capacity for analytical thinking.
4. Demonstrate good writing skills.
5. Practice critical listening and good discussion and oral communication skills.
6. Demonstrate academic research methods.

Requirements for the MLS Degree

The MLS degree is a non-thesis master’s degree. For general university requirements, see N (p. 49)on-Thesis Master’s Degrees (p. 66). Students pursuing the MLS degree must complete:

- A minimum of 11-12 courses (33-36 credit hours) to satisfy degree requirements.
- A minimum overall GPA of 3.0 in required coursework.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MLS Degree</td>
<td>33-36</td>
</tr>
</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td></td>
</tr>
<tr>
<td>MLSC 600</td>
<td>INTRODUCTION TO GRADUATE RESEARCH, ANALYSIS AND EXPOSITION 1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select 1 course from each of the following fields (see below for course lists): 2</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Humanities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social Sciences</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Natural Science</td>
<td></td>
</tr>
</tbody>
</table>

Elective Requirements

Select 6 elective courses from MLSC course offerings at the 500-level or 600-level 3

Capstone

Select 1 from the following: 4

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLSC 700</td>
<td>CAPSTONE I</td>
<td></td>
</tr>
<tr>
<td>MLSC 700, MLSC 701</td>
<td>CAPSTONE I and CAPSTONE II</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 33-36

Footnotes and Additional Information

1. All students must take MLSC 600 in their first semester of study.
2. The core requirements are designed to acquaint first-year students with contrasting perspectives and methodological approaches that define academic inquiry in the three broad fields of humanities, social sciences, and natural science. Core courses must be completed before courses that satisfy the electives can be taken.
3. The six (6) electives beyond the core requirements may focus on just 1 “track” (humanities, social sciences, or natural science) or may be chosen more broadly.
4. The capstone coursework is designed to help students integrate their knowledge through writing an extended paper or completing a project to be presented to MLS faculty and students. Students may take 1 semester (MLSC 701) or 2 semesters (MLSC 700 and MLSC 701) to complete the capstone project.

Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Humanities</td>
<td></td>
</tr>
<tr>
<td>MLSC 501</td>
<td>THE SHAPING OF WESTERN THOUGHT</td>
<td>3</td>
</tr>
<tr>
<td>MLSC 505</td>
<td>SHAKESPEARE AND FILM</td>
<td></td>
</tr>
<tr>
<td>MLSC 510</td>
<td>MUSIC AND OTHER ARTS: COLLABORATION AND FUSION</td>
<td></td>
</tr>
<tr>
<td>MLSC 517</td>
<td>MODERN DRAMA ON FILM AND IN PERFORMANCE</td>
<td></td>
</tr>
<tr>
<td>MLSC 526</td>
<td>CONTEMPORARY MORAL ISSUES</td>
<td></td>
</tr>
<tr>
<td>MLSC 533</td>
<td>SELF-DETERMINATION IN ARAB WORLD</td>
<td></td>
</tr>
<tr>
<td>MLSC 535</td>
<td>&quot;PLEASE SIR, I WANT SOME MORE&quot;: DICKENS, OLIVER TWIST, POVERTY, AND SOCIAL JUSTICE</td>
<td></td>
</tr>
<tr>
<td>MLSC 536</td>
<td>TRADITIONAL CHINESE CULTURE AND ITS MODERN LEGACY</td>
<td></td>
</tr>
<tr>
<td>MLSC 537</td>
<td>PROFILES FROM THE PAST: FAMOUS FIGURES IN WESTERN HISTORY</td>
<td></td>
</tr>
<tr>
<td>MLSC 539</td>
<td>IMMIGRATION AND THE STATE: EUROPE AND THE US IN COMPARATIVE PERSPECTIVE</td>
<td></td>
</tr>
<tr>
<td>MLSC 541</td>
<td>HUMAN RIGHTS, GENDER EQUALITY AND RELIGIOUS BELIEFS</td>
<td></td>
</tr>
<tr>
<td>MLSC 542</td>
<td>THE EPIC JOURNEY</td>
<td></td>
</tr>
<tr>
<td>MLSC 543</td>
<td>THE CITY IN LITERATURE</td>
<td></td>
</tr>
<tr>
<td>MLSC 544</td>
<td>WRITING LITERATURE FOR CHILDREN</td>
<td></td>
</tr>
<tr>
<td>MLSC 545</td>
<td>WINDOW TO THE SOUL: EXPLORING RELIGION AND ETHNICITY THROUGH MUSIC</td>
<td></td>
</tr>
</tbody>
</table>

2017-2018 General Announcements
Policies for the MLS Degree

Admission

Admission to graduate study is open to qualified students holding a bachelor’s degree (or equivalent) from an accredited university or college. A minimum GPA of 3.0 from the applicant’s undergraduate work is expected, though the admissions committee also gives consideration to applicants’ postgraduate experience and recent accomplishments.

For additional information, please see the Master of Liberal Studies website: http://mls.rice.edu.

Opportunities for the MLS Degree

Association of Graduate Liberal Studies National Honor Society

MLS graduates who earn a 3.75 GPA or higher and have demonstrated leadership in the classroom and in the greater community are eligible for nomination to the Association of Graduate Liberal Studies National Honor Society.

For additional information, please see the Master of Liberal Studies website: http://mls.rice.edu.

Lifetime Physical Activity Program

Historically, Rice University has recognized that becoming physically educated is integral to one’s overall education. Since the university was founded in 1912, the Lifetime Physical Activity Program has worked to create a multi-faceted learning experience that promotes the physical, social, and emotional benefits of physical activity. It is the mission of the Lifetime Physical Activity Program to teach both theoretical and practical components of a variety of exercise/performance activities such that they will bring enjoyment and demonstrate the importance of maintaining health and wellness throughout the course of a lifetime.

Specifically, the goals of the Lifetime Physical Activity Program are:

• To encourage a lifetime of fitness through the teaching of mechanical, physiological, and nutritional principles.
• To teach other pertinent knowledge such as historical and cultural foundations, rules, and strategy.
• To create an environment that fosters a sense of emotional satisfaction, physical accomplishment, and social interaction for its participants.
• To provide students with high-quality instruction specific to the course material so that they may learn skills that will improve the length and quality of their lives.
• To expose Rice University students to activities that are not necessarily mainstream in United States culture.

The Lifetime Physical Activity Program offers a variety of sport/exercise/performance activities. In the 40-plus sections that are offered each semester, many have a multi-sport focus (e.g., volleyball/basketball), allowing students to experience three or four activities during one year. A student may select an LPAP section that meets his/her scheduling needs and that offers activities that satisfy his/her interests. Some of the current activities offered include racquet sports (tennis, racquetball, badminton), fitness activities (aerobics, personal fitness, weight training), aquatic activities, dance (Latin, ballroom, modern, ballet, country western, Middle Eastern, classical Indian), martial arts, team sports (flag football,
basketball, volleyball, soccer, softball), and other activities such as fencing, self-defense for women, golf, yoga, and nutrition.

Undergraduates must successfully complete one LPAP course (1 credit) in order to satisfy the graduation requirement. Students may use up to four LPAP courses (4 credits total) towards the total credits necessary for graduation. LPAP courses are not repeatable for credit.

Lifetime Physical Activity Program classes are strongly recommended for all first-year students, including transfers who have not taken equivalent courses elsewhere. Because LPAP courses are participation based and must be supervised by an instructor, students are required to adhere to a program-wide attendance policy.

For additional information regarding the Lifetime Physical Activity program, see the program’s website: https://recreation.rice.edu/lpap/.

The courses that can satisfy the Lifetime Physical Activity Program’s undergraduate graduation requirements can be found in Rice’s Course Catalog. See the Courses tab for a link to the official course offerings.

The Lifetime Physical Activity Program does not currently offer courses at the graduate level.

**Director**
Dr. Elizabeth Slator

**Instructors**
Jim Baber
Jill Banta
John Barron
Damon Bowens
David Broadstone
Jennifer Buergermeister
Amanda Caldwell
Kris Cortez
Megan Gossett
Lisa Hastings
Mike Henshaw
Kristina Koutsoudas
Rathna Kumar
Susanna Leonard
D’Ondra McGee
Heather Nabors
Jacqueline Nalett
Marcia Oliveira
Milton Pinzon-Cancino
Ahmet Rosowsky
Chris Watkins
Ernie Wu

**Description and Code Legend**
Note: Internally the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**
- Course offerings/subject code: LPCR, LPAP

---

**Linguistics**

**Contact Information**

Linguistics
https://linguistics.rice.edu/
212 Herring Hall
713-348-6010

Robert Englebretson
Interim Department Chair
reng@rice.edu

The Rice Linguistics Department is the home of an active community of scholars with a wide range of interests. Broadly defined, the department adopts a functional, usage-based approach to language and linguistic theory. A number of recurrent themes emerge in faculty research and the degree programs offered: in-depth investigation of languages, coupled with the search for cross-linguistic generalization; the effects of semantics, language-in-use, sociocultural factors, and other functional influences that motivate and constrain linguistic form; grounding of theories in solid empirical data of many sorts; an interest in the relation between language and mind; and interest in discourse and social/communicative interaction more generally. These interests lead to intensive research activity in empirically well-supported theoretical and descriptive linguistics:

- cognitive/functional linguistics
- typology and language universals
- field studies in American Indian, Australian, Austronesian, African, and other languages
- sociolinguistics
- discourse studies
- phonetics and speech processing
- laboratory phonology
- language change and grammaticization

**Bachelor’s Program**
- Bachelor of Arts (BA) Degree with a Major in Linguistics (p. 455)

**Master’s Program**
- Master of Arts (MA) Degree in the field of Linguistics*

**Doctoral Program**
- Doctor of Philosophy (PhD) Degree in the field of Linguistics (p. 457)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

**Interim Chair**
Robert Englebretson

**Professors**
Michel Achard
Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: LING

Department Description and Code
- Linguistics: LING

Undergraduate Degree Description and Code
- Bachelor of Arts degree: BA

Undergraduate Major Description and Code
- Major in Linguistics: LING

Graduate Degree Descriptions and Codes
- Master of Arts degree: MA
- Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
- Degree Program in Linguistics: LING

Bachelor of Arts (BA) Degree with a Major in Linguistics

Program Learning Outcomes for the BA Degree with a Major in Linguistics

Upon completing the BA degree with a major in Linguistics, students will be able to:

1. Demonstrate the ability to perform independent research about languages and their speakers, including the ability to ethically complete field work, collect data, analyze data, utilize laboratory and computing technologies, draw meaningful conclusions from data, and convey research results effectively orally and in writing.

2. Identify and define the main approaches for researching language structure and use at all levels (sounds, words, grammar, meaning, social/cultural interaction), as well as be able to evaluate critically and apply the primary concepts, vocabularies, methods and theories in their own work.

3. Gain an appreciation of the diversity of language and the ways in which it changes over time. They will be able to analyze the diversity of sounds and grammar in the world’s languages. They will also understand the diversity of regionally, socially, and ethnically-defined varieties within a single language. Students will be able to explain why this diversity is relevant to everyday life and how it is crucial to fields both inside and outside of linguistics.

4. Understand language in its relation to cognition, identity formation, culture, and society, and the systematic relationships among them.

Requirements for the BA Degree with a Major in Linguistics

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Linguistics must complete:

- A minimum of 12 courses (36 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 9 courses (27 credit hours) at the 300-level or above.

Because human language is a multifaceted object of study, linguistics is, by its nature an interdisciplinary field. The undergraduate major provides both an in-depth grounding in the field as well as a cross-disciplinary breadth. Students beginning the linguistics major should take LING 200, which is a prerequisite for many upper-level courses in the department. All majors are required to take at least 9 courses (27 credit hours) in linguistics at the 300-level or above, including 5 core courses as specified below.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Linguistics</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Linguistics</td>
<td>120</td>
</tr>
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</table>

Degree Requirements

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LING 200 / ANTH 200</td>
<td>INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE</td>
<td>3</td>
</tr>
<tr>
<td>LING 300 / ANTH 300</td>
<td>LINGUISTIC ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>LING 301 / ANTH 301</td>
<td>PHONETICS</td>
<td>3</td>
</tr>
<tr>
<td>LING 400</td>
<td>LINGUISTIC ANALYSIS II</td>
<td>3</td>
</tr>
<tr>
<td>LING 401</td>
<td>ANALYSIS OF SOUND PATTERNS</td>
<td>3</td>
</tr>
<tr>
<td>LING 499</td>
<td>RESEARCH SEMINAR</td>
<td>3</td>
</tr>
</tbody>
</table>
Language Requirement

Select 2 courses in a foreign language: for European languages, 2 courses at the 200-level or above; for non-European languages, 2 courses at the 100-level or above.

<table>
<thead>
<tr>
<th>Elective Requirements</th>
<th>Total Credit Hours Required for the Major in Linguistics</th>
<th>Additional Credit Hours to Complete BA Degree Requirements</th>
<th>University Graduation Requirements (p. 25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select 4 electives from departmental (LING) course offerings at the 300-level or above.</td>
<td>36</td>
<td>24</td>
<td>60</td>
</tr>
</tbody>
</table>

Total Credit Hours

120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 In addition to the required prerequisite, core requirements, and elective requirements, competency in one language other than English is required. This requirement may be satisfied by taking 2 courses in a European Language at the 200-level or above (or equivalent) or by taking 2 courses in a Non-European Language at the 100-level or above.

European Languages:
- French (FREN)
- German (GERM)
- Greek (GREE)
- Italian (ITAL)
- Latin (LATI)
- Portuguese (PORT)
- Russian (RUSS)
- Spanish (SPAN)

Non-European Languages:
- Arabic (ARAB)
- Chinese (CHIN)
- Hebrew (HEBR)
- Hindi (HIND)
- Japanese (JAPA)
- Korean (KORE)
- Tibetan (TIBT)

2 The linguistics major requires, in addition to 5 core courses, at least 4 advanced linguistics electives at the 300-level or above. In addition to the LING 499 Research Seminar, one additional Research Seminar can be selected as an elective. No more than 1 independent study course (such as LING 480) may be counted toward the major requirements.

Policies for the BA Degree with a Major in Linguistics

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Linguistics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Linguistics website: https://linguistics.rice.edu/

Opportunities for the BA Degree with a Major in Linguistics

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honors Program in Linguistics

The Linguistics Honors Program provides selected undergraduate majors with the opportunity to conduct supervised research. Majors planning to pursue graduate training in Linguistics or a related field are strongly encouraged to apply, as well as others who wish to add the experience of an intensive, individualized research project to their undergraduate education.

Application to the Honors Program should be made in person to the undergraduate major advisor before the end of the student’s junior year. In support of the application, the student should prepare a brief description of the proposed project signed by the faculty member who is to supervise the work (the project supervisor). Acceptance into the program is by agreement of the linguistics faculty. On acceptance, the student will enroll in LING 482, with the supervising faculty member named as instructor.

The Honors Program framework is designed to facilitate the development of a mentoring relationship between student and faculty member. Students are thus expected to meet regularly with their project supervisor regarding their progress; the supervisor is responsible for providing research guidance and general support.

With the appropriate completion of major requirements and the honors project or thesis, the student will graduate with departmental honors.

Departmental Guidelines for Distinction in Research and Creative Work

To earn the Distinction in Research and Creative Work, in Linguistics, students must have done one of the following:

- Written a senior honors thesis in the department that is based on original research and/or scholarship, and is judged to be exceptional; or
- Written a sole-authored scholarly paper that was (or will be) presented at a scholarly conference; or
- Made a significant individual contribution to linguistic research, including research that has been published or presented in a public venue, and highlights the contributions that linguistics can make to other academic, scientific, community, or societal spheres.
By the end of the 14th week of the Spring semester, students applying should submit electronically to Rita Riley (department administrator) at riley@rice.edu a portfolio consisting of:

1. A two-page description of how their research effort meets the requirements of Distinction. This two-page document should also place the student’s original contribution in broader scholarly linguistics research.
2. If a paper or thesis has been written to qualify, students should also submit the paper.
3. An application form including the endorsement of a faculty member available from the department office.

The application should have the subject: Distinction in Research and Creative Work in Linguistics, should be submitted by the end of the 14th week of the Spring semester, and should be complete (all forms, copies, and documents should be submitted electronically).

For additional information, please see the Linguistics website: https://linguistics.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Linguistics

Program Learning Outcomes for the PhD Degree in the field of Linguistics

Upon completion of the PhD degree in the field of Linguistics, students will be able to:

Requirements for the MA and PhD Degrees in the field of Linguistics

The Linguistics Department is not accepting new students into the graduate program for Fall 2017.

For graduation requirements, see Graduate Degrees (p. 49). The doctoral linguistics program at Rice emphasizes the study of language use and functional/cognitive approaches to linguistic theory. Rice faculty engage in a broad range of research specializations, all of which play an important role for in-depth graduate training. These interrelated areas include cognitive linguistics, language change, sociolinguistics, discourse analysis, language documentation and description, phonetics, laboratory phonology, and typology. Other faculty research interests include phonological theory, acoustic phonetics, speech sciences and technology, syntax, language revitalization, neurolinguistics, and forensic linguistics. The program only admits students planning to study for the PhD degree full-time. Undergraduate preparation ideally should include language study and coursework in linguistics or disciplines related to linguistics, such as anthropology, applied linguistics, speech and hearing sciences, psychology, sociolinguistics, or studies of particular languages, although an advanced degree is not required. Students will earn a master’s degree upon advancement to candidacy. Students admitted to the program are generally offered financial support in the form of tuition scholarships and/or stipends for living expenses.

During the first year of residence, each entering student works closely with the graduate advisor to choose a plan of study congruent with the demands of the program and the student’s interests. Emphasis throughout the program is on a close working relationship with faculty. Students should select areas of specialization that fit well with faculty research interests and activities.

Students will, in general, take five years to progress through the degree program. With no prior linguistics background, course work in the first three years will include:

- one problem-solving course in linguistic analysis (LING 500) to be taken in the first year of study
- two courses in the area of phonetics/phonology (LING 501 and LING 511)
- two courses in the area of syntactic/semantic analysis (LING 504 and LING 515)
- the two-course sequence in field methods (LING 407 and LING 408) to be taken normally in the second year of study
- two seminars in the department usually to be taken in the second and/or third year of study
- five additional elective courses, including two courses in other subfields of linguistics

Prior preparation in linguistics will be assessed with regard to its equivalence to particular Rice courses. Graduate students are required to register for at least 12 credit hours per semester before advancing to candidacy. The department requires a minimum semester GPA of 3.0 to avoid probationary status. Students are expected to serve as teaching assistants for one course per year for four of the five years during the time they are receiving departmental support, and this service is included in the normal course load.

Before advancing to candidacy, students must prepare two in-depth research papers. Each paper must represent a different area in the field of linguistics (as determined by the linguistics faculty); a separate committee of two members of the faculty reads and referees each paper. The committees are chosen by the student and approved by the student’s faculty mentor. The first publishable paper must be approved no later than the end of the fifth semester. Students who fail to meet this deadline will be dismissed from the program. The second publishable paper must be approved by the beginning of the eighth semester. In addition, one of the papers must be presented in the departmental colloquium, and it is expected that students submit their work for presentation at relevant professional meetings and publish their work in venues such as conference proceedings and/or journals when possible.

Finally, students must fulfill the departmental language requirement of competency in at least one language other than English. See the department web page and Linguistics Graduate Student Handbook for specific details.

In the course of the first three years in the program, the student should work toward establishing a close working relationship with various members of the faculty such that multiple faculty members are familiar with the student’s work. During the first year, the graduate advisor serves as the student’s advisor, but after the first year, the student selects a faculty mentor to provide more personalized advising in addition to the general advice of the graduate advisor. After the student’s second paper is accepted, a dissertation advisor is selected and a doctoral committee is formed, by mutual agreement of the student and the anticipated committee members. During the fourth year, students present to their committee members a third research paper, called the dissertation prospectus, consisting of a substantial dissertation proposal and a comprehensive bibliography. It may be based on a grant proposal to an external funding agency, particularly in the case of proposed fieldwork.
Upon completion of the prospectus, students will submit to an oral qualifying exam to be administered by the dissertation committee. The exam will consist of two parts, a general exam demonstrating the student’s knowledge of the field and a dissertation prospectus hearing. Upon completion of this qualifying examination, the student will advance to candidacy.

Following advancement to candidacy, the student works full time toward the completion of the dissertation. The student is expected to consult regularly with the committee members during the data collection and writing process. Upon completion of a complete and acceptable draft of the dissertation, the student will then, in consultation with all members of the dissertation committee, schedule a public defense of the work. When the final version of the dissertation is accepted by the doctoral committee and filed with the university, and all other requirements are certified as fulfilled, the degree is then granted.

For more in-depth information about the linguistics graduate program requirements, consult the official Linguistics Graduate Student Handbook and the departmental web page at linguistics.rice.edu.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Total Credit Hours Required for the PhD Degree in the field of Linguistics</td>
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</tr>
<tr>
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<td>MA Degree Program</td>
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<tr>
<td></td>
<td>The MA degree is a non-thesis masters degree. For general university requirements for non-thesis masters degrees, please see Graduate Degrees (p. 49). Although students are not normally admitted to study for an MA, graduate students may earn the MA after obtaining approval of their candidacy for the PhD. After all the requirements necessary to advance to candidacy have been met, the student may apply for a candidacy master’s degree.</td>
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<td>Total Credit Hours Required for the MA Degree in the field of Linguistics</td>
<td>30</td>
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</table>

**Policies for the PhD Degree in the field of Linguistics**

For additional information, please see the Linguistics website: [https://linguistics.rice.edu/](https://linguistics.rice.edu/)

**Opportunities for the PhD Degree in the field of Linguistics**

For additional information, please see the Linguistics website: [https://linguistics.rice.edu/](https://linguistics.rice.edu/)

**Managerial Studies**

**Contact Information**

Managerial Studies
http://mana.rice.edu/
120 Herzstein Hall

Managerial Studies is an interdepartmental, nonprofessional program designed to provide undergraduates with an understanding of the environment in which businesses and other organizations exist today and of some of the tools employed by management in the commitment of its financial and human resources.

All students pursuing the managerial studies major must also complete at least one of the established departmental or interdepartmental majors, other than an area major. The managerial studies major is not the equivalent of an undergraduate business major at other universities.

**Bachelor’s Program**

- Bachelor of Arts (BA) Degree with a Major in Managerial Studies (p. 458)

Managerial Studies does not currently offer an academic program at the graduate level.

**Program Director**

Richard J. Stoll

**Description and Code Legend**

*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**

- Course offerings/subject codes: MANA

**Program Description and Code**

- Managerial Studies: MANA

**Undergraduate Degree Description and Code**

- Bachelor of Arts degree: BA

**Undergraduate Major Description and Code**

- Major in Managerial Studies: MANA

**Bachelor of Arts (BA) Degree with a Major in Managerial Studies**

**Program Learning Outcomes for the BA Degree with a Major in Managerial Studies**

Upon completing the BA degree with a major in Managerial Studies, students will be able to:

1. Demonstrate knowledge of how private economic practices, responsibilities, rights, and rewards are related to public policy, regulating institutions, and politics (including local, state, and federal regulation, international policy, and the like) and will be able to evaluate critically the impact of policy, institutions, and politics on business practices.
2. Demonstrate an understanding of economic practices internal to conducting business, including financial reporting and accounting, while also demonstrating an understanding of economic practices external to business, including private investing in company stocks, bonds, and options.

3. Define and critically apply interdisciplinary methodologies and theories (including those from psychology and economics) to problems in Managerial Studies, as well as demonstrate the ability to evaluate different forms of evidence.

4. Demonstrate sufficient proficiency in algebra, statistics and other pertinent mathematics to develop and verify economic hypotheses as well as to evaluate computationally business problems or proposals.

5. Demonstrate an understanding of the underlying principles that govern the way the profession accounts for and communicates business transactions.

Requirements for the BA Degree with a Major in Managerial Studies

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Managerial Studies must complete:

- A minimum of 10 courses (30-32 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 5 courses (15 credit hours) taken at the 300-level or above.
- The requirements for a second departmental or interdepartmental major.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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Total Credit Hours Required for the Major in Managerial Studies

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Total Credit Hours Required for the BA Degree with a Major in Managerial Studies

Degree Requirements

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Core Requirements

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<td>BUSI 305</td>
<td>FINANCIAL ACCOUNTING</td>
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<td>ECON 100</td>
<td>PRINCIPLES OF ECONOMICS</td>
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<td>3</td>
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<tr>
<td>BUSI 343</td>
<td>FINANCIAL MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>CEVE 322 / ENGI 303</td>
<td>ENGINEERING ECONOMICS</td>
<td></td>
</tr>
<tr>
<td>ECON 343</td>
<td>CORPORATE FINANCE</td>
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<tr>
<td>ECON 443</td>
<td>FINANCIAL ECONOMICS</td>
<td></td>
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<tr>
<td>ECON 443</td>
<td>MANAGEMENT COMMUNICATIONS IN A CONSULTING SIMULATION</td>
<td>3</td>
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<tr>
<td>PSYC 101</td>
<td>INTRODUCTION TO PSYCHOLOGY</td>
<td>3</td>
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<tr>
<td>PSYC 231</td>
<td>INDUSTRIAL AND ORGANIZATIONAL PSYCHOLOGY</td>
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Elective Requirements

Core Statistics Elective

Select 1 from the following: 3-4

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<tr>
<td>PSYC 339</td>
<td>STATISTICAL METHODS-PSYCHOLOGY</td>
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<td>SOCI 382</td>
<td>SOCIAL STATISTICS</td>
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<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS</td>
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<tr>
<td>STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
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<tr>
<td>STAT 310 / ECON 307</td>
<td>PROBABILITY AND STATISTICS</td>
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Advanced Methods Elective

Select 1 from the following: 3-4

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<td>CAAM 378</td>
<td>INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION</td>
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<td>ECON 310 / STAT 376</td>
<td>ECONOMETRICS</td>
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<tr>
<td>STAT 385</td>
<td>METHODS OF DATA ANALYSIS AND SYSTEM OPTIMIZATION</td>
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<tr>
<td>STAT 410</td>
<td>LINEAR REGRESSION</td>
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<td>STAT 421</td>
<td>APPLIED TIME SERIES AND FORECASTING</td>
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<td>STAT 486</td>
<td>MARKET MODELS</td>
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External Course Electives

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<td>MICROECONOMICS</td>
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<td>ECON 239</td>
<td>LAW AND ECONOMICS</td>
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<td>ECON 355</td>
<td>FINANCIAL MARKETS</td>
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<td>ECON 421</td>
<td>INTERNATIONAL FINANCE</td>
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<td>ECON 435</td>
<td>INDUSTRIAL ORGANIZATION</td>
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<tr>
<td>ECON 437 / ENST 437</td>
<td>ENERGY ECONOMICS</td>
<td></td>
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<td>MECH 499</td>
<td>CURRENT TOPICS</td>
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<td>POLI 335</td>
<td>POLITICAL ENVIRONMENT OF BUSINESS</td>
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<tr>
<td>POLI 338 / SOSC 301</td>
<td>POLICY ANALYSIS</td>
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<tr>
<td>STAT 411</td>
<td>ADVANCED STATISTICAL METHODS</td>
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</table>

Total Credit Hours Required for the Major in Managerial Studies 30-32

Additional Credit Hours to Complete BA Degree Requirements 28-30

University Graduation Requirements (p. 25) * 60

Total Credit Hours 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.
Policies for the BA Degree with a Major in Managerial Studies

Program Restrictions and Exclusions

Students pursuing the major in Managerial Studies should be aware of the following program restriction:

• Students pursuing the major in Managerial Studies must complete the requirements of a second departmental or interdepartmental major.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the major in Managerial Studies should be aware of the following program-specific transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

• For transfer credit requests for subjects outside of the program's subject code (i.e. ECON courses required for the major in Managerial Studies), students seeking transfer credit should contact the appropriate department for approval, and not the Director of Managerial Studies.

For additional information, please see the Managerial Studies website: http://mana.rice.edu/

Opportunities for the BA Degree with a Major in Managerial Studies

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honors Program

To apply for admission to the honors program, students must have completed 8 courses from the Managerial Studies curriculum and have a B+ (3.33) average in those courses. All applications must be approved by a participating faculty member. A list of participating faculty and their research interests is available from the director of Managerial Studies. For more information, students should consult the program director in 120 Herzstein Hall.

For additional information, please see the Managerial Studies website: http://mana.rice.edu/

Materials Science and NanoEngineering

Contact Information

Materials Science and NanoEngineering

https://msne.rice.edu/

E200E George R. Brown Hall
713-348-3698

Pulickel Ajayan
Department Chair
ajayan@rice.edu

Materials engineering is concerned with the processing, structure, properties, and performance of diverse materials which include metals and their alloys, semiconductors, ceramics, glass, polymers, composites, and nanomaterials. The materials engineer applies principles of math, physics and chemistry to design, produce, characterize, and utilize materials essential to modern society. Examples range in size and properties from the nanometer-thick atomic layers which form transistors on integrated circuit chips to the single-crystal superalloy blades used in turbine engines to the metallic alloys used in transcontinental pipelines and power lines. The Materials Science and NanoEngineering curriculum provides students with the requisite skills and educational background to contribute to the solution of many materials and nanoeengineering problems, allow graduates to work in a fascinating field, and make it possible to become a leader in one of the most challenging areas of technology.

The department’s graduate degree programs include a non-thesis professional master's degree as well as research degrees which include a thesis. These programs, in their comprehensive educational and research activities, collaborate with other departments at Rice and other institutions and industry in Houston, including those in the Texas Medical Center. Collaborations are also extended to universities in the United States, Europe, Asia, North and South America. International collaborations include joint research activities as well as faculty and student visitor exchanges.

Graduate studies in the department may lead to specialization in one of several areas, including Advanced Manufacturing, Biomaterials, Carbon Nanomaterial Composites, Computational Materials Science, Material Modeling and Theories, Electron Microscopy and in situ Methods, Electronic Materials, Energy Conversion and Storage, Low Dimensional Materials, Mechanical Properties and Nanomechanics, Metallurgy & Metals Processing, Nanotechnology, Optical Materials, Photonics and Nanoplasmonics, Surfaces and Interfaces, Coatings and Thin Films, and
Ultra-light Weight Ultrahigh-Strength Multifunctional Materials. For details about these faculty research areas, please go to the MSNE website (http://www.msne.rice.edu).

**Bachelor's Programs**
- Bachelor of Arts (BA) Degree with a Major in Materials Science and NanoEngineering (p. 462)
- Bachelor of Science in Materials Science and NanoEngineering (BSMSNE) Degree (p. 463)

**Master's Programs**
- Master of Materials Science and NanoEngineering (MMSNE) Degree (p. 468)
- Master of Science (MS) Degree in the field of Materials Science and NanoEngineering (p. 470)

**Doctoral Program**
- Doctor of Philosophy (PhD) Degree in the field of Materials Science and NanoEngineering (p. 466)

**Coordinated Program**
- Master of Business Administration (MBA) Degree / Master of Materials Science and NanoEngineering (MMSNE) Degree (p. 468)

**Chair**
Pulickel Ajayan

**Associate Chair**
Jun Lou

**Professors**
Enrique V. Barrera
Edwin L. Thomas
Boris I. Yakobson

**Assistant Professors**
Zachary Cordero
Eilaf Egap
Emilie Ringe
Ming Tang

**Professor Emeritus**
Rex B. McLellan

**Professor in the Practice**
Peter Loos

**Joint Appointments**
Pedro Alvarez
Gang Bao
Andrew Barron
Yildiz Bayazitoglu
Lisa Biswal
Naomi Halas
Junichiro Kono
Qilin Li
Antonios G. Mikos
Satish Nagarajah
Doug Natelson
Peter Nordlander
Matteo Pasquali
Gus Scuseria
Pol Spanos
James M. Tour
Rafael Verduzco
Bruce Weisman
Peter G. Wolynes
Michael S. Wong

**Associate Research Professor**
Wade Adams
Alberto Pimpinelli
Robert Vajtai

**Assistant Research Professor**
Eugenio Penev

**Lecturers**
Randy John

**Adjunct Professors**
Ghaithan Al-Muntasheri
John Biggins
Lijie Cai
Feng Ding
Brent Houchens
Sergio Kapusta
Valery Khabashesku
Ajit Roy
Glaura Goulart Silva
Abhishek Singh

**Description and Code Legend**
*Note:* Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**
- Course offerings/subject code: MSNE

**Department Description and Code**
- Materials Science and NanoEngineering: MSNE

**Undergraduate Degree Descriptions and Codes**
- Bachelor of Arts degree: BA
- Bachelor of Science in Materials Science and NanoEngineering degree: BSMSNE

**Undergraduate Major Code and Description**
- Major in Materials Science and NanoEngineering: MSNE

**Graduate Degree Descriptions and Codes**
- Master of Materials Science and NanoEngineering degree: MMSNE
- Master of Science degree: MS
- Doctor of Philosophy degree: PhD
Graduate Degree Program Description and Code
• Degree Program in Materials Science and NanoEngineering: MSNE

Bachelor of Arts (BA) Degree with a Major in Materials Science and NanoEngineering

Program Learning Outcomes for the BA Degree with a Major in Materials Science and Nanoengineering

Upon completing the BA degree with a major in Materials Science and Nanoengineering, students will demonstrate:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
3. An ability to identify, formulate, and solve engineering problems.
4. An ability to communicate effectively.
5. A knowledge of contemporary issues.
6. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Requirements for the BA Degree with a Major in Materials Science and NanoEngineering

For general university requirements, see Graduation Requirements (p. 25).

Students pursuing the BA degree with a major in Materials Science and NanoEngineering must complete:

• A minimum of 20 or 22 courses (57 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 9 courses (26 credit hours) taken at the 300-level or above.

The BA program in Materials Science and NanoEngineering is highly flexible, involves less technical content than the BS, and allows students greater freedom to pursue areas of interest outside of engineering.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
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<td>57</td>
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Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

Policies for the BA Degree with a Major in Materials Science and Nanoengineering

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Materials Science and Nanoengineering should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Materials Science and Nanoengineering department's website: https://msne.rice.edu/

Opportunities for the BA Degree with a Major in Materials Science and Nanoengineering

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Research Opportunities

Many MSNE majors participate in undergraduate research; some even start during their freshman year. To get involved, speak to a MSNE undergraduate advisor or directly to a MSNE faculty member.

Fifth-Year MMSNE Degree Option for Rice Undergraduate Students

Rice undergraduate students have the option to earn the MMSNE degree by adding an additional year after completing their bachelor's degree. Advanced Rice undergraduate students in good academic standing may apply to the graduate program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may complete part of the course requirements for the MMSNE program during their senior year. A plan of study based on their particular focus area will need to be approved by the program director and the MMSNE advisor. Students who have taken MSNE 401, MSNE 402, MSNE 406, MSNE 409 and/or MSNE 435 may request to waive the core course requirements on MSNE 503, MSNE 502, MSNE 506, MSNE 509 and/or MSNE 535, respectively, and replace them with other courses upon the approval of the MMSNE advisor.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for their bachelor's degree and the MMSNE degree independently of each other (i.e., no course may be counted toward the fulfillment of both degrees).
- should be aware of the financial aid implications, if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time (12 credit hours) status.

For additional information, please see the Materials Science and Nanoengineering department's website: https://msne.rice.edu/

Bachelor of Science in Materials Science and NanoEngineering (BSMSNE) Degree

Program Learning Outcomes (Student Outcomes) for the BSMSNE Degree

Upon completing the BSMSNE degree, students will demonstrate:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Program Educational Objectives for the BSMSNE Degree

The Bachelor of Science in Materials Science and NanoEngineering (BSMSNE) degree prepares graduates to succeed in professional careers by equipping them with the expertise sought by top graduate schools and corporations. Recognizing that graduates may embark on diverse educational and career paths, the Program Educational Objectives (PEO) that graduates will achieve within a few years of obtaining their Bachelor of Science in Materials Science and NanoEngineering (BSMSNE) degree from Rice University are:
1. Graduates will demonstrate technical proficiency and professional achievement in their work which may include scientific inquiry as well as problem-solving, process optimization, and/or design in materials engineering and related fields.

2. Graduates will be accomplished at communicating and working collaboratively in diverse work environments.

3. Graduates seeking post-baccalaureate education will achieve appropriate levels of success in admission to and progression through those programs. Graduates entering professional careers will achieve appropriate career progression and success.

**Requirements for the BSMSNE Degree**

For general university requirements, see Graduation Requirements (p. 25).

Students pursuing the BSMSNE degree must complete:

- A minimum of 30 or 34 courses (90-94 credit hours) depending on course selection to satisfy major requirements.
- A minimum of 130-134 credit hours depending on course selection to satisfy degree requirements.
- A minimum of 15 courses (38 credit hours) taken at the 300-level or above.

Students seeking the BSMSNE must complete at least 90 semester hours in general math and science, core, and specialization elective courses within the total requirements of 130 hours.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours Required for the Major in Materials Science and NanoEngineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Credit Hours Required for the BSMSNE Degree</td>
</tr>
</tbody>
</table>

**Degree Requirements**

**Required Math and Science Prerequisites**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 1 from the following:

- PHYS 101 & PHYS 103: MECHANICS (WITH LAB) and MECHANICS DISCUSSION
- PHYS 111: HONORS MECHANICS (WITH LAB)

Select 1 from the following:

- PHYS 102 & PHYS 104: ELECTRICITY & MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION
- PHYS 112: HONORS ELECTRICITY & MAGNETISM (WITH LAB)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
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</table>

**Core Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MSNE 201</td>
<td>INTRODUCTION TO NANOENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 301</td>
<td>MATERIALS SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 302</td>
<td>MATERIALS PROCESSING AND NANOMANUFACTURING</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 303</td>
<td>MATERIALS SCIENCE JUNIOR LAB</td>
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<tr>
<td>MSNE 311</td>
<td>MATERIALS SELECTION AND DESIGN</td>
<td>4</td>
</tr>
<tr>
<td>MSNE 401</td>
<td>THERMODYNAMICS IN MATERIALS SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 402</td>
<td>MECH PROPERTIES OF MATERIALS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 406</td>
<td>PHYSICAL PROPERTIES OF SOLIDS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 407</td>
<td>CAPSTONE DESIGN PROJECT I</td>
<td>4</td>
</tr>
<tr>
<td>MSNE 408</td>
<td>CAPSTONE DESIGN PROJECT II</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 411</td>
<td>METALLOGRAPHY AND PHASE RELATIONS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 415</td>
<td>CERAMICS AND GLASSES</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 435</td>
<td>CRYSTALLOGRAPHY &amp; DIFFRACTION</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 437</td>
<td>CRYSTALLOGRAPHY &amp; DIFFRACT LAB</td>
<td>1</td>
</tr>
<tr>
<td>MSNE 450 &amp; MSNE 451</td>
<td>MATERIALS SCIENCE SEMINAR and MATERIALS SCIENCE SEMINAR</td>
<td>1</td>
</tr>
</tbody>
</table>

**Elective Requirements**

Select 1 elective course from the Engineering Cluster (see below for course list)

Select 1 elective course from the Math and Science Cluster (see below for course list)

Select 2 elective courses from the Technical Cluster or select additional Engineering Cluster courses (see below for course lists)

Total Credit Hours Required for the Major in Materials Science and NanoEngineering | 90-94

University Graduation Requirements (p. 25) | 40

Total Credit Hours | 130-134

**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

**Elective Requirements**

To fulfill the remaining Materials Science and NanoEngineering major requirements for the BSMSNE degree, students must complete a total of 4 additional courses (a minimum of 12 credit hours). 1 course (3-4 credit
hours) must come from the Engineering Cluster, 1 course (3-4 credit hours) must come from the Math and Science Cluster. The 2 remaining courses (6-8 credit hours) must come from the Technical Cluster or from additional Engineering Cluster coursework.

### Engineering Cluster (no MSNE courses)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>BIOE 370</td>
<td>BIOMATERIALS</td>
<td>3-4</td>
</tr>
<tr>
<td>CEVE 310</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
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</tr>
<tr>
<td>CEVE 311 / MECH 311</td>
<td>MECHANICS OF SOLIDS AND STRUCTURES</td>
<td></td>
</tr>
<tr>
<td>CEVE 427 / MECH 427</td>
<td>COMPUTATIONAL STRUCTURAL MECHANICS AND FEM</td>
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</tr>
<tr>
<td>CEVE 434</td>
<td>FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT</td>
<td></td>
</tr>
<tr>
<td>CHBE 390</td>
<td>CHEMICAL KINETICS AND REACTOR DESIGN</td>
<td></td>
</tr>
<tr>
<td>CHBE 401</td>
<td>TRANSPORT PHENOMENA I</td>
<td></td>
</tr>
<tr>
<td>ELEC 241 &amp; ELEC 240</td>
<td>FUNDAMENTALS OF ELECTRICAL ENGINEERING I and FUNDAMENTALS OF ELECTRICAL ENGINEERING I LABORATORY</td>
<td></td>
</tr>
<tr>
<td>ELEC 261</td>
<td>ELECTRONIC MATERIALS AND QUANTUM DEVICES</td>
<td></td>
</tr>
<tr>
<td>ELEC 361</td>
<td>QUANTUM MECHANICS FOR ENGINEERS</td>
<td></td>
</tr>
<tr>
<td>ELEC 462</td>
<td>OPTOELECTRONIC DEVICES</td>
<td></td>
</tr>
<tr>
<td>ENGI 302 / CEVE 302</td>
<td>SUSTAINABLE DESIGN</td>
<td></td>
</tr>
<tr>
<td>ENGI 303</td>
<td>ENGINEERING ECONOMICS</td>
<td></td>
</tr>
<tr>
<td>MECH 211 / CEVE 211</td>
<td>ENGINEERING MECHANICS</td>
<td></td>
</tr>
<tr>
<td>MECH 403</td>
<td>COMPUTER AIDED DESIGN</td>
<td></td>
</tr>
<tr>
<td>MECH 417 / CEVE 417</td>
<td>FINITE ELEMENT ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>MECH 481</td>
<td>HEAT TRANSFER</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours: 3-4

### Math and Science Cluster (no MSNE or Engineering courses)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTR 201</td>
<td>STARS, GALAXIES, AND THE UNIVERSE</td>
<td>3-4</td>
</tr>
<tr>
<td>ASTR 202</td>
<td>EXPLORATION OF THE SOLAR SYSTEM</td>
<td></td>
</tr>
<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOC 301</td>
<td>BIOCHEMISTRY I</td>
<td></td>
</tr>
<tr>
<td>BIOC 385 / NEUR 385</td>
<td>FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE</td>
<td></td>
</tr>
<tr>
<td>CAAM 336</td>
<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>CAAM 378</td>
<td>INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION</td>
<td></td>
</tr>
<tr>
<td>CAAM 415</td>
<td>THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>CAAM 435</td>
<td>DYNAMICAL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>CAAM 453</td>
<td>NUMERICAL ANALYSIS I</td>
<td></td>
</tr>
<tr>
<td>CAAM 501</td>
<td>ANALYSIS I</td>
<td></td>
</tr>
<tr>
<td>CAAM 519</td>
<td>COMPUTATIONAL SCIENCE I</td>
<td></td>
</tr>
<tr>
<td>CHEM 211 &amp; CHEM 213</td>
<td>ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>CHEM 212 &amp; CHEM 214</td>
<td>ORGANIC CHEMISTRY II and ORGANIC CHEM DISCUSSION II</td>
<td></td>
</tr>
<tr>
<td>CHEM 311</td>
<td>PHYSICAL CHEMISTRY I</td>
<td></td>
</tr>
<tr>
<td>CHEM 312</td>
<td>PHYSICAL CHEMISTRY II</td>
<td></td>
</tr>
<tr>
<td>CHEM 330</td>
<td>ANALYTICAL CHEMISTRY</td>
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<tr>
<td>CHEM 360</td>
<td>INORGANIC CHEMISTRY</td>
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</tr>
<tr>
<td>ELEC 241 &amp; ELEC 240</td>
<td>FUNDAMENTALS OF ELECTRICAL ENGINEERING I</td>
<td></td>
</tr>
<tr>
<td>ELEC 261</td>
<td>ELECTRONIC MATERIALS AND QUANTUM DEVICES</td>
<td></td>
</tr>
<tr>
<td>ELEC 361</td>
<td>QUANTUM MECHANICS FOR ENGINEERS</td>
<td></td>
</tr>
<tr>
<td>ELEC 462</td>
<td>OPTOELECTRONIC DEVICES</td>
<td></td>
</tr>
<tr>
<td>ENGI 302 / CEVE 302</td>
<td>SUSTAINABLE DESIGN</td>
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<tr>
<td>ENGI 303</td>
<td>ENGINEERING ECONOMICS</td>
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<td>MECH 211 / CEVE 211</td>
<td>ENGINEERING MECHANICS</td>
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<tr>
<td>MECH 403</td>
<td>COMPUTER AIDED DESIGN</td>
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<td>MECH 417 / CEVE 417</td>
<td>FINITE ELEMENT ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>MECH 481</td>
<td>HEAT TRANSFER</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours: 3-4

### Technical Cluster (MSNE or Engineering courses)

Select at least 2 from the following (or select additional coursework from the Engineering Cluster):

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSNE 365 / ELEC 365</td>
<td>NANOMATERIALS FOR ENERGY</td>
<td>6</td>
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<tr>
<td>MSNE 409</td>
<td>PHYSICAL METALLURGY</td>
<td></td>
</tr>
<tr>
<td>MSNE 433</td>
<td>COMPUTATIONAL MATERIALS MODELING</td>
<td></td>
</tr>
<tr>
<td>MSNE 505</td>
<td>MICROSTRUCTURE AND NANOSTRUCTURE EVOLUTION</td>
<td></td>
</tr>
<tr>
<td>MSNE 523</td>
<td>PROPERTIES, SYNTHESIS AND DESIGN OF COMPOSITE MATERIALS</td>
<td></td>
</tr>
<tr>
<td>MSNE 538 / CEVE 538</td>
<td>COMPUATIONAL NANOSCIENCE FOR GREEN INFRASTRUCTURE</td>
<td></td>
</tr>
<tr>
<td>MSNE 545 / ELEC 545</td>
<td>THIN FILMS</td>
<td></td>
</tr>
<tr>
<td>MSNE 555</td>
<td>MATERIALS IN NATURE AND BIO-MIMETIC STRATEGIES</td>
<td></td>
</tr>
<tr>
<td>MSNE 560 / CHBE 560</td>
<td>COLLOIDAL AND INTERFACIAL PHENOMENA</td>
<td></td>
</tr>
<tr>
<td>MSNE 569</td>
<td>SCIENCE AND APPLICATIONS OF CORROSION SCIENCE AND ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>MSNE 580</td>
<td>MICROSCOPY METHODS IN MATERIALS SCIENCE</td>
<td></td>
</tr>
</tbody>
</table>
MSNE 581 MICRO AND NANO HEAT TRANSPORT METHODOLOGIES AND DESIGN
MSNE 593 / CHBE 593 INTRODUCTION TO POLYMER PHYSICS AND ENGINEERING
MSNE 594 / CHBE 594 PROPERTIES OF POLYMERS
MSNE 650 NANO MATERIALS AND NANOMECHANICS

Total Credit Hours 6

Footnotes and Additional Information
1 The Technical Cluster also includes the Engineering cluster.

Policies for the BSMSNE Degree

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the BSMSNE degree should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Materials Science and NanoEngineering website: https://msne.rice.edu/

Opportunities for the BSMSNE Degree

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Research Opportunities
Many MSNE majors participate in undergraduate research; some even start during their freshman year. To get involved, speak to a MSNE undergraduate advisor or directly to a MSNE faculty member.

Fifth-Year MMSNE Degree Option for Rice Undergraduate Students
Rice undergraduate students have the option to earn the MMSNE degree by adding an additional year after completing their bachelor’s degree. Advanced Rice undergraduate students in good academic standing may apply to the graduate program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may complete part of the course requirements for the MMSNE program during their senior year. A plan of study based on their particular focus area will need to be approved by the program director and the MMSNE advisor. Students who have taken MSNE 401, MSNE 402, MSNE 406, MSNE 409 and/or MSNE 435 may request to waive the core course requirements on MSNE 503, MSNE 502, MSNE 506, MSNE 509 and/or MSNE 535, respectively, and replace them with other courses upon the approval of the MMSNE advisor.

As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for their bachelor’s degree and the MMSNE degree independently of each other (i.e., no course may be counted toward the fulfillment of both degrees).
• should be aware of the financial aid implications, if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time (12 credit hours) status.

For additional information, please see the Materials Science and NanoEngineering website: https://msne.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Materials Science and NanoEngineering

Program Learning Outcomes for the PhD Degree in the field of Materials Science and NanoEngineering
Upon completing the PhD degree in the field of Materials Science and NanoEngineering, students will be able to:

1. Demonstrate an advanced command of Materials Science and NanoEngineering field work.
2. Conduct independent research that demonstrates advanced mastery of a subfield within Materials Science or NanoEngineering.
3. Communicate scientific ideas effectively in writing and when speaking.

Requirements for the PhD Degree in the field of Materials Science and NanoEngineering

Full-time students seeking the PhD degree are expected to complete all the requirements for the degree within five calendar years following entrance into the program. Continuation in the program beyond this time limit will require special approval of the department.

For general university requirements, please see Doctoral Degrees (p. 64). Students pursuing the PhD degree program in Materials Science and NanoEngineering must complete:

• A minimum of 90 credit hours advanced relevant study, of which at least 18 credit hours must be completed through coursework.

The programs leading to the MS and PhD degrees are open to students who have demonstrated outstanding performance in their undergraduate studies. The granting of a graduate research degree presupposes academic work of superior quality and a demonstrated ability to do original research.

For general university requirements, see Graduate Degrees (p. 49). Course requirements for the research degrees vary depending on the extent of individual undergraduate preparation as well as each student’s performance in graduate courses and on qualifying examinations. For both the MS and PhD degrees, students must present a thesis that
comprises an original contribution to knowledge and defend it in a public oral examination.

Students are expected to earn letter grades of at least B- (2.67 grade points) in all courses taken, and maintain a minimum overall GPA of 3.0 to graduate. If a student’s GPA is below 3.0, the student will be placed on departmental probation. The student may be dismissed from the program if his/her GPA falls below 3.0 for two semesters. Final decision will be made by the Graduate Committee in consultation with the Department Chair.

Each graduate student is expected to render research and/or instructional assistance to the department not to exceed 10 hours per week. Graduate student work assignments will be made by the advisor at the beginning of each semester.

All PhD students must attend at least 75% of the MSNE seminars per semester. For details, please see the degree requirements on the MSNE website (http://msne.rice.edu/Content.aspx?id=2147483743).

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Materials Science and NanoEngineering</td>
<td>90</td>
</tr>
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</table>

Degree Requirements

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSNE 502</td>
<td>MECH PROPERTIES OF MATERIALS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 503</td>
<td>THERMODYNAMICS IN MATERIALS SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 506</td>
<td>PHYSICAL PROPERTIES OF SOLIDS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 535 /</td>
<td>CRYSTALLOGRAPHY &amp; DIFFRACTION</td>
<td>3</td>
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</tbody>
</table>

Elective Requirements

Select 2 courses from departmental (MSNE) course offerings at the 500-level or above.¹

Non-Coursework²

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>MSNE 500</td>
<td>MATERIALS SCIENCE SEMINAR</td>
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</tr>
<tr>
<td>MSNE 501</td>
<td>GRADUATE STUDENT SEMINAR</td>
<td>1</td>
</tr>
<tr>
<td>MSNE 800</td>
<td>RESEARCH AND THESIS</td>
<td>9</td>
</tr>
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</table>

Total Credit Hours as Defined by Department 72

Total Credit Hours 90

Footnotes and Additional Information

¹ Students may complete courses that satisfy the Electives requirement from other departmental course offerings upon approval from their advisors or one member of the Departmental Graduate Committee.

² Credit received for MSNE 500, MSNE 501, and MSNE 800 will not be counted toward coursework, but will count toward the total credit hours required for the degree.

³ Students must attend at least 10 of the 13 MSNE 500 seminars per semester for the duration of their study

⁴ Students must attend at least 9 of the 13 MSNE 501 seminars per semester for the duration of their study

⁵ Students must register for a minimum of 9 credit hours per semester and must be required to receive an "S" grade. "U" grades are discussed further in the MSNE Graduate Student Handbook in the section Grades.

Graduate students pursuing a thesis degree program will be subject to a preliminary evaluation of their candidacy for the highest degree program they intend to pursue. The evaluation will be conducted by the end of the second semester of enrollment in the graduate program in the MSNE department.

By the end of the sixth semester of enrollment in the graduate program in the MSNE department, the student must pass an oral qualifying examination.

Each candidate for the PhD degree must complete a thesis that constitutes an original contribution to scientific knowledge (analytical or experimental). It is expected that the research will be of sufficient importance and quality that positive results would lead to publication. On completion of the thesis, each candidate for the PhD degree must pass a final public oral examination. The examination will be conducted by a committee consisting of at least three members. Two, including the advisor, must be MSNE faculty members, and one must be a faculty member from another department.

Candidates for the PhD degree program in Materials Science and NanoEngineering are required to provide teaching assistance to the department as a teaching assistant or grader for at least 4 semesters, but no more than 6 semesters.

For additional details and information, please see the degree requirements on the MSNE website (http://msne.rice.edu/Content.aspx?id=64).

**Policies for the PhD Degree in the field of Materials Science and NanoEngineering**

Department of Materials Science and NanoEngineering Graduate Program Handbook

For more detailed information regarding the PhD degree program policies, please see Materials Science and NanoEngineering department’s Graduate Handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Material_Science_Nano_Engineering_Graduate_Handbook.pdf

For additional information, please see the Materials Science and Nanoengineering website: https://msne.rice.edu/

**Opportunities for the PhD Degree in the field of Materials Science and NanoEngineering**

For additional information, please see the Materials Science and Nanoengineering website: https://msne.rice.edu/
Master of Business Administration (MBA) Degree / Master of Materials Science and NanoEngineering (MMSNE) Degree

Program Learning Outcomes for the MMSNE Degree

Upon completing the MMSNE degree, students will be able to:

1. Acquire broad, advanced knowledge within either Materials Science or NanoEngineering, which is also in-depth in one major sub-discipline of the field.
2. Conduct research at an advanced level in at least one area of Materials Science and Nanoengineering.
3. Communicate scientific ideas effectively in writing and when speaking.
4. Demonstrate the ability to gain admission to a graduate or professional program, if interested in pursuing further education.
5. Demonstrate the ability to gain employment or advancement in a technical field related to Materials Science and NanoEngineering, if pursuing non-academic careers.

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA/MMSNE Coordinated Degree Program

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

Policies for the MBA/MMSNE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Materials Science and Nanoengineering website: https://msne.rice.edu/

Opportunities for the MBA/MMSNE Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Materials Science and Nanoengineering website: https://msne.rice.edu/

Master of Materials Science and NanoEngineering (MMSNE) Degree

Program Learning Outcomes for the MMSNE Degree

Upon completing the MMSNE degree, students will be able to:

1. Acquire broad, advanced knowledge within either Materials Science or NanoEngineering, which is also in-depth in one major sub-discipline of the field.
2. Conduct research at an advanced level in at least one area of Materials Science and Nanoengineering.
3. Communicate scientific ideas effectively in writing and when speaking.
4. Demonstrate the ability to gain admission to a graduate or professional program, if interested in pursuing further education.
5. Demonstrate the ability to gain employment or advancement in a technical field related to Materials Science and NanoEngineering, if pursuing non-academic careers.

Requirements for the MMSNE Degree in Materials Science and NanoEngineering

The MMSNE degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MMSNE degree must complete:
• A minimum of 10 courses (30 credit hours) at the 500-level or above to satisfy degree requirements.
• A minimum of 8 courses (24 credit hours) at Rice University.
• A minimum overall GPA of 3.0 in required coursework with a minimum grade of B- (2.67 grade points) in each course.
• The requirements for one area of specialization. The MMSNE degree program offers the following two areas of specialization.
  • Materials Science
  • NanoEngineering

The MMSNE degree program is open to students who have shown academic excellence in their undergraduate studies. This non-thesis degree option is designed for engineers who have attained a bachelor’s degree and are looking to further their careers in industry. They combine engineering coursework with professional development and communications. A list of required and suggested courses are available on the MSNE website (https://msne.rice.edu). Students should develop a specific plan of study based on their particular interests and discussions with their advisor.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
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**Degree Requirements**

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<tbody>
<tr>
<td></td>
<td><strong>Core Requirements</strong> Select 3 from the following:</td>
<td>9</td>
</tr>
<tr>
<td>MSNE 502</td>
<td>MECH PROPERTIES OF MATERIALS</td>
<td></td>
</tr>
<tr>
<td>MSNE 503</td>
<td>THERMODYNAMICS IN MATERIALS SCIENCE</td>
<td></td>
</tr>
<tr>
<td>MSNE 505</td>
<td>MICROSTRUCTURE AND NANOSTRUCTURE EVOLUTION</td>
<td></td>
</tr>
<tr>
<td>MSNE 506</td>
<td>PHYSICAL PROPERTIES OF SOLIDS</td>
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</tr>
<tr>
<td>MSNE 509</td>
<td>PHYSICAL METALLURGY</td>
<td></td>
</tr>
<tr>
<td>MSNE 535 / PHYS 535</td>
<td>CRYSTALLOGRAPHY &amp; DIFFRACTION</td>
<td></td>
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<td><strong>Technical Electives</strong> Select 3 technical electives including at least 2 MSNE courses (6 credit hours) from the following:</td>
<td>9</td>
</tr>
<tr>
<td>MSNE 523</td>
<td>PROPERTIES, SYNTHESIS AND DESIGN OF COMPOSITE MATERIALS</td>
<td></td>
</tr>
<tr>
<td>MSNE 533</td>
<td>COMPUTATIONAL MATERIALS MODELING</td>
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<tr>
<td>MSNE 545</td>
<td>THIN FILMS</td>
<td></td>
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<tr>
<td>MSNE 555</td>
<td>MATERIALS IN NATURE AND BIO-MIMETIC STRATEGIES</td>
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<tr>
<td>MSNE 569</td>
<td>SCIENCE AND APPLICATIONS OF CORROSION SCIENCE AND ENGINEERING</td>
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<tr>
<td>MSNE 580</td>
<td>MICROSCOPY METHODS IN MATERIALS SCIENCE</td>
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<tr>
<td>MSNE 613</td>
<td>SPECIAL TOPICS I</td>
<td></td>
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<td>MSNE 614</td>
<td>SPECIAL TOPICS II</td>
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<td>MSNE 615</td>
<td>SPECIAL TOPICS III</td>
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<tr>
<td>MSNE 650</td>
<td>NANOMATERIALS AND NANOMECHANICS</td>
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**Research Project**

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<tr>
<td></td>
<td><strong>Research Project</strong></td>
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**Professional Development**

Select at least 1 course, but no more than 2 courses from the following:

<table>
<thead>
<tr>
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<tr>
<td>ENGI 505 / CEVE 505</td>
<td>ENGINEERING PROJECT MANAGEMENT AND ECONOMICS</td>
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<tr>
<td>ENGI 510</td>
<td>TECHNICAL AND MANAGERIAL COMMUNICATIONS</td>
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</tr>
<tr>
<td>ENGI 528</td>
<td>ENGINEERING ECONOMICS</td>
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<tr>
<td>ENGI 529 / CEVE 529</td>
<td>ETHICS AND ENGINEERING LEADERSHIP</td>
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<td>ENGI 610 / NSCI 610</td>
<td>MANAGEMENT FOR SCIENCE AND ENGINEERING</td>
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<td>ENGI 615</td>
<td>LEADERSHIP COACHING FOR ENGINEERS</td>
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<tr>
<td>NSCI 511</td>
<td>SCIENCE POLICY, AND ETHICS</td>
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**Elective Requirements**

Select electives at the 500-level or above to fulfill the minimum credit hours 3-6

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
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<td><strong>Total Credit Hours</strong></td>
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</tbody>
</table>

**Footnotes and Additional Information**

1 Advisor approval is not required for students completing 1 technical elective (3 credit hours) outside of MSNE course offerings. MSNE 500 and MSNE 501 are not considered technical electives.

2 MSNE 502, MSNE 503, MSNE 505, MSNE 506, MSNE 509, and/or MSNE 535 that are not used towards satisfying the core requirements can be taken as Technical Electives.

3 Students must work with their advisor to select their research project. Students may also complete MSNE 622 to fulfill the Research Project requirement, however, MSNE 621 is required.

4 Students should work with their advisor to receive approval for courses according to their interests and field of study.

**Policies for the MMSNE Degree**

**Department of Materials Science and NanoEngineering Graduate Program Handbook**

For more detailed information regarding the MMSNE degree program policies, please see Materials Science and NanoEngineering department’s Graduate Handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Material_Science_Nano_Engineering_Graduate_Handbook.pdf.

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

For additional information, please see the Materials Science and Nanoengineering website: https://msne.rice.edu/

**Opportunities for the MMSNE Degree**

For additional information, please see the Materials Science and Nanoengineering website: https://msne.rice.edu/
Master of Science (MS) Degree in the field of Materials Science and NanoEngineering

Program Learning Outcomes for the MS Degree in the field of Materials Science and NanoEngineering

Upon completing the MS degree in the field of Materials Science and NanoEngineering, students will be able to:

1. Demonstrate an advanced command of Materials Science and NanoEngineering field work.
2. Conduct independent research that demonstrates advanced mastery of a subfield within Materials Science or NanoEngineering.
3. Communicate scientific ideas effectively in writing and when speaking.

Requirements for the MS Degree in the field of Materials Science and NanoEngineering

The MS degree is a thesis master's degree. For general university requirements, please see Thesis Master's Degrees (p. 67). Students pursuing the MS degree program in Materials Science and NanoEngineering must complete:

- A minimum of 30 credit hours of study, of which at least 18 credit hours must be completed through coursework.

Full-time students seeking the MS degree are expected to complete all the requirements for the degree within 2 calendar years into the program. Continuation in the program beyond this time limit will require special approval of the department.

The programs leading to the MS and PhD degrees are open to students who have demonstrated outstanding performance in their undergraduate studies. The granting of a graduate research degree presupposes academic work of superior quality and a demonstrated ability to do original research.

For general university requirements, see Graduate Degrees (p. 49). Course requirements for the research degrees vary depending on the extent of individual undergraduate preparation as well as each student’s performance in graduate courses and on qualifying examinations. For both the MS and PhD degrees, students must present a thesis that comprises an original contribution to knowledge and defend it in a public oral examination.

Students are expected to earn letter grades of at least B- in all courses taken, and maintain a minimum GPA of 3.0 to graduate. If a student’s GPA is below 3.0, the student will be placed on departmental probation. The student may be dismissed from the program if his/her GPA falls below 3.0 for two semesters. Final decision will be made by the Graduate Committee in consultation with the Department Chair.

Each graduate student is expected to render research and/or instructional assistance to the department not to exceed 10 hours per week. Graduate student work assignments will be made by the advisor at the beginning of each semester.

All PhD students must attend at least 75% of the MSNE seminars per semester, and MS students must attend at least 50% of the MSNE seminars per semester. For details, please see the degree requirements on the MSNE website (http://msne.rice.edu/Content.aspx?id=2147483743).

Graduate students pursuing a thesis degree program will be subject to a preliminary evaluation of their candidacy for the highest degree program they intend to pursue. The evaluation will be conducted by the end of the second semester of enrollment in the graduate program in the MSNE department.

Each candidate for the MS degree must complete a thesis demonstrating ability in research of a fundamental nature (analytical or experimental). It is expected that the research will be of sufficient importance and quality that positive results would lead to publication. Upon completion of the thesis, each candidate for the MS degree must pass a final public oral examination. The examination will be conducted by a committee consisting of at least three members. Two, including the advisor, must be MSNE faculty members, and one must be a faculty member from another department.

Candidates for the MS degree are required to provide teaching assistance to the department as a teaching assistant or grader for at least 2 semesters, but no more than 3 semesters.

For details, please see the degree requirements on the MSNE website (http://msne.rice.edu/Content.aspx?id=2147483743).

Summary

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<td>Total Credit Hours Required for the MS Degree in the field of Materials Science and NanoEngineering</td>
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Degree Requirements

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<tr>
<th>Code</th>
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<tr>
<td>Core Courses</td>
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<td>MSNE 502</td>
<td>MECH PROPERTIES OF MATERIALS</td>
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<td>MSNE 503</td>
<td>THERMODYNAMICS IN MATERIALS SCIENCE</td>
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<td>MSNE 506</td>
<td>PHYSICAL PROPERTIES OF SOLIDS</td>
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<td>MSNE 535 / PHYS 535</td>
<td>CRYSTALLOGRAPHY &amp; DIFFRACTION</td>
<td>3</td>
</tr>
<tr>
<td>Elective Requirements</td>
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<td>Select 2 courses from departmental (MSNE) course offerings at the 500-level or above</td>
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<tr>
<td>Non-Coursework</td>
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<td>MSNE 500</td>
<td>MATERIALS SCIENCE SEMINAR</td>
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<td>MSNE 501</td>
<td>GRADUATE STUDENT SEMINAR</td>
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<tr>
<td>MSNE 800</td>
<td>RESEARCH AND THESIS</td>
<td>9</td>
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<tr>
<td>Additional Requirements as Defined by Department</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>
Footnotes and Additional Information

1 Students may complete courses that satisfy the Electives requirement from other departmental course offerings upon approval from their advisors or one member of the Departmental Graduate Committee.

2 Credit received for MSNE 500, MSNE 501, and MSNE 800 will not be counted toward coursework, but will count toward the total credit hours required for the degree.

3 Students must attend at least 6 of the 13 MSNE seminars per semester for the duration of their study.

4 Students must attend at least 6 of the 13 MSNE 501 seminars per semester for the duration of their study.

5 Students must register for a minimum of 9 credit hours per semester and must be required to receive an "S" grade. "U" grades are discussed further in the MSNE Graduate Student Handbook in the section Grades.

Policies for the MS Degree in the field of Materials Science and NanoEngineering

Department of Materials Science and NanoEngineering Graduate Program Handbook

For more detailed information regarding the MS degree program policies, please see Materials Science and NanoEngineering department's Graduate Handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Material_Science_Nano_Engineering_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Material_Science_Nano_Engineering_Graduate_Handbook.pdf)

For additional information, please see the Materials Science and NanoEngineering website: [https://msne.rice.edu/](https://msne.rice.edu/)

Opportunities for the MS Degree in the field of Materials Science and NanoEngineering

For additional information, please see the Materials Science and NanoEngineering website: [https://msne.rice.edu/](https://msne.rice.edu/)

Mathematics

Contact Information

Mathematics

http://math.rice.edu/
220 Herman Brown Hall
713-348-4829

Mike Wolf
Department Chair
mwolf@rice.edu

Mathematics lies at the foundation of many disciplines in the sciences, engineering fields, and the social sciences, and this influence is growing as these subjects become increasingly quantitative. Recognizing this important role in the wide variety of directions available to our degree recipients, the program in mathematics provides undergraduates with a spectrum of choices. These range from nontheoretical treatments of calculus and courses in combinatorics, elementary number theory, and projective geometry to a broad variety of sophisticated mathematics, including real and complex analysis, differential geometry, abstract algebra, algebraic and geometric topology, algebraic geometry, dynamics, and partial differential equations.

Faculty research interests range from differential geometry, ergodic theory, group representations, partial differential equations, and probability to real analysis, mathematical physics, complex variables, algebraic geometry, number theory, combinatorics, geometric topology, algebraic topology, and dynamics.

Bachelor's Programs

- Bachelor of Arts (BA) Degree with a Major in Mathematics (p. 472)
- Bachelor of Science (BS) Degree with a Major in Mathematics (p. 473)

Minor

- Minor in Mathematics (p. 476)

Master's Program

- Master of Arts (MA) Degree in the field of Mathematics*

Doctoral Program

- Doctor of Philosophy (PhD) Degree in the field of Mathematics (p. 475)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Chair

Michael Wolf

Professors

Michael Boshernitzan
David Damanik
Robert M. Hardt
Shelly Harvey
Frank Jones
Alexander Kiselev
Alan Reid
Stephen W. Semmes

Associate Professors

Zhiyong Gao
Anthony Varilly-Alvarado

Assistant Professors

Gregory Chambers
Milivoje Lukic
Ronen Mukamel

Professors Emeriti

Robin Forman
F. Reese Harvey
John Hempel
John C. Polking
Raymond S. Wells
Sr. Instructor
Stephen Wang

Instructors
Gokalp Alpan
Jennifer Berg
John Calabrese
Anastassia Etropolski
Neil Fullarton
Betul Orcan-Ekmekci
Siran Li
Arindam Roy
Selim Sukhataiev
Changhui Tan

Clinical Assistant Professor
Robin Ward (with RUSMP)

Adjunct Faculty
Ray Johnson

Research Professor
Michael Field

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: MATH

Department Description and Code
• Mathematics: MATH

Undergraduate Degree Descriptions and Codes
• Bachelor of Arts degree: BA
• Bachelor of Science degree: BS

Undergraduate Major Description and Code
• Major in Mathematics (attached to both the BA and BS Degrees): MATH

Undergraduate Minor Description and Code
• Minor in Mathematics: MATM

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Mathematics: MATH

Bachelor of Arts (BA) Degree with a Major in Mathematics

Program Learning Outcomes for the BA Degree with a Major in Mathematics
Upon completing the BA degree with a major in Mathematics, students will be able to:

1. Achieve both practical and theoretical fluency in calculus and linear algebra.
2. Acquire a background at the undergraduate level in a wide variety of central areas of mathematics.
3. Be acquainted with formal mathematical reasoning, including proofs.

Requirements for the BA Degree with a Major in Mathematics
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Mathematics must complete:

• A minimum of 12 courses (36 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 8 courses (24 credit hours) taken at the 300-level or above.

Students who are pursuing 2 majors (i.e., are double majors) are eligible for a course substitution exception in the Elective Requirements. Double majors may substitute approved mathematics-related courses for up to 3 courses (9 credit hours) of the 8 courses (24 credit hours) required at the 300-level or above. Double majors who later drop their second major are required to meet the requirements listed for single majors.

Students receive advanced placement credit for MATH 101 by achieving a score of 4 or 5 on the AP AB-level test and for MATH 101 and MATH 102 by achieving a score of 4 or 5 on the BC-level test. Students who have had calculus but have not taken the AP test may petition the department for a waiver of the calculus requirements. Entering students should enroll in the most advanced course commensurate with their background; advice is available from the mathematics faculty during Orientation Week and at other times.

The chair of the MATH department's undergraduate committee may modify requirements to meet the needs of specific advanced students. If a course is repeatable for credit, the course may only be repeated once.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Mathematics</td>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Mathematics</td>
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Degree Requirements

Core Requirements

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<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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Select 1 from the following:

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<tbody>
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<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS</td>
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</tr>
<tr>
<td>&amp; MATH 212</td>
<td>AND LINEAR ALGEBRA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and MULTIVARIABLE CALCULUS ¹</td>
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</tr>
<tr>
<td>MATH 221</td>
<td>HONORS CALCULUS III</td>
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</tr>
<tr>
<td>&amp; MATH 222</td>
<td>and HONORS CALCULUS IV</td>
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</tbody>
</table>

Elective Requirements

Select 8 additional courses from departmental (MATH) course offerings at the 300-level or above.²

Total Credit Hours Required for the Major in Mathematics

36

Additional Credit Hours to Complete BA Degree Requirements

24

University Graduation Requirements (p. 25)¹

60

Total Credit Hours

120

Footnotes and Additional Information

¹ Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

² In Fall 2017, the MATH department is offering an Honors version of this course, Honors Ordinary Differential Equations. Please see the MATH major advisor for details on course substitution, etc.

¹ The Elective Requirements for the double major are the same as the single major except that students may substitute approved mathematics-related courses for up to 3 courses (9 credit hours) of the 8 courses (24 credit hours) required at the 300-level or above. At most, students can take one course (three credit hours) for any given course number to use toward the degree.

Opportunities for the BA Degree with a Major in Mathematics

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Mathematics website: http://math.rice.edu/

Bachelor of Science (BS) Degree with a Major in Mathematics

Program Learning Outcomes for the BS Degree with a Major in Mathematics

Upon completing the BS degree with a major in Mathematics, students will be able to:

1. Achieve both practical and theoretical fluency in calculus and linear algebra.
2. Acquire a broad background at the undergraduate level in all the major areas of mathematics, including analysis, algebra, and geometry.
3. Learn to read and write proofs.

Requirements for the BS Degree with a Major in Mathematics

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BS degree with a major in Mathematics must complete:

• A minimum of 14-17 courses (42-51 credit hours) depending on course selection to satisfy the major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 11 courses (33 credit hours) taken at the 300-level or above.

Students receive advanced placement credit for MATH 101 by achieving a score of 4 or 5 on the AP AB-level test and for MATH 101 and MATH 102 by achieving a score of 4 or 5 on the BC-level test. Students who have had calculus but have not taken the AP test may petition the department for a waiver of the calculus requirements. Entering students should enroll in the most advanced course commensurate with their background; advice is available from the mathematics faculty during Orientation Week and at other times.

The chair of the MATH department's undergraduate committee may modify requirements to meet the needs of specific advanced students. If a MATH course is repeatable for credit, the course may only be repeated once.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier).
Bachelor of Science (BS) Degree with a Major in Mathematics

Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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### Degree Requirements

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<td>Core Requirements</td>
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<tr>
<td></td>
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<td>INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS</td>
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<td>MATH 423 / CAAM 423</td>
<td>PARTIAL DIFFERENTIAL EQUATIONS I</td>
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<td>HONORS CALCULUS III</td>
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<td>&amp; MATH 222</td>
<td>and HONORS CALCULUS IV</td>
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<td>Linear Algebra</td>
<td></td>
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<td>MATH 221</td>
<td>HONORS CALCULUS III</td>
<td>3</td>
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<td>MATH 354</td>
<td>HONORS LINEAR ALGEBRA</td>
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<td>LINEAR ALGEBRA</td>
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<td>Real Analysis</td>
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<td>MATH 322</td>
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<td>MATH 331</td>
<td>HONORS ANALYSIS</td>
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<tr>
<td>MATH 425</td>
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<td></td>
<td>Algebra</td>
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<td>MATH 356</td>
<td>ABSTRACT ALGEBRA I</td>
<td>3</td>
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<td>MATH 463</td>
<td>ABSTRACT ALGEBRA II</td>
<td>3</td>
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<td></td>
<td>Geometry and Manifolds</td>
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<tr>
<td>MATH 370</td>
<td>CALCULUS ON MANIFOLDS</td>
<td>3</td>
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<tr>
<td>MATH 401</td>
<td>DIFFERENTIAL GEOMETRY OF CURVES AND SURFACES</td>
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<td>MATH 402</td>
<td>DIFFERENTIAL GEOMETRY</td>
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<td>Complex Analysis</td>
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<td>or MATH 427</td>
<td>COMPLEX ANALYSIS</td>
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</table>

### Elective Requirements

Students must complete a minimum of 33 credit hours from departmental (MATH) course offerings at the 300-level or above.  

### Total Credit Hours Required for the Major in Mathematics

42-51

### Additional Credit Hours to Complete BS Degree Requirements

9-18

### University Graduation Requirements

60

### Total Credit Hours

120

### Footnotes and Additional Information

1. Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

2. In Fall 2017, the MATH department is offering an Honors version of this course, Honors Ordinary Differential Equations. Please see the MATH major advisor for details on course substitution, etc.

The Elective Requirements can include courses taken from the Core Requirements and/or Elective coursework, for a minimum of 11 courses (33 credit hours) at the 300-level or above. At most, students can take 1 course (3 credit hours) for any given course number to use toward the degree.

### Policies for the BS Degree with a Major in Mathematics

#### Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

Students pursuing the major in Mathematics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Mathematics website: [http://math.rice.edu/](http://math.rice.edu/)

### Opportunities for the BS Degree with a Major in Mathematics

#### Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work.
Doctor of Philosophy (PhD) Degree in the field of Mathematics

Program Learning Outcomes for the PhD Degree in the field of Mathematics

Upon completing the PhD Degree in the field of Mathematics, students will be able to:

1. Apply abstract structures from algebra, analysis, and topology to analyze and solve both concrete problems and conceptual questions.
2. Learn fundamental mathematics independently, outside the structure of a regular course.
3. Present mathematical results and reasoning in a compelling way to an audience of mathematicians.
4. Use the mathematical literature and databases to find theorems, constructions, or counterexamples.
5. Write clear and convincing proofs of one’s own original mathematical results.

Requirements for the MA and PhD Degrees in the field of Mathematics

Admission to graduate study in mathematics is granted to a limited number of students who have indicated an ability for advanced and original work. Normally, students take one or two years after the BA degree to obtain an MA degree, and they take four or five years to obtain a PhD. An MA is not a prerequisite for the PhD. For general university requirements, please see Doctoral Degrees (p. 64).

A number of graduate scholarships and fellowships are available, awarded on the basis of merit. As part of the graduate education in mathematics, students also engage in teaching or other instructional duties, generally for no more than six hours a week.

For courses carrying dual undergraduate and graduate numbers, (e.g., MATH 463/MATH 563), the 500-level version is intended to prepare students for advanced work in mathematics. In particular, written assignments should be prepared to high professional standards. Mathematics graduate students should enroll in the 500-level version.

MA Degree Program

The MA degree can be either a thesis or a non-thesis master’s degree depending on the option the student pursues. For general university requirements for thesis master’s degrees, please see Thesis Master’s Degrees (p. 67). For general university requirements for non-thesis master’s degrees, please see Non-Thesis Master’s Degrees (p. 66).

Doctoral students may petition for these once they have satisfied all university and departmental requirements.

To earn an MA degree in the field of Mathematics, students must complete:

- Complete with a grade of B or better a course of study approved by the department. (Students may transfer credits from another university only with the approval of both the department and the University Graduate Council.)
- Perform satisfactorily on the general examinations in algebra, analysis, and topology or prepare and present an oral defense of an original thesis acceptable to the department

Summary

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
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<td>Total Credit Hours Required for the MA Degree in the field of Mathematics</td>
<td>30</td>
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</table>

PhD Degree Program

Students pursuing the PhD degree in the field of Mathematics must:

- Complete with a grade of B or better a course of study approved by the department (students may transfer credits from another university only with the approval of both the department and the University Graduate Council)
- Perform satisfactorily on qualifying examinations (see below)
- Perform satisfactorily on examinations in one approved foreign language (French, German, or Russian)
- Write an original thesis acceptable to the department
- Perform satisfactorily on a final oral examination on the thesis

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Mathematics</td>
<td>90</td>
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</tbody>
</table>

Qualifying Examinations

The qualifying examinations in mathematics consist of the general examinations and the advanced oral examination.

To complete the general examinations, students must take exams, one each in algebra, analysis, and topology. Exams are offered every August, January, and May. First-year students may take any combination of exams at any time. After 2 semesters of study, students must attempt to pass all remaining exams at each offering. Students must perform satisfactorily on all 3 by the January exams at the beginning of their fourth semester. The judgment of satisfactory performance on the general examinations for either the MA or PhD degree is the responsibility of the department graduate committee. Students may take an exam several times.

To complete the advanced oral examination, students must select a special field (e.g., homotopy theory, several complex variables, or group theory) and submit it to the department graduate committee for approval. The committee schedules an advanced examination in the selected field, normally 6 to 12 months after the student completes the general examinations. While students failing the advanced examination may, with the approval of the committee, retake it on the same or possibly on a different topic, they generally are not allowed to take the advanced examination more than twice.
Policies for the PhD Degree in the field of Mathematics

Department of Mathematics Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Mathematics publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Mathematics_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Mathematics_Graduate_Handbook.pdf)

For additional information, please see the Mathematics website: [http://math.rice.edu/](http://math.rice.edu/)

Opportunities for the PhD Degree in the field of Mathematics

For additional information please see the Mathematics website: [http://math.rice.edu/](http://math.rice.edu/)

Minor in Mathematics

Program Learning Outcomes for the Minor in Mathematics

Upon completing the minor in Mathematics, students will have:

1. Achieved practical fluency in calculus and linear algebra.
2. Acquired a background at the undergraduate level in a small variety of central areas of mathematics.
3. Become acquainted with formal mathematical reasoning, including proofs.

Requirements for the Minor in Mathematics

Students pursuing the minor in Mathematics must complete:

- A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
- A minimum of 6 courses from departmental (MATH) course offerings at the 200-level or above.
- A minimum of 4 courses (12 credit hours) from departmental (MATH) course offerings at the 300-level or above.

Certain approved classes taken outside the mathematics department may be used to satisfy one area of the Core Requirements, but will not count towards the required 6 courses (18 credit hours). An approved upper-level MATH course (other than MATH 490 or MATH 499) may be used to satisfy an area of the Core Requirements. Students seeking to substitute approved courses should consult in advance with the chair of the undergraduate committee. At most 1 course (3 credit hours) from any particular course or course number may be applied to the minor.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

<table>
<thead>
<tr>
<th>Summary</th>
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<tbody>
<tr>
<td>Code</td>
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<tr>
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<tr>
<td>MATH 302</td>
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<td>MATH 321</td>
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<td>MATH 381</td>
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<table>
<thead>
<tr>
<th>Minor Requirements</th>
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<tbody>
<tr>
<td>Code</td>
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<tr>
<td>Core Requirements</td>
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<td>Analysis</td>
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<td>MATH 302</td>
</tr>
<tr>
<td>MATH 321</td>
</tr>
<tr>
<td>MATH 381</td>
</tr>
<tr>
<td>MATH 382</td>
</tr>
<tr>
<td>Discrete Mathematics and Algebra</td>
</tr>
<tr>
<td>Select 1 from the following:</td>
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<tr>
<td>MATH 356</td>
</tr>
<tr>
<td>MATH 365</td>
</tr>
<tr>
<td>MATH 368</td>
</tr>
<tr>
<td>Linear Algebra</td>
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<td>Select 1 from the following:</td>
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<td>MATH 221</td>
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<tr>
<td>MATH 354</td>
</tr>
<tr>
<td>MATH 355</td>
</tr>
<tr>
<td>Elective Requirements</td>
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<td>Select 3 additional courses from departmental (MATH) course offerings.</td>
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<tr>
<td>Total Credit Hours</td>
</tr>
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</table>

Policies for the Minor in Mathematics

Program Restrictions and Exclusions

Students pursuing the minor in Mathematics should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the minor in Mathematics should be aware of the following departmental transfer credit guidelines:
• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Mathematics website: http://math.rice.edu/

Opportunities for the Minor in Mathematics

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 477) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Mathematics website: http://math.rice.edu/

Mechanical Engineering

Contact Information

Mechanical Engineering
https://mech.rice.edu/
101 Mechanical Engineering Building
713-348-4906

Laura Schaefer
Department Chair
laura.schaefer@rice.edu

Undergraduate studies in mechanical engineering can lead to specialization in one or more of a diverse set of areas, including aerospace engineering, biomedical systems, computational fluid dynamics, computational mechanics, fluids-thermal science, mechanical design, mechanics, robotics, systems dynamics and controls.

The graduate program offers professional degrees in mechanical engineering, which permits specialization in the areas previously mentioned. Graduate students also may pursue research degrees. The graduate program, in its comprehensive educational and research activities, collaborates with other departments at Rice and other institutions in Houston, including those in the Texas Medical Center. Collaborations also are extended to universities in the United States, Europe, Japan, and South America. International collaborations include joint research activities and faculty and student visitor exchanges.

A coordinated MBA/MME degree program is available in conjunction with the Jesse H. Jones Graduate School of Business.

Bachelor's Programs

• Bachelor of Arts (BA) Degree with a Major in Mechanical Engineering (p. 478)
• Bachelor of Science in Mechanical Engineering (BSME) Degree (p. 479)

Master's Programs

• Master of Mechanical Engineering (MME) Degree (p. 483)
• Master of Science (MS) Degree in the field of Mechanical Engineering (p. 484)

Doctoral Program

• Doctor of Philosophy (PhD) Degree in the field of Mechanical Engineering (p. 481)

Coordinated Program

• Master of Business Administration (MBA) Degree / Master of Mechanical Engineering (MME) Degree (p. 482)

Chair
Laura Schaefer

Professors
John E. Akin
Yildiz Bayazitoglu
B.J. Fregly
Fathi Ghorbel
C. Fred Higgs, III
Andrew J. Meade
Marcia K. O’Malley
Pol D. Spanos
Tayfun E. Tezduyar

Assistant Professors
Matthew Brake
Pedram Hassanzadeh

Professor Emeritus
Chao-Cheng Wang

Lecturers
Leroy Chiao
Matthew Elliott
Eleazar Marquez

Professors, Joint Appointments
Lydia Kavraki
Satish Nagarajaiah

Associate Professors, Joint Appointments
Ilincu Stanciulescu

Adjunct Professors
Sarmad Adnan
Aladin Boriek
James Dabney
Thomas J. R. Hughes

Adjunct Associate Professors
Kenji Takizawa
David Woffinden
Bachelor of Arts (BA) Degree with a Major in Mechanical Engineering

Program Learning Outcomes for the BA Degree with a Major in Mechanical Engineering

Upon completing the BA degree with a major in Mechanical Engineering, students will be able to:

Requirements for the BA Degree with a Major in Mechanical Engineering

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Mechanical Engineering must complete:

- A minimum of 25 courses (68 credit hours) to satisfy major requirements. Note that the courses required to complete the major must be taken after 13 required basic math and science (pre-requisite) courses (31 credit hours).
- A minimum of 128 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 9 courses (28 credit hours) at the 300-level or above.

The BA program mirrors the BSME program in the freshman and sophomore years, with the exceptions that MECH 331 and MECH 340 are not required. Specific major requirements are completed in the junior and senior years.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Mechanical Engineering</td>
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Degree Requirements

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<tr>
<td>CHEM 122 &amp; CHEM 124</td>
<td>GENERAL CHEMISTRY II and GENERAL CHEMISTRY LABORATORY II</td>
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<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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</tr>
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<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
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<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
<td>3</td>
</tr>
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<td>MSNE 301</td>
<td>MATERIALS SCIENCE</td>
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</tr>
<tr>
<td>PHYS 101 &amp; PHYS 103</td>
<td>MECHANICS (WITH LAB) and MECHANICS DISCUSSION</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 102 &amp; PHYS 104</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION</td>
<td>4</td>
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Required Courses for Mechanical Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
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<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
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</tr>
<tr>
<td>CAAM 335</td>
<td>MATRIX ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 336</td>
<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
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Mechanical Engineering Courses

<table>
<thead>
<tr>
<th>Course Code</th>
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<tr>
<td>MECH 200</td>
<td>CLASSICAL THERMODYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>MECH 211</td>
<td>ENGINEERING MECHANICS</td>
<td>3</td>
</tr>
<tr>
<td>MECH 311 / CEVE 311</td>
<td>MECHANICS OF SOLIDS AND STRUCTURES</td>
<td>3</td>
</tr>
<tr>
<td>MECH 343</td>
<td>MODELING OF DYNAMIC SYSTEMS</td>
<td>4</td>
</tr>
<tr>
<td>MECH 371</td>
<td>FLUID MECHANICS I</td>
<td>3</td>
</tr>
<tr>
<td>MECH 401</td>
<td>MECHANICAL DESIGN APPLICATIONS</td>
<td>3</td>
</tr>
<tr>
<td>MECH 412</td>
<td>VIBRATIONS</td>
<td>3</td>
</tr>
<tr>
<td>MECH 420 / ELEC 436</td>
<td>FUNDAMENTALS OF CONTROL SYSTEMS</td>
<td>3</td>
</tr>
</tbody>
</table>

List of courses, including general university requirements and the usual order in which students take them, are available from the department.

2017-2018 General Announcements
MECH 481  HEAT TRANSFER  3

Total Credit Hours Required for the Major in Mechanical Engineering  68

University Graduation Requirements (p. 25) *  60

Total Credit Hours  128

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

Policies for the BA Degree with a Major in Mechanical Engineering

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Mechanical Engineering should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Opportunities for the BA Degree with a Major in Mechanical Engineering

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Fifth-Year MME Degree Option for Rice Undergraduates

Rice undergraduate students have the option to earn the Master of Mechanical Engineering (MME) degree by adding an additional year after completing their bachelor’s degree. Advanced Rice undergraduate students in good academic standing may apply to the graduate program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may complete part of the course requirements for the MME program during their senior year. A plan of study based on their particular focus area will need to be approved by the program director and the MME advisor.

As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for their bachelor’s degree and the MME degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
• should be aware of the financial aid implications, if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).

For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Bachelor of Science in Mechanical Engineering (BSME) Degree

The program leading to the BSME degree is accredited by the Engineering Accreditation Commission (EAC) of ABET, http://www.abet.org.

Program Learning Outcomes (Student Outcomes) for the BSME Degree

Upon completing the BSME degree, students will demonstrate:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Program Educational Objectives for the BSME Degree

Within 3-5 years of graduation, Bachelor of Science in Mechanical Engineering (BSME) degree alumni from Rice will be exceptional engineers who are:

1. Successful and on track to become leaders in the global workforce, and/or
2. Students in top-rated post-graduate programs.

Requirements for the BSME Degree

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BSME degree must complete:
A minimum of 36 courses (94 credit hours) to satisfy major requirements.

- A minimum of 132 credit hours to satisfy degree requirements.
- A minimum of 21 courses (57 credit hours) taken at the 300-level or above.

The BSME degree prepares students for the professional practice of engineering. The degree program's goals and objectives are available on the departmental website. Lists of representative undergraduate courses and the usual order in which they are taken are available from the department.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</tr>
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<tr>
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<td>Total Credit Hours Required for the Major in Mechanical Engineering</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BSME Degree</td>
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### Degree Requirements

#### Core Requirements

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<th>Code</th>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I and GENERAL CHEMISTRY LABORATORY I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 122</td>
<td>GENERAL CHEMISTRY II and GENERAL CHEMISTRY LABORATORY II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
<td>3</td>
</tr>
<tr>
<td>MSNE 301</td>
<td>MATERIALS SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 101</td>
<td>MECHANICS (WITH LAB)</td>
<td>4</td>
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<tr>
<td>&amp; PHYS 103</td>
<td>and MECHANICS DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>PHYS 102</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td>4</td>
</tr>
<tr>
<td>&amp; PHYS 104</td>
<td>and ELECTRICITY AND MAGNETISM DISCUSSION</td>
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</table>

#### Computational and Applied Mathematics

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 335</td>
<td>MATRIX ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 336</td>
<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Senior Design

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>MECH 407</td>
<td>CAPSTONE DESIGN PROJECT I</td>
<td>4</td>
</tr>
<tr>
<td>MECH 408</td>
<td>CAPSTONE DESIGN PROJECT II</td>
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</table>

#### Laboratory Courses

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>MECH 331</td>
<td>JUNIOR LABORATORY I</td>
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<tr>
<td>MECH 332</td>
<td>JUNIOR LABORATORY II</td>
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</tbody>
</table>

#### Elective Requirements

**Limited Electives**

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
<td></td>
</tr>
<tr>
<td>STAT 310 / ECON 307</td>
<td>PROBABILITY AND STATISTICS</td>
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</table>

**Technical Electives**

Select 2 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MECH 400 / CEVE 400</td>
<td>ADVANCED MECHANICS OF MATERIALS</td>
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</tr>
<tr>
<td>MECH 403</td>
<td>COMPUTER AIDED DESIGN</td>
<td></td>
</tr>
<tr>
<td>MECH 411</td>
<td>DYNAMICS AND CONTROL OF MECHANICAL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>MECH 417 / CEVE 417</td>
<td>FINITE ELEMENT ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>MECH 454 / BIOE 454 / CEVE 454</td>
<td>COMPUTATIONAL FLUID MECHANICS</td>
<td></td>
</tr>
<tr>
<td>MECH 474</td>
<td>ADVANCED COMPUTATIONAL MECHANICS or MECH 555: COMPUTATIONAL FLUID-STRUCTURE INTERACTION</td>
<td></td>
</tr>
<tr>
<td>MECH 488</td>
<td>DESIGN OF MECHATRONIC SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>MECH 498 / COMP 498 / ELEC 498</td>
<td>INTRODUCTION TO ROBOTICS</td>
<td></td>
</tr>
<tr>
<td>MECH 594</td>
<td>INTRODUCTION TO AERONAUTICS</td>
<td></td>
</tr>
<tr>
<td>MSNE 402</td>
<td>MECH PROPERTIES OF MATERIALS</td>
<td></td>
</tr>
</tbody>
</table>

**Group B**

Select an additional course from Group A or 1 course at the 300-level or above from School of Engineering departmental course offering, including any ENGI course offerings.

### Total Credit Hours Required for the Major in Mechanical Engineering

94

### University Graduation Requirements (p. 25)

38

### Total Credit Hours

132
Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 During their senior year, mechanical engineering students in the BSME program complete these courses in design application while completing a major design project.

2 Students must complete a total of 3 technical electives (9 credit hours). A minimum of two of these courses must come from Group A. The remaining course can come from Group A or B. Group A courses are fundamental courses in the following focus areas: aerospace engineering (AE), computational engineering (CompE), fluid mechanics and thermal science (FT), solid mechanics and materials (SMM), and system dynamics and control (SDC). Group B courses are additional technical electives that complement the focus areas listed above.

Policies for the BSME Degree

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the BSME degree should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Opportunities for the BSME Degree

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Fifth-Year MME Degree Option for Rice Undergraduates

Rice undergraduate students have the option to earn the Master of Mechanical Engineering (MME) degree by adding an additional year after completing their bachelor’s degree. Advanced Rice undergraduate students in good academic standing may apply to the graduate program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may complete part of the course requirements for the MME program during their senior year. A plan of study based on their particular focus area will need to be approved by the program director and the MME advisor.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for their bachelor’s degree and the MME degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware of the financial aid implications, if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).

For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Mechanical Engineering

Program Learning Outcomes for the PhD Degree in the field of Mechanical Engineering

Upon completing the PhD Degree in the field of Mechanical Engineering, students will be able to:

1. Apply the technical skills required by industrial and governmental organizations to solve mechanical engineering problems at an advanced level.
2. Conduct research that demonstrates advanced mastery of a subfield within Mechanical Engineering.
3. Communicate scientific ideas effectively in writing and when speaking.
4. Understand and exhibit professional and ethical responsibility.
5. Recognize the need to engage in life-long learning.
6. Recognize and understand the role of leadership.

Requirements for the PhD Degree in the field of Mechanical Engineering

For general university requirements, please see Doctoral Degrees (p. 64). Students seeking the PhD degree are expected to complete all the requirements for the degree within five calendar years following entrance into the program. Continuation in the program beyond this time limit will require special approval of the department.

All entering graduate students pursuing a thesis degree program will be subject to a preliminary evaluation of their candidacy for the highest degree program they intend to pursue. The evaluation will be conducted by the end of the second semester of enrollment in the graduate program in the Mechanical Engineering department.

By the end of the third year of enrollment in the graduate program in the Mechanical Engineering department, the student must pass an oral qualifying examination.

Each candidate for the PhD must complete a thesis that constitutes an original contribution to scientific knowledge (analytical, numerical or experimental). It is expected that the research will be of sufficient importance and quality that positive results would lead to publications. On completion of the thesis, each candidate for the PhD degree must
pass a final public oral examination. The examination will be conducted by a committee consisting of at least four members. Three, including the committee chair, must be members of the department. One member must be from another department within the university.

The minimum semester hours of course work (a one-semester course is usually three semester hours credit) required are tabulated below as a function of the degree held on entrance into the program. In all cases, a student’s course of study is formulated in consultation with the thesis director and must be approved by the department.

Course requirements for the research degrees vary depending on the extent of individual undergraduate preparation as well as each student’s performance in graduate courses and on qualifying examinations. For both the MS and PhD degrees, students must present a thesis that comprises an original contribution to knowledge and defend it in a public oral examination.

As part of their degree requirements, graduate students are expected to provide instructional assistance to the department not to exceed 10 hours per week. The department chair will assign graduate student work at the beginning of each semester.

All graduate students (except professional master’s students, MME) must attend at least 75 percent of the Mechanical Engineering seminars. For details, please see the degree requirements on the mech.rice.edu.

Degree at Entrance: Minimum graduate-level semester hours required (course work)

- MS: 18 graduate-level credit hours
- 5-year BS: 30 graduate-level credit hours
- BS: 36 graduate-level credit hours
- BA: 42 graduate-level credit hours

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Mechanical Engineering</td>
<td>90</td>
</tr>
</tbody>
</table>

For additional information and details, please see the Mechanical Engineering website (http://mech.rice.edu).

Opportunities for the PhD Degree in the field of Mechanical Engineering

For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Master of Business Administration (MBA) Degree / Master of Mechanical Engineering (MME) Degree

Program Learning Outcomes for the MME Degree

Upon completing the MME degree, students will be able to:

1. Demonstrate an advanced command of Mechanical Engineering fieldwork.
2. Apply professional standards and exercise ethical judgment.
3. Communicate scientific ideas effectively in writing and when speaking.
4. Recognize the need for, and ability to engage in life-long learning.

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA/MME Coordinated Degree Program

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering
- Computer Science
- Electrical Engineering
- Materials Science and Nanoengineering
- Mechanical Engineering
- Statistics

Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.
For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

**Policies for the MBA/MME Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Mechanical Engineering website: https://mech.rice.edu/

**Opportunities for the MBA/MME Coordinated Degree Program**

For additional information on these two degrees:

1. Please see the Business website: https://business.rice.edu/
2. Please see the Mechanical Engineering website: https://mech.rice.edu/

**Master of Mechanical Engineering (MME) Degree**

**Program Learning Outcomes for the MME Degree**

Upon completing the MME degree, students will be able to:

1. Demonstrate an advanced command of Mechanical Engineering fieldwork.
2. Apply professional standards and exercise ethical judgment.
3. Communicate scientific ideas effectively in writing and when speaking.
4. Recognize the need for, and ability to engage in life-long learning.

**Requirements for the MME Degree**

The MME degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MME degree must complete:

- A minimum of 30 credit hours of approved coursework at the 500-level or higher.
- A minimum of 18 credit hours from departmental (MECH) course offerings.
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum overall GPA of 3.0 in required coursework.

The professional master's degree in Mechanical Engineering (MME) is a non-thesis degree program intended for students who have completed a 4-year bachelor's program in engineering and wish to join the workforce as practicing professionals, rather than pursuing a research oriented or academic career. It offers preparation in advanced engineering topics in order to enhance an engineer's technical qualifications and increases competitiveness in the job market. The MME program is open to students who have shown academic excellence in their undergraduate studies. Students who have a BS or BA degree in any field of engineering or related study may apply, although some may need to fulfill prerequisites or take remedial courses to earn the MME degree. Students may enroll on a full or part-time basis.

Lists of required and suggested courses are available from the department. Students should develop a specific plan of study based on their particular interests and discussions with their advisor.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</table>

**Degree Requirements**

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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</tbody>
</table>

**Core Requirements**

Select 6 from the following:

- MECH 501 DYNAMICS AND CONTROL OF MECHANICAL SYSTEMS
- or MECH 508 NONLINEAR SYSTEMS: ANALYSIS AND CONTROL
- CAAM 508 / ELEC 508
- MECH 502 VIBRATIONS
- MECH 505 NUMERICAL METHODS FOR ENGINEERS
- MECH 517 FINITE ELEMENT ANALYSIS
- MECH 554 / BIOE 554 / CEVE 554 COMPUTATIONAL FLUID MECHANICS
- MECH 575 INTRODUCTION TO HYDRODYNAMIC STABILITY
- MECH 582 CONVECTIVE HEAT TRANSFER
- MECH 588 DESIGN OF MECHATRONIC SYSTEMS
- or MECH 599 INTRODUCTION TO ROBOTICS
- COMP 598 / ELEC 598
- MECH 594 INTRODUCTION TO AERONAUTICS

**Elective Requirements**

Select 4 courses at the 500-level or above.  

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</tbody>
</table>

Total Credit Hours

Footnotes and Additional Information

1. With approval by the advisor and the department, some of which could be from outside the department. None of the remaining required 12 credit hours can be from Independent-Study (MECH 611 or MECH 612) courses.

**Degree at Entrance: Minimum graduate-level semester hours required (course work)**

2017-2018 General Announcements
• 4-year BS: 30 credit hours
• 4-year BA: 30 credit hours

Policies for the MME Degree

Department of Mechanical Engineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Mechanical Engineering publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Mechanical_Engineering_Graduate_Handbook.pdf.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Opportunities for the MME Degree

For additional information, please see the Mechanical Engineering website: https://mech.rice.edu/

Master of Science (MS) Degree in the field of Mechanical Engineering

Program Learning Outcomes for the MS Degree in the field of Mechanical Engineering

Upon completing the MS Degree in the field of Mechanical Engineering, students will be able to:

1. Apply the technical skills required by industrial and governmental organizations to solve mechanical engineering problems at an advanced level.
2. Conduct research that demonstrates advanced mastery of a subfield within Mechanical Engineering.
3. Communicate scientific ideas effectively in writing and when speaking.
4. Understand and exhibit professional and ethical responsibility.
5. Recognize the need to engage in life-long learning.
6. Recognize and understand the role of leadership.

Requirements for the MS Degree in the field of Mechanical Engineering

The MS degree is a thesis master’s degree. For general university requirements, please see Thesis Master's Degrees (p. 67). Students seeking the MS degree are expected to complete all the requirements for the degree within two calendar years following entrance into the program. Continuation in the program beyond this time limit will require special approval of the department.

All entering graduate students pursuing a thesis degree program will be subject to a preliminary candidacy evaluation for the highest degree program they intend to pursue. The evaluation will be conducted by the end of the second semester of enrollment in the graduate program in the Mechanical Engineering department.

Each candidate for the MS degree must complete a thesis demonstrating ability in research of a fundamental nature (analytical, numerical, or experimental). It is expected that the research will be of sufficient importance and quality that positive results would lead to publications. A committee consisting of at least three members will conduct the examination. Two, including the committee chair, must be members of the department.

The minimum semester hours of course work (a one-semester course is usually three semester hours credit) required for the MS degree is tabulated below as a function of the degree held on entrance into the program. Research and thesis hours, as well as seminar hours, do not count towards these course requirements but do count toward the minimum requirement that a student complete 30 credit hours at the 500 level or above. In all cases, a student’s specific course of study is formulated in consultation with the departmental advisor (thesis director) and must be approved by the department.

Course requirements for the research degrees vary depending on the extent of individual undergraduate preparation as well as each student’s performance in graduate courses and on qualifying examinations. For both the MS and PhD degrees, students must present a thesis that comprises an original contribution to knowledge and defend it in a public oral examination.

As part of their degree requirements, graduate students are expected to provide instructional assistance to the department not to exceed 10 hours per week. The department chair will assign graduate student work at the beginning of each semester.

All graduate students (except professional master’s students, MME) must attend at least 75 percent of the Mechanical Engineering seminars. For additional information and details, please see the degree requirements on the Mechanical Engineering website (http://mech.rice.edu).

Degree at Entrance: Minimum graduate-level semester hours required (coursework)

• 5-year BS: 12 credit hours
• BS: 18 credit hours
• BA: 24 credit hours

Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

Total Credit Hours Required for the MS Degree in the field of Mechanical Engineering

Policies for the MS Degree in the field of Mechanical Engineering

Department of Mechanical Engineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Mechanical
Medical Humanities

Contact Information

Medical Humanities
http://hrc.rice.edu/
Herring Hall 306
713-348-4227

Kirsten Ostherr
Program Director
kostherr@rice.edu

Medical Humanities is an interdisciplinary minor that examines medicine through humanistic disciplines such as history, ethics, religion, literature, cultural anthropology, media studies, and the visual and dramatic arts. Students will learn about medical systems and practices using methodologies such as close reading, cultural comparison, historical contextualization, creative expression, and critical thinking. The field is committed to interpretive and qualitative work that explores the human dimensions of experiences of health and illness, for doctors and for patients.

The Medical Humanities minor is housed in the Humanities Research Center (p. 435).

Minor

- Minor in Medical Humanities (p. 485)

Medical Humanities does not currently offer an academic program at the graduate level.

Director and Advisor

Kirsten Ostherr

Professors

Marcia Brennan
James Faubion
Eugenia Georges
Bridget Gorman
Vivian Ho
Rachel Kimbro
Anne Klein
Kirsten Ostherr
Rebecca Richards-Kortum

Associate Professors
Deborah Harter
Moramay Lopez-Alonso

Assistant Professors
Niki Clements
Justin Denney
Zoë Wool

Professors in the Practice
Melissa Bailar
Gia Merlo

Lecturers
Jennifer Blumenthal-Barby
Beverly Mitchell
John Mulligan

Steering Committee
Melissa Bailar
Eugenia Georges
Moramay Lopez-Alonso
Kirsten Ostherr
Rebecca Richards-Kortum
Zoë Wool

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject codes: Courses from various subjects may apply toward the minor.

Program Description and Code
- Medical Humanities: MDHM

Undergraduate Minor Description and Code
- Minor in Medical Humanities: MDHM

Minor in Medical Humanities

Program Learning Outcomes for the Minor in Medical Humanities
Upon completing the minor in Medical Humanities, students will be able to:

1. Describe the historical, literary, artistic and ethical domains of medical humanities scholarship.
2. Analyze and evaluate complex texts relating to the social and cultural aspects of medicine through close reading and critical interpretation of arguments, metaphors, and images.
3. Explain how health disparities and disability shape the healthcare experience for patients.
4. Conduct independent research and communicate their own arguments about medical humanities in research papers, class presentations, and discussions.

Requirements for the Minor in Medical Humanities

Students pursuing the minor in Medical Humanities must complete:

• A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
• A minimum of 3 courses (9 credit hours) taken at the 300-level or above.
• A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

The courses used in the Medical Humanities program examine the social, cultural, ethical and aesthetic dimensions of medicine in contemporary and historical contexts, and are open to all undergraduate students at Rice from all backgrounds.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Total Credit Hours Required for the Minor in Medical Humanities</td>
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Minor Requirements

<table>
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</thead>
</table>

Core Requirement

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>HURC 201</td>
<td>INTRODUCTION TO MEDICAL HUMANITIES</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Requirements

Select 4 electives from the Electives list below

Practicum

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>

Footnotes and Additional Information

Students must complete the core course (HURC 201) before they complete the practicum. The core course and the practicum may not be taken concurrently.

Students may take ENGL 386/FILM 381 as either an elective or the practicum, but it will not count toward both requirements.

HURC 430 provides an archival or other non-clinical setting for engaged research.

Students may take NSCI 399 as either an elective or the practicum, but it will not count toward both requirements.

Elective Requirements

To fulfill the elective requirements for the Medical Humanities minor, students must complete a total of 4 courses (12 credit hours) from the following Rice departmental course offerings. Students must fulfill the elective requirements by completing coursework from at least 2 different subject codes (i.e., ANTH, ENGL, etc.), and must take a minimum of 2 courses (6 credit hours) at the 300-level or above.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 342</td>
<td>ETHNOGRAPHIES OF CARE</td>
<td></td>
</tr>
<tr>
<td>ANTH 354</td>
<td>ILLNESS, DISABILITY, AND THE GENDERED BODY</td>
<td></td>
</tr>
<tr>
<td>SWGS 353</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANTH 381</td>
<td>MEDICAL ANTHROPOLOGY</td>
<td></td>
</tr>
<tr>
<td>ANTH 477</td>
<td>SPECIAL TOPICS</td>
<td></td>
</tr>
<tr>
<td>ANTH 582</td>
<td>BODY, TECHNOLOGY, ENHANCEMENT</td>
<td></td>
</tr>
<tr>
<td>ASIA 339</td>
<td>CONSCIOUSNESS FROM INDIAN TRADITIONS TO MODERN SCIENCE</td>
<td>3</td>
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<tr>
<td>ENGL 245</td>
<td>INTERDISCIPLINARY APPROACHES</td>
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<td>HURC 245</td>
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<tr>
<td>ENGL 272</td>
<td>LITERATURE AND MEDICINE</td>
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<tr>
<td>ENGL 273</td>
<td>MEDICINE AND MEDIA</td>
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<tr>
<td>SWGS 273</td>
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<tr>
<td>ENGL 278</td>
<td>MEDICINE IN THE AGE OF NETWORKED INTELLIGENCE</td>
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<tr>
<td>ENGL 386</td>
<td>MEDICAL MEDIA ARTS LAB</td>
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<tr>
<td>FILM 381</td>
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<tr>
<td>HEAL 360</td>
<td>VIOLENCE IN AMERICA: A PUBLIC HEALTH PERSPECTIVE</td>
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<tr>
<td>HIST 312</td>
<td>BIOMEDICAL APPROACH TO HISTORY</td>
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<tr>
<td>HIST 481</td>
<td>GLOBAL HISTORY OF HEALTH AND WELFARE</td>
<td></td>
</tr>
<tr>
<td>NSCI 399</td>
<td>MEDICAL PROFESSIONALISM AND OBSERVERSHIP</td>
<td></td>
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</table>

HURC 211 | 19TH CENTURY PSYCHOLOGICAL FICTION AND MEDICINE | 3 |

HURC 213 | THE DOCTOR IS ON | 3 |

HURC 306 | HEALTH AND HUMANITIES MASTER | 3 |

HURC 307 | CRITICAL HUMANITIES - HEALTH AND BODY | 3 |

2017-2018 General Announcements
Rice University

HURC 361 / RELI 361: THE HUMANITIES OF CARE & END OF LIFE

Natural Sciences
NSCI 399: MEDICAL PROFESSIONALISM AND OBSERVERSHIP

Program in Writing and Communication
COMM 415: MEDICAL COMMUNICATION

Religion
RELI 344 / ANTH 343: SEMINAR ON THE END OF LIFE
RELI 350 / MDEM 350: DEMONS, MENTAL ILLNESS AND MEDICINE
RELI 361 / HURC 361: THE HUMANITIES OF CARE & END OF LIFE

Sociology
SOCI 344: SOCIOLOGY OF MENTAL HEALTH
SOCI 345: MEDICAL SOCIOLOGY
SOCI 377: HEALTH DISPARITIES IN THE UNITED STATES
SOCI 422: SOCIAL AUTOPSIES: HOW SOCIETY KILLS US
SOCI 465 / SWGS 465: GENDER AND HEALTH

Footnotes and Additional Information
1 ANTH 477 is a special topics course, and not all sections are eligible to be applied towards the minor requirements as an Elective course. Please see a minor advisor for more information.
2 Students may take ENGL 386/FILM 381 as either an elective or the practicum, but it will not count toward both requirements.
3 Students may take NSCI 399 as either an elective or the practicum, but it will not count toward both requirements.

Policies for the Minor in Medical Humanities

Program Restrictions and Exclusions
Students pursuing the minor in Medical Humanities should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the minor in Medical Humanities should be aware of the following program-specific transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing may apply towards the minor.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
- Transfer credit coursework received via the articulation of AP, IB or A-level credit will not be considered towards minor requirements.
- Transfer credit from online-only courses cannot be used to count towards the minor.

For additional information, please see the Humanities Research Center website: http://hrc.rice.edu/.

Opportunities for the Minor in Medical Humanities

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Experiential Learning
Advanced students in the Medical Humanities minor have the opportunity to conduct experiential learning and research in our practica, enroll in internships at Houston-area hospitals, archives, and community partner institutions, and take our multi-institution seminar, co-taught by researchers and clinicians in the Texas Medical Center, University of Houston, University of Texas School of Public Health, and Rice. See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this minor.

Medieval and Early Modern Studies

Contact Information
Medieval and Early Modern Studies
https://medieval.rice.edu/
116 Humanities Building
713-348-4274
Peter Loewen
Program Director
pvl1@rice.edu

The Medieval and Early Modern Studies program enables students to study medieval and early modern cultures in the period between 500 and 1700 A.D.

As an interdisciplinary major, the program combines a broad background in various aspects of medieval and early modern culture with more specialized study in a selected field. These fields of emphasis or specialized study include medieval and early modern art history, history, literature (Arabic, Chinese, English, French, or Latin), music, philosophy, or religion.
Bachelor's Program

- Bachelor of Arts (BA) Degree with a Major in Medieval and Early Modern Studies (p. 488)

Medieval and Early Modern Studies does not currently offer an academic program at the graduate level.

Director and Advisor
Peter Loewen

Professors
Michael Maas
Joseph Manca
Scott McGill
Alida Metcalf
Donald Morrison
Deborah Nelson-Campbell
Nanxiu Qian
Paula Sanders
Meredith Skura
Richard Smith
Edward Snow
John Stroup
Diane Wolfthal
John Zammito

Associate Professors
Lisa Balabanlilar
Greg Barnett
Joseph Campana
David Cook
Sarah Ellenzweig
Claire Fanger
Jeffrey Fleisher
Shih-Shan Susan Huang
Peter Loewen
Linda E. Neagley

Assistant Professors
Niki Clements
Emily Houlik-Ritchey
Maya Soifer Irish
Brian Ogren

Lecturer
Ted Somerville

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: MDEM

Program Description and Code
- Medieval and Early Modern Studies: MDEM

Undergraduate Degree Description and Code
- Bachelor of Arts degree: BA

Undergraduate Major Description and Code
- Major in Medieval and Early Modern Studies: MDEM

Bachelor of Arts (BA) Degree with a Major in Medieval and Early Modern Studies

Program Learning Outcomes for the BA Degree with a Major in Medieval and Early Modern Studies

Upon completing the BA degree with a major in Medieval and Early Modern Studies, students will be able to:

1. Situate Medieval and Early Modern studies more broadly within several interdisciplinary fields, including history, art, philosophy, music, literature, and religion.
2. Define and apply appropriate disciplinary and/or interdisciplinary methodologies, vocabularies, concepts, and theories to critically respond to questions within the field of Medieval and Early Modern Studies.
3. Demonstrate the ability to define and respond to research questions and scholarly debates within the field, including the ability to analyze primary and secondary sources, draw conclusions from the analysis of these sources, and cite evidence in support of conclusions.
4. Demonstrate a firm grasp of written, visual, and oral communication, including critical writing principles such as appropriate citation, use of evidence, clarity, and grammatical correctness.

Requirements for the BA Degree with a Major in Medieval and Early Modern Studies

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Medieval and Early Modern Studies must complete:

- A minimum of 10 courses (30 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 5 courses (15 credit hours) at the 300-level or above.

Students who are pursuing two majors (i.e., are double majors) and have declared the major in Medieval and Early Modern Studies must complete:

- A minimum of 8 courses (24 credit hours) to satisfy major requirements.
- A minimum of 5 courses (15 credit hours) at the 300-level or above.

Double majors who drop the other major are required to meet the requirements listed for single majors.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier).
Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Medieval and Early Modern Studies (for single majors)</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Medieval and Early Modern Studies (for double majors)</td>
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<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Medieval and Early Modern Studies</td>
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**Degree Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Course Requirements</td>
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<tr>
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<td>Select 10 courses from the following:</td>
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<tr>
<td></td>
<td>Anthropology</td>
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</tr>
<tr>
<td></td>
<td>MDEM 311 / ANTH 312 AFRICAN PREHISTORY</td>
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<tr>
<td></td>
<td>Art History</td>
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<td></td>
<td>MDEM 108 / HUMA 108 ART IN CONTEXT: LATE MEDIEVAL AND RENAISSANCE CULTURE</td>
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<tr>
<td></td>
<td>HART 240</td>
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<td>MDEM 111 / CLAS 102 / HART 101 INTRODUCTION TO THE HISTORY OF WESTERN ART I: PREHISTORIC TO GOTHIC</td>
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<td>MDEM 330 / HART 330 EARLY MEDIEVAL ART</td>
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<td>MDEM 331 / HART 331 GOTHIC ART</td>
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<td>MDEM 332 / HART 332 ART OF THE COURTS</td>
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<tr>
<td></td>
<td>MDEM 340 / HART 340 NORTHERN RENAISSANCE ART</td>
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<td>MDEM 343 / HART 343 MASTERS OF THE BAROQUE ERA</td>
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<td>MDEM 363 / HART 364 THE RISE OF CAPITALISM AND LATE MEDIEVAL AND EARLY MODERN ART</td>
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<td></td>
<td>MDEM 373 / ASIA 372 / HART 372 CHINESE ART AND VISUAL CULTURE</td>
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<td>MDEM 376 / ASIA 376 / HART 376 EAST &amp; WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND NORTHERN EUROPE</td>
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<td>MDEM 378 / HART 378 DUTCH ART IN THE AGE OF REMBRANDT</td>
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<td>MDEM 431 / HART 431 ARCHITECTURE OF THE GOTHIC CATHEDRAL FROM THE MIDDLE AGES TO THE TWENTIETH CENTURY</td>
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<td>MDEM 434 / HART 434 / SWGS 434 SEEING SEX IN EUROPEAN ART, 1400-1700</td>
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<td></td>
<td>MDEM 435 / HART 435 / HIST 443 MULTICULTURAL EUROPE, 1400-1700</td>
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**Asian Studies**

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<tr>
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<td>MDEM 370 / ASIA 330 / CHIN 330 INTRODUCTION TO TRADITIONAL CHINESE POETRY</td>
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<td>MDEM 375 / ASIA 335 / CHIN 335 INTRODUCTION TO CLASSICAL CHINESE NOVELS</td>
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<td></td>
<td>MDEM 379 / ASIA 399 / SWGS 399 WOMEN IN CHINESE LITERATURE</td>
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<td>MDEM 395 CLASSICAL CHINESE NOVELS</td>
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**Classical Studies**

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<td>MDEM 211 / LATI 201 INTERMEDIATE LATIN I: PROSE</td>
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<td>MDEM 212 / LATI 202 INTERMEDIATE LATIN II</td>
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**English**

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<td>MDEM 312 / ENGL 312 TOPICS IN OLD ENGLISH</td>
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<td>MDEM 313 / ENGL 313 BEOWULF FOR THE 21ST CENTURY</td>
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<td>MDEM 315 / ENGL 315 MEDIEVAL CULTURES THROUGH FILM</td>
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<td>MDEM 316 / ENGL 316 / SWGS 305 CHAUCER</td>
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<td>MDEM 317 / ENGL 317 / SWGS 301 ARTHURIAN LITERATURE</td>
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<td>MDEM 319 / ENGL 314 MEDIEVAL ROMANCE</td>
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<td>MDEM 412 / ENGL 412 INTRODUCTION TO OLD ENGLISH LANGUAGE</td>
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<td>MDEM 413 / ENGL 413 BEOWULF IN OLD ENGLISH</td>
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**French Studies**

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<tr>
<td></td>
<td>MDEM 404 / FREN 404 BEGINNINGS OF THE LANGUAGE AND LITERATURE OF FRANCE</td>
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<td>MDEM 425 / FREN 415 COURTLY LOVE IN MEDIEVAL FRANCE</td>
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<tr>
<td></td>
<td>MDEM 436 / FREN 416 LITERATURE AND CULTURE OF THE MIDDLE AGES: KING ARTHUR</td>
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**German Studies**

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<tr>
<td></td>
<td>MDEM 402 MIDDLE HIGH GERMAN</td>
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**History**

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<tr>
<td></td>
<td>HIST 120 MEDIEVAL CIVILIZATIONS</td>
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<tr>
<td></td>
<td>HIST 211 MEDIEVAL VIOLENCE</td>
<td></td>
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<tr>
<td></td>
<td>MDEM 281 / HIST 281 THE MIDDLE EAST FROM THE PROPHET MUHAMMAD TO SULAYMAN THE MAGNIFICENT</td>
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<tr>
<td></td>
<td>MDEM 308 / HIST 308 THE WORLD OF LATE ANTIQUITY</td>
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</table>
### Bachelor of Arts (BA) Degree with a Major in Medieval and Early Modern Studies

**MDEM 324 / HIST 324**  
**COEXISTENCE IN MEDIEVAL SPAIN**

**MDEM 345 / HIST 345**  
**RENAISSANCE EUROPE**

**MDEM 357 / HIST 357**  
**JEWS AND CHRISTIANS IN MEDIEVAL EUROPE**

**MDEM 364 / HIST 364**  
**CENTRAL ASIAN CONQUEST EMPIRES**

**Medieval and Early Modern Studies**

<table>
<thead>
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<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>MDEM 120 / HIST 120</td>
<td>MEDIEVAL CIVILIZATIONS</td>
</tr>
<tr>
<td>MDEM 210 / HIST 211</td>
<td>MEDIEVAL VIOLENCE</td>
</tr>
<tr>
<td>MDEM 320</td>
<td>DIRECTED READING IN MEDIEVAL STUDIES</td>
</tr>
<tr>
<td>MDEM 411</td>
<td>THE LITERARY AND HISTORICAL IMAGE OF THE MEDIEVAL WOMAN</td>
</tr>
<tr>
<td>MDEM 222 / MUSI 222</td>
<td>MEDIEVAL AND RENAISSANCE ERAS</td>
</tr>
<tr>
<td>MDEM 427</td>
<td>TOPICS IN EARLY MUSIC</td>
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<tr>
<td>MDEM 429 / MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<tr>
<td>MDEM 456 / MUSI 436</td>
<td>COLLEGIUM MUSICUM</td>
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**Philosophy**

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<tr>
<td>MDEM 201 / CLAS 201 / PHIL 201</td>
<td>HISTORY OF PHILOSOPHY I</td>
</tr>
<tr>
<td>MDEM 301 / CLAS 301 / PHIL 301</td>
<td>ANCIENT AND MEDIEVAL PHILOSOPHY</td>
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<tr>
<td>MDEM 481</td>
<td>ANCIENT AND MEDIEVAL PHILOSOPHY</td>
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**Religion**

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<th>Course Title</th>
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<tbody>
<tr>
<td>MDEM 100 / RELI 100</td>
<td>ROMANING RELIGION: NARRATIVES OF THE SACRED</td>
</tr>
<tr>
<td>MDEM 103 / RELI 104</td>
<td>INTRODUCTION TO JEWISH MYSTICISM</td>
</tr>
<tr>
<td>MDEM 105 / RELI 105</td>
<td>INTRODUCTION TO MEDIEVAL CHRISTIAN THOUGHT</td>
</tr>
<tr>
<td>MDEM 271 / RELI 271</td>
<td>MEDIEVAL POPULAR CHRISTIANITY</td>
</tr>
<tr>
<td>MDEM 305 / RELI 305</td>
<td>PAIN, ECSTASY AND EMBODIMENT IN RELIGIOUS EXPERIENCE</td>
</tr>
<tr>
<td>MDEM 314 / RELI 314 / SWGS 314</td>
<td>DIVINE SEX: GENDER AND DIVINITY IN THE MIDDLE AGES</td>
</tr>
<tr>
<td>MDEM 391 / RELI 391</td>
<td>THE REFORMATION &amp; ITS RESULTS</td>
</tr>
<tr>
<td>MDEM 462 / RELI 462</td>
<td>ENGLISH SPIRITUALITY AFTER HENRY VIII: PROTESTANT, CATHOLIC, OR ANGLICAN?</td>
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</table>

### Additional Credit Hours to Complete BA Degree Requirements

<table>
<thead>
<tr>
<th>Category</th>
<th>Total Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Graduation Requirements (p. 25)</td>
<td>30-36</td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td>120</td>
</tr>
</tbody>
</table>

**Footnotes and Additional Information**

Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1. Double majors who drop the other major are required to meet the requirements listed for single majors.

2. Of the 10 required courses, a total of 5 courses (15 credit hours) must be taken at the 300-level or above. Double majors may satisfy this requirement by completing a total of 6 courses (24 credit hours). Of the 6 required courses for double majors, a total of 5 courses (15 credit hours) must be taken at the 300-level or above. Please note that not all courses will be offered each academic year.

**Recommended Coursework**

It is recommended, but not required, that students take 2 semesters at the college level in an appropriate language (or languages). Students should take 3 courses (6 credit hours), and preferably 2 at the 300-level or above, in their chosen language of emphasis. One of these three courses may be a directed reading course. Students work out their programs of study in consultation with the program director. For students considering MDEM graduate work, it is recommended that they study at least one foreign language in some depth (as most graduate schools require a reading knowledge of French and German for the PhD).

**Policies for the BA Degree with a Major in Medieval and Early Modern Studies**

**Transfer Credit**

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Program Transfer Credit Guidelines**

Students pursuing the major in Medieval and Early Modern Studies should be aware of the following program-specific transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Medieval and Early Modern Studies website: [https://medieval.rice.edu](https://medieval.rice.edu)

**Opportunities for the BA Degree with a Major in Medieval and Early Modern Studies**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (*summa cum laude, magna cum laude, and cum laude*) and Distinction in Research and Creative Work.
The Basic Course
The basic course consists of four semesters of military science, which include:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MILI 121</td>
<td>INTRODUCTION TO LEADERSHIP</td>
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</tr>
<tr>
<td>MILI 122</td>
<td>INTRODUCTION TO LEADERSHIP II</td>
<td>2</td>
</tr>
<tr>
<td>MILI 201</td>
<td>FOUNDATIONS OF LEADERSHIP</td>
<td>2</td>
</tr>
<tr>
<td>MILI 202</td>
<td>FOUNDATIONS OF LEADERSHIP II</td>
<td>2</td>
</tr>
</tbody>
</table>

These freshman- and sophomore-level classes are open to all students without obligation.

The Advanced Course
Students entering the advanced course must enter into a contract to pursue and accept a commission in the active army, the Army Reserve, or the National Guard. To be considered for contracting into the advanced course, the student must be a full-time student in a course of instruction that leads to a degree in a recognized academic field, have a minimum of two years of academic work remaining in a curriculum leading to a baccalaureate or advanced degree, be under age 30 when commissioned, and pass a physical and medical examination.

Two-Year Program
The two-year program is designed for students who did not take the basic course but otherwise are eligible to enroll in the advanced course. This program allows students completing their sophomore year to attend a four-week Leader's Training Course during June and July at Fort Knox, Kentucky, in lieu of taking the first two years of ROTC. There is no military obligation for attending Leader's Training Course. The army provides transportation, room, and board. Students are paid approximately $900 for the four-week period.

Laboratory Requirements
A military science laboratory is required for students enrolling in:

<table>
<thead>
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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MILI 121</td>
<td>INTRODUCTION TO LEADERSHIP</td>
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<tr>
<td>MILI 122</td>
<td>INTRODUCTION TO LEADERSHIP II</td>
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<tr>
<td>MILI 201</td>
<td>FOUNDATIONS OF LEADERSHIP</td>
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</tr>
<tr>
<td>MILI 202</td>
<td>FOUNDATIONS OF LEADERSHIP II</td>
<td>2</td>
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<td>MILI 301</td>
<td>ADVANCED LEADERSHIP</td>
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<tr>
<td>MILI 302</td>
<td>ADVANCED LEADERSHIP II</td>
<td>3</td>
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<td>MILI 401</td>
<td>ADAPTIVE LEADERSHIP</td>
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<tr>
<td>MILI 402</td>
<td>LEADERSHIP IN A COMPLEX WORLD</td>
<td>3</td>
</tr>
</tbody>
</table>

This laboratory provides hands-on opportunities for marksmanship training, rappelling, drill and ceremonies, communications training, and other activities.

Veterans
Veterans who have served on active duty or in the Army Reserve or National Guard also are eligible for the ROTC program. Although veterans are not required to take the basic course, they are encouraged to do so. All students, including veterans, must have a minimum of 54 credit hours prior to enrolling in the advanced course.
National Guard and Army Reserve Members

Students enrolled in ROTC may also be members of the Army Reserve/National Guard. Through the Simultaneous Membership Program (SMP), those students enrolled in the advanced course will be placed in a leadership position as a cadet and will receive pay and entitlements from the National Guard or Army Reserve in the pay grade of Sergeant (E-5).

Financial Assistance

The United States Army offers, on a competitive nationwide basis, four-, three-, and two-year scholarships. The scholarships cover tuition 100%. Recipients also receive benefits for educational fees (to include lab fees), a book allowance, and a subsistence allowance ranging from $300 to $500 per month. Applicants must be U.S. citizens and must be under age 27 on the anticipated graduation date. Applications are available from the military science department. Veteran applicants can extend the age limit up to a maximum of three years, based on prior active duty service.

Other Financial Aid

All students enrolled in the advanced course will receive a subsistence allowance of $450 per month junior year and $500 per month senior year. For more information, contact the military science department. GI Bill recipients still retain benefits.

Tuition

Members of the Army or the Army Reserve, National Guard, Texas State Guard, or other reserve forces may be exempted from the nonresident tuition fee and other fees and charges.

Special Training

Basic- and advanced-course students may volunteer for and may attend the U.S. Army Airborne and Air Assault courses during June, July, and August. Cadet Troop Leadership Training positions also are available to Advanced-course cadets during the summer months.

Miscellaneous

All participating cadets are eligible for our internal scholarships provided by our alumni and sponsors of the program.

The Corps of Cadets sponsors an annual military ball in addition to other social events throughout the school year. The Department of Military Science sponsors extracurricular activities such as the University of Houston Color Guard and the Ranger Challenge Team.

Military Science does not offer an academic program at the graduate level.

Chair and Professor

Lieutenant Colonel Kurt Robinson

Assistant Professors

Lieutenant Colonel Steven Lopez
Captain McVay Chambers
Captain Jonathan Howard
Master Sergeant Al Frances
Sergeant First Class David Briseno
Sergeant First Class Roland Thomas

Staff Sergeant John Russell

Description and Code Legend

Note: Internally the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: MILI

Museums and Cultural Heritage

Contact Information

Museums and Cultural Heritage
http://hrc.rice.edu/culturalheritage/minor
116 Humanities Building
713-348-4274

John Hopkins
Program Co-Director
john.hopkins@rice.edu

Kerry Ward
Program Co-Director
kward@rice.edu

Museums and Cultural Heritage incorporates the fields of architecture, anthropology, art, history, and cultural studies to study the identification, preservation, and/or representation of art and heritage materials. Such materials often serve as the evidentiary basis for humanistic, architectural, and social science disciplines.

Students will learn about the preservation and use of tangible and intangible cultural heritage for study, archival purposes, and public display through the study of museums and cultural heritage institutions, new digital analysis tools and media, and traditional methods of preservation and analysis.

Minor

• Minor in Museums and Cultural Heritage (p. 493)

Museums and Cultural Heritage does not currently offer an academic program at the graduate level.

Co-Directors and Advisors

John Hopkins
Kerry Ward

Professors

Farès el-Dadah
Susan McIntosh
Diane Wolfthal

Associate Professors

Jeffrey Fleisher
John Hopkins
Linda Neagley
Rice University

Assistant Professors
Reto Geiser
Fabiola Lopez-Duran

Professor in the Practice
Melissa Bailar

Lecturer
John Mulligan

Steering Committee
Melissa Bailar
Farès el-Dahdah
Jeff Fleisher
Reto Geiser
John Hopkins
Susan McIntosh
Lisa Spiro
Kerry Ward

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: MUCH

Program Description and Code
• Museums and Cultural Heritage: MUCH

Undergraduate Minor Description and Code
• Minor in Museums and Cultural Heritage: MUCH

Minor in Museums and Cultural Heritage

Program Learning Outcomes for the Minor in Museums and Cultural Heritage

Upon completing the minor in Museums and Cultural Heritage, students will be able to:

1. Understand the historical, changing uses and meanings of art/cultural objects and collections in museums, particularly with regard to the concept of heritage.
2. Explain the historical and contemporary issues that face art objects and cultural heritage, including recovery and preservation, and presentation to the public for education, research, and continued practice/use.
3. Work with primary sources relating to art and cultural heritage focusing on visual analysis, recovery and preservation methods, or archival research.
4. Conduct independent and collaborative research in museums and cultural heritage based in a specific disciplinary methodology and communicate it to a public audience through oral, written, visual, or other practical means.

Requirements for the Minor in Museums and Cultural Heritage

Students pursuing the minor in Museums and Cultural Heritage must complete:

• A minimum of 7 courses (18 credit hours) to satisfy minor requirements.
• A minimum of 3 courses (9 credit hours) taken at the 300-level or above.
• A maximum of 2 courses (6 credit hours) from study abroad or transfer credit, which must be approved by the faculty director of the minor. For additional program guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Minor in Museums and Cultural Heritage</td>
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Minor Requirements

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td></td>
<td>Core Requirement</td>
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<tr>
<td>ANTH 341 /</td>
<td>MUSEUMS AND HERITAGE: EXHIBITING ART, EXHIBITING CULTURE</td>
<td>3</td>
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<td>HURC 341</td>
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Elective Requirements

Museums or Preservation
Select 2 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>ANTH 362</td>
<td>ARCHAEOLOGICAL FIELD TECHNIQUES</td>
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<tr>
<td>ARCH 323</td>
<td>SEMINAR IN ARCHITECTURE</td>
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<tr>
<td>ARTS 378</td>
<td>EXHIBITION DESIGN</td>
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<td>FILM 327 / ARTH 327 / ANTH 324</td>
<td>DOCUMENTARY PRODUCTION</td>
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<td>FILM 430</td>
<td>ADVANCED METHODS IN SOUND, CINEMATOGRAPHY, AND EDITING</td>
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<tr>
<td>FWIS 134</td>
<td>COLLECTING ART: PERSPECTIVES OF ARTISTS, PATRONS, AND MUSEUMS</td>
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</tr>
<tr>
<td>FWIS 155</td>
<td>FAKES, FORGERIES, AND STOLEN ART</td>
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<tr>
<td>HART 101 / CLAS 102 / MDEM 111</td>
<td>INTRODUCTION TO THE HISTORY OF WESTERN ART I: ANTIQUITY TO GOTHIC</td>
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<tr>
<td>HART 297</td>
<td>SPECIAL TOPICS IN MUSEUM CURATORIAL STUDIES</td>
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<tr>
<td>HART 307</td>
<td>TECHNICAL ART HISTORY: STUDYING THE TECHNIQUES OF WESTERN PAINTING, 13TH-20TH CENTURIES</td>
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### Cultural Heritage

**Select 2 from the following:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ANTH 305</td>
<td>INTRODUCTION TO ARCHAEOLOGY</td>
</tr>
<tr>
<td>ANTH 307</td>
<td>INTRODUCTION TO ARCHAEOLOGICAL SCIENCE</td>
</tr>
<tr>
<td>ANTH 308</td>
<td>THE ANTHROPOLOGY OF THE HISTORICAL IMAGINATION</td>
</tr>
<tr>
<td>ANTH 310</td>
<td>AFRICAN PREHISTORY</td>
</tr>
<tr>
<td>ANTH 312</td>
<td>THE POLITICS OF THE PAST: ARCHAEOLOGY IN SOCIAL CONTEXT</td>
</tr>
<tr>
<td>ANTH 355</td>
<td>LANDSCAPE ARCHAEOLOGY</td>
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<tr>
<td>ANTH 356</td>
<td>EARLY CIVILIZATIONS</td>
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<tr>
<td>ARCH 225</td>
<td>HISTORY &amp; THEORY I (INTRO)</td>
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<td>HART 225</td>
<td>HISTORY AND THEORY II - PRE 1890</td>
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<td>FWIS 140</td>
<td>WRITING ARCHAEOLOGY: INTERPRETING THE PAST FOR THE ACADEMY AND THE PUBLIC</td>
</tr>
<tr>
<td>GERM 122</td>
<td>HISTORY THROUGH GERMAN CINEMA</td>
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<td>GERM 351</td>
<td>HOLOCAUST MEMORY IN MODERN GERMANY</td>
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<td>HART 359</td>
<td>CINEMAS OF URBAN ALIENATION</td>
</tr>
<tr>
<td>HART 391</td>
<td>PLACE AND MEMORY IN MIDDLE EASTERN AND EUROPEAN CINEMA</td>
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<tr>
<td>HART 454</td>
<td>THE ARTIST AS ETHNOGRAPHER - THE ETHNOGRAPHER AS ARTIST</td>
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<td>HIST 366</td>
<td>RIO DE JANEIRO: A SOCIAL AND ARCHITECTURAL HISTORY</td>
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<td>HURC 432</td>
<td>SPATIAL HUMANITIES</td>
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**Practicum**

**Select 1 from the following:**

<table>
<thead>
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<th>Course Code</th>
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<tbody>
<tr>
<td>HART 300</td>
<td>MUSEUM INTERNSHIP I</td>
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<tr>
<td>HART 301</td>
<td>MUSEUM INTERNSHIP II</td>
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<td>BAYOU BEND UNDERGRADUATE INTERNSHIP I</td>
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<td>HART 401</td>
<td>BAYOU BEND UNDERGRADUATE INTERNSHIP II</td>
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<td>HURC 423</td>
<td>HRC PRACTICUM IN CULTURAL HERITAGE</td>
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<td>HUMA 406</td>
<td>ARTS AND CULTURE INTERNSHIP 1</td>
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<tr>
<td>HUMA 407</td>
<td>ARTS AND CULTURE INTERNSHIP 2</td>
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</tbody>
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**Footnotes and Additional Information**

1. A maximum of 2 courses (6 credit hours) from the same subject code can be counted toward the Elective Requirements for the minor.
2. One of the following courses must be completed before starting a practicum to provide adequate background knowledge: the Core Requirement: ANTH 341/HURC 341; or one of the following Elective Requirements: ANTH 345, HART 312, or HIST 244.
3. The practicum will introduce students to the field directly, promoting an engaged and active learning environment while fostering connections in the fields of museum work, cultural heritage, and preservation. All practica should be taken through established courses or independent study at the 300-level or 400-level (for at least 3 credit hours) and must focus on active participation on the part of students in the mission of the project or institution, with meaningful pedagogical or research outcomes for the student; the chief duties of a student in a practicum cannot be clerical. Students who do not complete one of the application-based internships at area museums and cultural institutions listed above (HART 300, HART 301, HART 400, HART 401) will have the following two alternative options for completing this requirement with advisor approval:
   1. Internships and Practica (of at least 3 credit hours) offered through the Humanities Research Center, the Center for Civic Leadership, or the School of Humanities with the research and related activities approved by a program advisor.
   2. Faculty-Directed Initiatives - independent study courses (for at least 3 credit hours) affiliated with the pertinent department or center. Must have approval of the minor's academic advisor (or official certifier).

4. Every year, the HRC will host a 0 credit hour capstone symposium, in which students who have completed their coursework for the minor will present their practicum experiences and address what they have learned throughout the minor's curriculum.

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**Policies for the Minor in Museums and Cultural Heritage**

### Program Restrictions and Exclusions

Students pursuing the minor in Museums and Cultural Heritage should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

### Program Transfer Credit Guidelines

Students pursuing the minor in Museums and Cultural Heritage should be aware of the following program-specific transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing may apply toward the minor.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.
Opportunities for the Minor in Museums and Cultural Heritage

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practicas that may be relevant to this minor.

Music

Contact Information
Music
http://music.rice.edu/
Alice Pratt Brown Hall
713-348-4854

Robert Yekovich
Dean
yekovr@rice.edu

Gary Smith
Associate Dean
gasmith@rice.edu

At the undergraduate level, The Shepherd School of Music offers both professional training and a broad liberal arts curriculum. Degree programs include a BA degree in music and a BMus degree in performance, composition, music history, and music theory. Acceptance into a five-year honors program leads to the simultaneous awarding of the BMus and MMus degrees.

At the graduate level, the school offers professional music training for qualified students in the fields of music composition, performance, or research that is supported by lab or performing ensembles. This training includes theory and history seminars. Advanced degree programs include a MMus degree in composition, orchestral conducting, musicology, and performance; a post-master’s Artist Diploma (AD) in orchestral conducting and performance; and a DMA degree in composition and selected areas of performance.

Other Musical Opportunities

For Non-Majors
Students who are not music majors may take the following courses designed for the general student. Other music courses not on this list require the permission of the instructor, and the approval of the dean of the Shepherd School.

Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Bachelor’s Programs
- Bachelor of Music (BMus) Degree with a Major in Bassoon Performance (p. 523)
- Bachelor of Music (BMus) Degree with a Major in Cello Performance (p. 525)
- Bachelor of Music (BMus) Degree with a Major in Clarinet Performance (p. 527)
- Bachelor of Music (BMus) Degree with a Major in Composition (p. 529)
- Bachelor of Music (BMus) Degree with a Major in Double Bass Performance (p. 531)
- Bachelor of Music (BMus) Degree with a Major in Flute Performance (p. 533)
- Bachelor of Music (BMus) Degree with a Major in Harp Performance (p. 535)
- Bachelor of Music (BMus) Degree with a Major in Horn Performance (p. 537)
- Bachelor of Music (BMus) Degree with a Major in Music History (p. 539)
- Bachelor of Music (BMus) Degree with a Major in Music Theory (p. 542)
- Bachelor of Music (BMus) Degree with a Major in Oboe Performance (p. 545)
- Bachelor of Music (BMus) Degree with a Major in Organ Performance (p. 547)
- Bachelor of Music (BMus) Degree with a Major in Percussion Performance (p. 549)
- Bachelor of Music (BMus) Degree with a Major in Piano Performance (p. 551)
- Bachelor of Music (BMus) Degree with a Major in Trombone Performance (p. 553)
• Bachelor of Music (BMus) Degree with a Major in Trumpet Performance (p. 555)
• Bachelor of Music (BMus) Degree with a Major in Tuba Performance (p. 557)
• Bachelor of Music (BMus) Degree with a Major in Viola Performance (p. 559)
• Bachelor of Music (BMus) Degree with a Major in Violin Performance (p. 561)
• Bachelor of Music (BMus) Degree with a Major in Vocal Performance (p. 563)
• Bachelor of Arts (BA) Degree with a Major in Music (p. 521)

**Master's Programs**

• Master of Music (MMus) Degree in the field of Bassoon Performance (p. 591)
• Master of Music (MMus) Degree in the field of Cello Performance (p. 593)
• Master of Music (MMus) Degree in the field of Clarinet Performance (p. 596)
• Master of Music (MMus) Degree in the field of Composition (p. 598)
• Master of Music (MMus) Degree in the field of Double Bass Performance (p. 600)
• Master of Music (MMus) Degree in the field of Flute Performance (p. 602)
• Master of Music (MMus) Degree in the field of Harp Performance (p. 605)
• Master of Music (MMus) Degree in the field of Horn Performance (p. 607)
• Master of Music (MMus) Degree in the field of Musicology (p. 610)
• Master of Music (MMus) Degree in the field of Oboe Performance (p. 612)
• Master of Music (MMus) Degree in the field of Orchestral Conducting (p. 615)
• Master of Music (MMus) Degree in the field of Organ Performance (p. 617)
• Master of Music (MMus) Degree in the field of Percussion Performance (p. 619)
• Master of Music (MMus) Degree in the field of Piano Chamber Music and Accompanying (p. 622)
• Master of Music (MMus) Degree in the field of Piano Performance (p. 624)
• Master of Music (MMus) Degree in the field of String Quartet Performance (p. 627)
• Master of Music (MMus) Degree in the field of Trombone Performance (p. 629)
• Master of Music (MMus) Degree in the field of Trumpet Performance (p. 631)
• Master of Music (MMus) Degree in the field of Tuba Performance (p. 634)
• Master of Music (MMus) Degree in the field of Viola Performance (p. 636)
• Master of Music (MMus) Degree in the field of Violin Performance (p. 639)
• Master of Music (MMus) Degree in the field of Vocal Performance (p. 641)

**Post-Master's Performance Programs**

• Artist Diploma (AD) in the field of Bassoon Performance (p. 498)
• Artist Diploma (AD) in the field of Cello Performance (p. 499)
• Artist Diploma (AD) in the field of Clarinet Performance (p. 500)
• Artist Diploma (AD) in the field of Double Bass Performance (p. 502)
• Artist Diploma (AD) in the field of Flute Performance (p. 503)
• Artist Diploma (AD) in the field of Harp Performance (p. 504)
• Artist Diploma (AD) in the field of Horn Performance (p. 506)
• Artist Diploma (AD) in the field of Oboe Performance (p. 507)
• Artist Diploma (AD) in the field of Opera Performance (p. 508)
• Artist Diploma (AD) in the field of Orchestral Conducting (p. 509)
• Artist Diploma (AD) in the field of Organ Performance (p. 511)
• Artist Diploma (AD) in the field of Percussion Performance (p. 512)
• Artist Diploma (AD) in the field of Piano Performance (p. 513)
• Artist Diploma (AD) in the field of Trombone Performance (p. 515)
• Artist Diploma (AD) in the field of Trumpet Performance (p. 516)
• Artist Diploma (AD) in the field of Tuba Performance (p. 517)
• Artist Diploma (AD) in the field of Viola Performance (p. 518)
• Artist Diploma (AD) in the field of Violin Performance (p. 520)

**Doctoral Programs**

• Doctor of Musical Arts (DMA) Degree in the field of Cello Performance (p. 565)
• Doctor of Musical Arts (DMA) Degree in the field of Clarinet Performance (p. 567)
• Doctor of Musical Arts (DMA) Degree in the field of Composition (p. 569)
• Doctor of Musical Arts (DMA) Degree in the field of Double Bass Performance (p. 572)
• Doctor of Musical Arts (DMA) Degree in the field of Flute Performance (p. 574)
• Doctor of Musical Arts (DMA) Degree in the field of Oboe Performance (p. 576)
• Doctor of Musical Arts (DMA) Degree in the field of Organ Performance (p. 578)
• Doctor of Musical Arts (DMA) Degree in the field of Percussion Performance (p. 580)
• Doctor of Musical Arts (DMA) Degree in the field of Piano Performance (p. 582)
• Doctor of Musical Arts (DMA) Degree in the field of Viola Performance (p. 584)
• Doctor of Musical Arts (DMA) Degree in the field of Violin Performance (p. 586)
• Doctor of Musical Arts (DMA) Degree in the field of Vocal Performance (p. 588)

**Dean**
Robert Yekovich

**Professors**
Robert Atherholt
Gregory Barnett
Anthony K. Brandt
Richard Brown
Barbara Butler
Leone Buyse
Shih-Hui Chen
James Dunham
Paul V. H. Ellison
Norman Fischer
Charles Geyer
Kenneth Goldsmith
Arthur Gottschalk
Richard Hawley
Desmond Hoebig
Thomas I. Jaber
Pierre Jalbert
Benjamin C. Kamins
Paul Kantor
Stephen King
Richard Lavenda
Cho-Liang Lin
Jon Kimura Parker
Timothy Pitts
Larry Rachleff
Robert Roux
Julie Simson
Ivo-Jan van der Werff
William VerMeulen
Michael Webster
Kathleen Winkler

**Associate Professors**

Karim Al-Zand
Walter B. Bailey
Allen Barnhill
Barbara Clark
Kenneth Cowan
David Ferris
David E. Kirk
Thomas LeGrand
Peter V. Loewen
Paula Page
Janet Rarick
Brinton Averil Smith
Kurt Stallmann
Matthew Strauss

**Assistant Professors**

Damian Blättler
Alexandra Kieffer

**Artist Teachers**

Brian Connelly
Joan DerHovsepian
Debra Dickinson
Susan Dunn
Jeanne Kierman Fischer
Christopher French
Eric Halen
Jerry Hou
Sohyoung Park
Bethany Self
Karen Roethlisberger Verm

Virginia Weckstrom

**Lecturers**

George C. Baker
Rachel Buchman
Mary Greitzer
Robert Simpson
Cornelia Watkins
Chapman Welch

**Adjunct Professors**

C. Richard Stasney

**Description and Code Legend**

*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**
- Course offerings/subject code: MUSI

**School Description and Code**
- Music: MUSI

**Undergraduate Degree Descriptions and Codes**
- Bachelor of Arts degree: BA
- Bachelor of Music degree: BMus

**Undergraduate Major Descriptions and Code**
- Major in Music (BA degree): MUSI
- Major in Bassoon Performance (BMus degree): MBSN
- Major in Cello Performance (BMus degree): MCEL
- Major in Clarinet Performance (BMus degree): MCLR
- Major in Composition (BMus degree): MCMP
- Major in Double Bass Performance (BMus degree): MDBS
- Major in Flute Performance (BMus degree): MFLT
- Major in Harp Performance (BMus degree): MHRP
- Major in Horn Performance (BMus degree): MHRN
- Major in Music History (BMus degree): MHIS
- Major in Music Theory (BMus degree): MTHE
- Major in Oboe Performance (BMus degree): MOBO
- Major in Organ Performance (BMus degree): MORG
- Major in Percussion Performance (BMus degree): MPER
- Major in Piano Performance (BMus degree): MPIA
- Major in Trombone Performance (BMus degree): MTRB
- Major in Trumpet Performance (BMus degree): MTRP
- Major in Tuba Performance (BMus degree): MTUB
- Major in Viola Performance (BMus degree): MVLA
- Major in Violin Performance (BMus degree): MVLN
- Major in Vocal Performance (BMus degree): MVOC

**Graduate Degree Descriptions and Codes**
- Master of Music degree: MMus
- Artist Diploma: AD
- Doctor of Musical Arts degree: DMA
Graduate Degree Program Descriptions and Codes

- Degree Program in Bassoon Performance (MMus and AD degrees): MBSN
- Degree Program in Cello Performance (MMus, AD, and DMA degrees): MCEL
- Degree Program in Clarinet Performance (MMus, AD, and DMA degrees): MCLR
- Degree Program in Composition (MMus and DMA degrees): MCMP
- Degree Program in Double Bass Performance (MMus, AD, and DMA degrees): MDBS
- Degree Program in Flute Performance (MMus, AD, and DMA degrees): MFLT
- Degree Program in Harp Performance (MMus and AD degrees): MHRP
- Degree Program in Horn Performance (MMus and AD degrees): MHRN
- Degree Program in Musicology (MMus degree): MMUC
- Degree Program in Oboe Performance (MMus, AD, and DMA degrees): MOBO
- Degree Program in Opera Performance (AD degree): MOPR
- Degree Program in Orchestral Conducting (MMus and AD degrees): MOCO
- Degree Program in Organ Performance (MMus, AD, and DMA degrees): MORG
- Degree Program in Percussion Performance (MMus, AD, and DMA degrees): MPER
- Degree Program in Piano Performance (MMus, AD, and DMA degrees): MPIA
- Degree Program in Piano, Chamber Music, and Accompanying (MMus degree): MPCM
- Degree Program in String Quartet Performance (MMus degree): MSQT
- Degree Program in Trombone Performance (MMus and AD degrees): MTRB
- Degree Program in Trumpet Performance (MMus and AD degrees): MTRP
- Degree Program in Tuba Performance (MMus and AD degrees): MTUB
- Degree Program in Viola Performance (MMus, AD, and DMA degrees): MVLA
- Degree Program in Violin Performance (MMus, AD, and DMA degrees): MVLN
- Degree Program in Vocal Performance (MMus and DMA degrees): MVOC

Artist Diploma (AD) in the field of Bassoon Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Intellectually master the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma

For general university requirements, see Diploma Programs (p. 66). Students pursuing the Artist Diploma in any field of music performance must complete:

- A minimum of 41 credit hours to satisfy the Artist Diploma requirements.

Summary

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<tr>
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<tbody>
<tr>
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Diploma Requirements

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<tr>
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<tbody>
<tr>
<td>MUSI 760</td>
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<tr>
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<tr>
<td>MUSI 763</td>
<td>ARTIST DIPLOMA SPECIAL PROJECT (minimum of 2 semesters)</td>
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<tr>
<td>MUSI 764</td>
<td>ARTIST DIPLOMA PERFORMANCE (minimum of 4 semesters)</td>
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Academic Coursework

Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for approved courses)

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Footnotes and Additional Information

¹ Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

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<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
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</tr>
<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
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Policies for the Artist Diploma

Academic Standards

Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner:

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Note: For music history and musicology majors a grade of "C+" or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
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For additional information, please see the Shepherd School website at: [http://music.rice.edu](http://music.rice.edu)

Opportunities for the Artist Diploma

Other Musical Opportunities

Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the Shepherd School website at: [http://music.rice.edu](http://music.rice.edu)

Artist Diploma (AD) in the field of Cello Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Intellectually master the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma

For general university requirements, see Diploma Programs (p. 66). Students pursuing the Artist Diploma in any field of music performance must complete:

- A minimum of 41 credit hours to satisfy the Artist Diploma requirements.

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Diploma Requirements

Program Requirements

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Artist Diploma (AD) in the field of Clarinet Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

Grading Policy

A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner:

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Opportunities for the Artist Diploma

Other Musical Opportunities

Lectures and Performances

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For additional information, please see the Shepherd School website at: http://music.rice.edu

Assessment and Certification

The University of Houston is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award B.S., B.M., B.F.A., M.M., M.S., M.A., M.Ed., M.F.A., M.S.W., M.B.A., M.T., Ph.D., and D.M.A. degrees. For specific information about this program, please contact the Shepherd School of Music.

For additional information, please see the Shepherd School website at: http://music.rice.edu

Policies for the Artist Diploma

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.
1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.

2. Intellectually master the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.

3. Accumulate a significantly expanded and diverse list of repertoire.

4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma

For general university requirements, see Diploma Programs (p. 66).

Students pursuing the Artist Diploma in any field of music performance must complete:

- A minimum of 41 credit hours to satisfy the Artist Diploma requirements.

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Diploma Requirements

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<tr>
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</table>

| MUSI 761             |
| ARTIST DIPLOMA RECITAL |
| 0                     |

| MUSI 762             |
| ARTIST DIPLOMA SEMINAR |
| 3                     |

| MUSI 763             |
| ARTIST DIPLOMA SPECIAL PROJECT |
| (minimum of 2 semesters) |
| 3                     |

| MUSI 764             |
| ARTIST DIPLOMA PERFORMANCE |
| (minimum of 4 semesters) |
| 3                     |

<table>
<thead>
<tr>
<th>Academic Coursework</th>
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<tbody>
<tr>
<td>Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for approved courses)</td>
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Total Credit Hours 41

Footnotes and Additional Information

1 Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

Academic Coursework

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Select 2 courses from the following:

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Policies for the Artist Diploma

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

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Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the

2017-2018 General Announcements
Artist Diploma (AD) in the field of Double Bass Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Intellectually master the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
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Requirements for the Artist Diploma

For general university requirements, see Diploma Programs (p. 66). Students pursuing the Artist Diploma in any field of music performance must complete:

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<td>(minimum of 4 semesters)</td>
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Footnotes and Additional Information

1. Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.
Policies for the Artist Diploma

Academic Standards

Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

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Opportunities for the Artist Diploma

Other Musical Opportunities

Lectures and Performances
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Artist Diploma (AD) in the field of Flute Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Intellectually master the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
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Requirements for the Artist Diploma

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Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for approved courses)

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<td>MUSI 503</td>
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<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
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<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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Policies for the Artist Diploma

Academic Standards

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Artist Diploma (AD) in the field of Harp Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Intellectually master the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma

For general university requirements, see Diploma Programs (p. 66). Students pursuing the Artist Diploma in any field of music performance must complete:
A minimum of 41 credit hours to satisfy the Artist Diploma requirements.

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#### Program Requirements

**Academic Coursework**

Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for approved courses)

Total Credit Hours 41

#### Footnotes and Additional Information

1. Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

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### Opportunities for the Artist Diploma

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**Artist Diploma (AD) in the field of Horn Performance**

**Program Learning Outcomes for the Artist Diploma**

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Intellectually master the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
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**Requirements for the Artist Diploma**

For general university requirements, see Diploma Programs (p. 66). Students pursuing the Artist Diploma in any field of music performance must complete:

- A minimum of 41 credit hours to satisfy the Artist Diploma requirements.

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Artist Diploma (AD) in the field of Oboe Performance
Program Learning Outcomes for the Artist Diploma
Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Intellectually master the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
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Academic Coursework
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Artist Diploma (AD) in the field of Opera Performance

Program Learning Outcomes for the Artist Diploma

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Opportunities for the Artist Diploma

Other Musical Opportunities

Lectures and Performances

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Artist Diploma (AD) in the field of Orchestral Conducting

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:
1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Intellectually master the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma

For general university requirements, see Diploma Programs (p. 66). Students pursuing the Artist Diploma in any field of music performance must complete:

• A minimum of 41 credit hours to satisfy the Artist Diploma requirements.

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Academic Coursework

Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for approved courses) 4

Total Credit Hours 41

Footnotes and Additional Information

¹ Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

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Policies for the Artist Diploma

Academic Standards

Curriculum and Degree Requirements
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For additional information, please see the Shepherd School website at: http://music.rice.edu

Artist Diploma (AD) in the field of Organ Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Intellectually master the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma

For general university requirements, see Diploma Programs (p. 66). Students pursuing the Artist Diploma in any field of music performance must complete:

- A minimum of 41 credit hours to satisfy the Artist Diploma requirements.

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Total Credit Hours 41

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**Policies for the Artist Diploma**

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**Artist Diploma (AD) in the field of Piano Performance**

**Program Learning Outcomes for the Artist Diploma**

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Intellectually master the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
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<td>MUSI</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
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Policies for the Artist Diploma

Academic Standards

Curriculum and Degree Requirements

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Artist Diploma (AD) in the field of Trombone Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Intellectually master the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma

For general university requirements, see Diploma Programs (p. 66). Students pursuing the Artist Diploma in any field of music performance must complete:

• A minimum of 41 credit hours to satisfy the Artist Diploma requirements.

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Academic Coursework

Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for approved courses)

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Opportunities for the Artist Diploma
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Artist Diploma (AD) in the field of Trumpet Performance
Program Learning Outcomes for the Artist Diploma
Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Intellectually master the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma
For general university requirements, see Diploma Programs (p. 66). Students pursuing the Artist Diploma in any field of music performance must complete:

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<td>MUSI 763</td>
<td>ARTIST DIPLOMA SPECIAL PROJECT (minimum of 2 semesters)</td>
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<td>MUSI 764</td>
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Academic Coursework
Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for approved courses) 4

Total Credit Hours

Footnotes and Additional Information

¹ Students pursuing the Artist Diploma in all fields of music performance must perform two (2) recitals with the exception of students in the field of Opera Performance, who are not required to perform recitals.

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<td>MGMT 676</td>
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<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
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<tr>
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<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
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<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
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<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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Select 2 courses from the following:
Opportunities for the Artist Diploma

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Artist Diploma (AD) in the field of Tuba Performance

Program Learning Outcomes for the Artist Diploma

Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
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Academic Coursework

Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for approved courses) 4

Total Credit Hours 41

Footnotes and Additional Information

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Artistic Diploma (AD) in the field of Viola Performance

Program Learning Outcomes for the Artist Diploma

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A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

**Note:** For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

**Graduate degree requirement:** A minimum grade point average of 2.67 is necessary for graduation.

**Leaves of Absence and Voluntary Withdrawal**

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the
university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

For additional information, please see the Shepherd School website at: http://music.rice.edu

Opportunities for the Artist Diploma
Other Musical Opportunities
Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the Shepherd School website at: http://music.rice.edu

Artist Diploma (AD) in the field of Violin Performance
Program Learning Outcomes for the Artist Diploma
Upon completing the Artist Diploma, students will be able to:

1. Demonstrate the technical mastery and musical expertise requisite to having a significant professional career in their chosen area of performance.
2. Intellectually master the stylistic differences when performing music of the Baroque, Classical, Romantic, modern and contemporary eras and be able to apply them in performance.
3. Accumulate a significantly expanded and diverse list of repertoire.
4. Be equipped with multiple extra-musical career skills.

Requirements for the Artist Diploma
For general university requirements, see Diploma Programs (p. 66). Students pursuing the Artist Diploma in any field of music performance must complete:

- A minimum of 41 credit hours to satisfy the Artist Diploma requirements.

Summary

<table>
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<tr>
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<tbody>
<tr>
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Diploma Requirements

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<td>MUSI 761</td>
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<td>ARTIST DIPLOMA SPECIAL PROJECT (minimum of 2 semesters)</td>
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<td>MUSI 764</td>
<td>ARTIST DIPLOMA PERFORMANCE (minimum of 4 semesters)</td>
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For additional information, please see the Shepherd School website at: http://music.rice.edu

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<td>ADVANCED MENTAL TRAINING</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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<tr>
<td>MGMT 625</td>
<td>CREATIVE ENTREPRENEURSHIP</td>
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<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
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<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
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<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
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<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
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<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
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<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
<td></td>
</tr>
<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION</td>
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<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
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<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
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<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
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<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
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<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
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<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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</tr>
<tr>
<td>MUSI 532</td>
<td>THE FEDELNRAIS METHOD AND THE MUSICIAN'S BODY</td>
<td></td>
</tr>
</tbody>
</table>
Bachelor of Arts (BA) Degree with a Major in Music

Program Learning Outcomes for the BA Degree with a Major in Music

Upon completing the BA degree with a major in Music, students will be able to:

1. Demonstrate an intermediate level of technical and musical competence in performance.
2. Possess rudimentary skills in music theory and an understanding of how those skills are related to music performance.
3. Acquire a fundamental understanding and appreciation of the various historical periods of music literature.

Requirements for the BA Degree with a Major in Music

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Music must complete:

- A minimum of 19 courses (43-51 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside the major.
- A minimum of 14 courses (30 credit hours) taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

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<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 211</td>
<td>THEORY I</td>
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<tr>
<td>MUSI 212</td>
<td>THEORY II</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
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</tr>
<tr>
<td>MUSI 312</td>
<td>THEORETICAL STUDIES IV</td>
<td>3</td>
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<tr>
<td>Select 1 from the following:</td>
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<tr>
<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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</tr>
<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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</table>

Degree Requirements

For additional information, please see the Shepherd School website at: http://music.rice.edu
Bachelor of Arts (BA) Degree with a Major in Music

MUSI 416 ORCHESTRATION
MUSI 417 MUSIC FOR MEDIA
MUSI 512 ANALYTICAL SYSTEMS
MUSI 513 MODAL COUNTERPOINT
MUSI 514 SCORE READING AND THEORY AT THE KEYBOARD
MUSI 517 EARLY MODERN MASTERS
MUSI 613 TONAL COUNTERPOINT
MUSI 617 MUSIC SINCE 1950

Aural Skills and Performance Techniques
MUSI 231 AURAL SKILLS AND PERFORMANCE TECHNIQUE I 2
MUSI 232 AURAL SKILLS AND PERFORMANCE TECHNIQUE II 2

Music History
MUSI 222 / MDEM 222 MEDIEVAL AND RENAISSANCE ERAS 3
MUSI 321 BAROQUE AND EARLY CLASSICAL ERAS 3
MUSI 322 CLASSICAL AND ROMANTIC ERAS 3
MUSI 421 THE MODERN ERA 3

Individual Instrumental or Vocal Study (minimum of 4 semesters) 1
Select 4 courses from the following: 8-12
Any 300-level individual instrumental or vocal study course (see below for course list)
Any 400-level individual instrumental or vocal study course (see below for course list)

Ensemble (minimum of 4 semesters)
Select 4 courses from the following: 4-8
MUSI 335 UNDERGRADUATE CHORUS
or MUSI 337 UNDERGRADUATE ORCHESTRA

Total Credit Hours Required for the Major in Music 43-51
Additional Credit Hours to Complete BA Degree Requirements 9-17
University Graduation Requirements (p. 25) 60
Total Credit Hours 120

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.
1 Students in the BA degree program who wish to continue taking private lessons beyond the required four (4) semesters of individual instrumental and/or vocal study must obtain permission from the dean of the Shepherd School of Music.

Individual Instrumental or Vocal Study Courses (400-level) 1
MUSI 416 ORCHESTRATION
MUSI 417 MUSIC FOR MEDIA
MUSI 512 ANALYTICAL SYSTEMS
MUSI 513 MODAL COUNTERPOINT
MUSI 514 SCORE READING AND THEORY AT THE KEYBOARD
MUSI 517 EARLY MODERN MASTERS
MUSI 613 TONAL COUNTERPOINT
MUSI 617 MUSIC SINCE 1950

Individual Instrumental or Vocal Study (minimum of 4 semesters) 1
Select 4 courses from the following: 8-12
Any 300-level individual instrumental or vocal study course (see below for course list)
Any 400-level individual instrumental or vocal study course (see below for course list)

Ensemble (minimum of 4 semesters)
Select 4 courses from the following: 4-8
MUSI 335 UNDERGRADUATE CHORUS
or MUSI 337 UNDERGRADUATE ORCHESTRA

Total Credit Hours Required for the Major in Music 43-51
Additional Credit Hours to Complete BA Degree Requirements 9-17
University Graduation Requirements (p. 25) 60
Total Credit Hours 120

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.
1 Students in the BA degree program who wish to continue taking private lessons beyond the required four (4) semesters of individual instrumental and/or vocal study must obtain permission from the dean of the Shepherd School of Music.

Policies for the BA Degree with a Major in Music

Admission
The Shepherd School does not admit students to the BA degree with a major in Music. It is provided as an option for those BMus performance majors who no longer wish to pursue the performance degree.

Academic Standards
Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner:
A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors, a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of “C+” or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Performance
Students are expected to perform frequently during their residence at Rice. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

Examination
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester.

For additional information, please see the School of Music website at: http://music.rice.edu

Bachelor of Music (BMus) Degree with a Major in Bassoon Performance

Program Learning Outcomes for the BMus Degree
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program
- A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>Total Credit Hours Required for the Major in Bassoon Performance</td>
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<tr>
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<td>Total Credit Hours Required for the BMus Degree with a Major in Bassoon Performance</td>
<td>120</td>
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Degree Requirements

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 211</td>
<td>THEORY I</td>
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</tr>
<tr>
<td>MUSI 212</td>
<td>THEORY II</td>
<td>3</td>
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</tbody>
</table>

Opportunities for the BA Degree with a Major in Music

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the School of Music website at: http://music.rice.edu
Bachelor of Music (BMus) Degree with a Major in Bassoon Performance

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<td>MUSI 311</td>
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<td>MUSI 312</td>
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<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<td>MUSI 231</td>
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<td>MUSI 331</td>
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<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
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<td>MEDIEVAL AND RENAISSANCE ERAS</td>
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<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
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<td>MUSI 322</td>
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<td>MUSI 421</td>
<td>THE MODERN ERA</td>
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<tr>
<td>MUSI 457</td>
<td>BASSOON FOR MAJORS (minimum of 8 semesters)</td>
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<td>MUSI 337</td>
<td>UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)</td>
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<td>MUSI 338</td>
<td>UNDERGRADUATE CHAMBER MUSIC (minimum of 4 semesters)</td>
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<td>UNDERGRADUATE ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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<td>MUSI 441</td>
<td>SENIOR RECITAL</td>
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<td>Piano Proficiency Exam</td>
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<td>Total Credit Hours Required for the Major in Bassoon Performance</td>
<td>85</td>
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<tr>
<td></td>
<td>University Graduation Requirements (p. 25) *</td>
<td>35</td>
</tr>
<tr>
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<td>Total Credit Hours</td>
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Footnotes and Additional Information
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Recommended
It is recommended, though not required, for students to complete MUSI 723.

Policies for the BMus Degree

Admission
An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university's Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities also must provide an audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

Academic Standards
Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
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to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Transfer Credit
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Examinations
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

Performance
Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school's conducted ensembles as assigned.

For additional information, please see the School of Music website at: http://music.rice.edu

Opportunities for the BMus Degree
BMus/MMus Honors Program
Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student's fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor's degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

Other Musical Opportunities
Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the School of Music website at: http://music.rice.edu

Bachelor of Music (BMus) Degree with a Major in Cello Performance

Program Learning Outcomes for the BMus Degree
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student's major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program
- A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tr>
<td></td>
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2017-2018 General Announcements
Total Credit Hours Required for the BMus Degree with a Major in Cello Performance 120

### Degree Requirements

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<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
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<td>THEORETICAL STUDIES IV</td>
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<td>MUSI 378</td>
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<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<td></td>
<td><strong>Aural Skills and Performance Techniques</strong></td>
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### Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam.

Total Credit Hours Required for the Major in Cello Performance 86

University Graduation Requirements (p. 25) * 34

Total Credit Hours 120

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

### Policies for the BMus Degree

#### Admission

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university's Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities also must provide an audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

#### Academic Standards

##### Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

##### Grading Policy

A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors, a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of “C+” or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

2017-2018 General Announcements
Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/re audition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit on page 32. For additional information, please see the School of Music website at: http://music.rice.edu.

Examinations
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

Performance
Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

For additional information, please see the School of Music website at: http://music.rice.edu

Opportunities for the BMus Degree
BMus/MMus Honors Program
Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student’s fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

Other Musical Opportunities

Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, see Latin Honors on page 47 (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the School of Music website at: http://music.rice.edu

Bachelor of Music (BMus) Degree with a Major in Clarinet Performance

Program Learning Outcomes for the BMus Degree
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree
For general university requirements, see Graduation Requirements on page 25. Students pursuing the BMus degree must complete:

* The requirements for one major offered by the BMus degree program
* A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.
Bachelor of Music (BMus) Degree with a Major in Clarinet Performance

Summary

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<td>Total Credit Hours Required for the BMus Degree with a Major in Clarinet Performance</td>
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Degree Requirements

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<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
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<td>THEORETICAL STUDIES IV</td>
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<td>MUSI 404</td>
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<td>MUSIC BUSINESS AND LAW</td>
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<td>ANALYTICAL SYSTEMS</td>
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<td>MODAL COUNTERPOINT</td>
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<td>THE MODERN ERA</td>
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<td>MUSI 455</td>
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Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

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<td>Total Credit Hours</td>
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Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

Policies for the BMus Degree

Admission

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university’s Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities also must provide an audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

Academic Standards

Curriculum and Degree Requirements

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Grading Policy

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Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Examinations
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

Performance
Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school's conducted ensembles as assigned.

For additional information, please see the School of Music website at: http://music.rice.edu

Opportunities for the BMus Degree

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

BMus/MMus Honors Program
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The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor's degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

Other Musical Opportunities

Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website at: http://music.rice.edu

Bachelor of Music (BMus) Degree with a Major in Composition

Program Learning Outcomes for the BMus Degree

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student's major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program
- A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.
Bachelor of Music (BMus) Degree with a Major in Composition

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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**Degree Requirements**

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<td>MUSI 311</td>
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<td>or MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSI 416</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<td><strong>Aural Skills and Performance Techniques</strong></td>
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<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE I</td>
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<td>MUSI 431</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES V</td>
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<td></td>
<td><strong>Music History</strong></td>
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<tr>
<td>MUSI 222 / MDEM 222</td>
<td>MEDIEVAL AND RENAISSANCE ERAS</td>
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<td>MUSI 321</td>
<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
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<td>MUSI 322</td>
<td>CLASSICAL AND ROMANTIC ERAS</td>
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<td>MUSI 421</td>
<td>THE MODERN ERA</td>
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<td></td>
<td><strong>Composition Study</strong></td>
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<tr>
<td>MUSI 401</td>
<td>COMPOSITION FOR MAJORS (minimum of 8 semesters and 24 credit hours)</td>
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<td>MUSI 303</td>
<td>UNDERGRAD COMPOSITION SEMINAR (minimum of 8 semesters and 8 credit hours)</td>
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<td><strong>Piano Study (minimum of 8 semesters)</strong></td>
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<td>MUSI 281</td>
<td>SECONDARY PIANO</td>
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<tr>
<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
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**Select a minimum of 5 semesters from the following:**

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<th>Code</th>
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<td>MUSI 335</td>
<td>UNDERGRADUATE CHORUS</td>
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<td>MUSI 337</td>
<td>UNDERGRADUATE ORCHESTRA</td>
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<td><strong>Senior Recital</strong></td>
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<td>MUSI 441</td>
<td>SENIOR RECITAL</td>
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<td></td>
<td><strong>Piano Proficiency Exam</strong></td>
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<tr>
<td>Students must complete and pass the Piano Proficiency Exam</td>
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</tr>
<tr>
<td></td>
<td><strong>Footnotes and Additional Information</strong></td>
<td></td>
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</tbody>
</table>
| * Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

The “hours outside of the major” requirement may include all of the above university requirements.

1 BMus students majoring in Composition must enroll in MUSI 281 until the piano proficiency exam is passed, and then enroll in MUSI 381 to complete a minimum of 8 semesters of piano study.

**Policies for the BMus Degree**

**Admission**

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university’s Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities also must provide an audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

**Academic Standards**

**Curriculum and Degree Requirements**

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**

A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.
Note: For music history and musicology majors, a grade of "C+" or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of "C+" or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudit. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Examinations
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

Performance
Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school's conducted ensembles as assigned.

For additional information, please see the School of Music website at: http://music.rice.edu

Opportunities for the BMus Degree

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

BMus/MMus Honors Program
Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student's fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

Other Musical Opportunities
Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website at: http://music.rice.edu

Bachelor of Music (BMus) Degree with a Major in Double Bass Performance

Program Learning Outcomes for the BMus Degree

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student's major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program
- A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.
The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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<th>Credit Hours</th>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BMus Degree with a Major in Double Bass Performance</td>
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Degree Requirements

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<tr>
<th>Code</th>
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<td>Music Theory</td>
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<td>MUSI 211</td>
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<td>MUSI 212</td>
<td>THEORY II</td>
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<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
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<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>TONAL COUNTERPOINT</td>
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<td>MUSIC SINCE 1950</td>
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<td>Aural Skills and Performance Techniques</td>
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<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES V</td>
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Individual and Ensemble Study

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<td>DOUBLE BASS FOR MAJORS (minimum of 8 semesters)</td>
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<td>UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)</td>
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<td>MUSI 338</td>
<td>UNDERGRADUATE CHAMBER MUSIC (minimum of 4 semesters)</td>
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<td>MUSI 339</td>
<td>UNDERGRADUATE ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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Recital

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<td>MUSI 441</td>
<td>SENIOR RECITAL</td>
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Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

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Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

Policies for the BMus Degree

Admission

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university’s Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities also must provide an audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

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Examinations
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Performance
Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

For additional information, please see the School of Music website at: http://music.rice.edu

Opportunities for the BMus Degree
Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

BMus/MMus Honors Program
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The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

Other Musical Opportunities
Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website at: http://music.rice.edu

Bachelor of Music (BMus) Degree with a Major in Flute Performance Program Learning Outcomes for the BMus Degree
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

• The requirements for one major offered by the BMus degree program
• A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are
entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

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<th>Code</th>
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<td>Total Credit Hours Required for the BMus Degree with a Major in Flute Performance</td>
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**Degree Requirements**

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<td>MUSI 211</td>
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<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<td>MUSIC FOR MEDIA</td>
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<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<tr>
<td></td>
<td><strong>Aural Skills and Performance Techniques</strong></td>
<td></td>
</tr>
<tr>
<td>MUSI 231</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE I</td>
<td>2</td>
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<td>MUSI 232</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE II</td>
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<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES III</td>
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<td>MUSI 332</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
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<td>MUSI 431</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES V</td>
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<td></td>
<td><strong>Music History</strong></td>
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<tr>
<td>MUSI 222 / MDEM 222</td>
<td>MEDIEVAL AND RENAISSANCE ERAS</td>
<td>3</td>
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**Individual and Ensemble Study**

<table>
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<tr>
<th>Code</th>
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<tr>
<td>MUSI 321</td>
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<td>CLASSICAL AND ROMANTIC ERAS</td>
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<td>MUSI 421</td>
<td>THE MODERN ERA</td>
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**Recitals**

<table>
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<tr>
<th>Code</th>
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<tr>
<td>MUSI 441</td>
<td>SENIOR RECITAL</td>
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**Piano Proficiency Exam**

Students must complete and pass the Piano Proficiency Exam

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>University Graduation Requirements (p. 25) *</td>
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<td>Total Credit Hours</td>
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**Footnotes and Additional Information**

*Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

**Policies for the BMus Degree**

**Admission**

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university’s Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities also must provide an audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

**Grading Policy**

A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent...
from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors, a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of “C+” or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/re-audition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Examinations
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

Performance
Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

For additional information, please see the School of Music website at: http://music.rice.edu

Opportunities for the BMus Degree
BMus/MMus Honors Program
Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student’s fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

Other Musical Opportunities
Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the School of Music website at: http://music.rice.edu

Bachelor of Music (BMus) Degree with a Major in Harp Performance
Program Learning Outcomes for the BMus Degree
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

• The requirements for one major offered by the BMus degree program
• A minimum of 120 credit hours to satisfy degree requirements
Bachelor of Music (BMus) Degree with a Major in Harp Performance

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td><strong>Total Credit Hours Required for the Major in Harp Performance</strong></td>
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<td></td>
<td><strong>Total Credit Hours Required for the BMus Degree with a Major in Harp Performance</strong></td>
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**Degree Requirements**

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<td>MUSI 212</td>
<td>THEORY II</td>
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<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
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<tr>
<td>MUSI 312</td>
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<td>MUSI 378</td>
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<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 417</td>
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<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<td>MUSI 231</td>
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<td>MUSI 232</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE II</td>
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<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES III</td>
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<td>MUSI 332</td>
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<tr>
<td>MUSI 431</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES V</td>
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**Music History**

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<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
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<td>MUSI 322</td>
<td>CLASSICAL AND ROMANTIC ERAS</td>
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</tr>
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<td>MUSI 421</td>
<td>THE MODERN ERA</td>
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**Individual and Ensemble Study**

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<th>Credit Hours</th>
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<tr>
<td>MUSI 487</td>
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<td>MUSI 337</td>
<td>UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)</td>
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**Recitals**

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<th>Code</th>
<th>Title</th>
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<td>MUSI 341</td>
<td>JUNIOR RECITAL</td>
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<tr>
<td>MUSI 441</td>
<td>SENIOR RECITAL</td>
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**Piano Proficiency Exam**

Students must complete and pass the Piano Proficiency Exam

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Total Credit Hours Required for the Major in Harp Performance</strong></td>
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**University Graduation Requirements (p. 25) * 43

Total Credit Hours 120

**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

**Recommended**

It is recommended, though not required, that music students complete FREN 141 in addition to the requirements listed above. MUSI 338 may be recommended at the discretion of the instructor in addition to the requirements listed above.

**Policies for the BMus Degree**

**Admission**

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university’s Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities also must provide an audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

**Academic Standards**

**Curriculum and Degree Requirements**

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**

A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:
A music major who receives a grade of "C+" or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of "C+" or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

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**Leaves of Absence and Voluntary Withdrawal**

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

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**Transfer Credit**

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**Examinations**

At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

**Performance**

Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school's conducted ensembles as assigned.

For additional information, please see the School of Music website at: [http://music.rice.edu](http://music.rice.edu)

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**Opportunities for the BMus Degree**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

**BMus/MMus Honors Program**

Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the **BMus/ MMus Honors Program**, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student's fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

**Other Musical Opportunities**

**Lectures and Performances**

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website at: [http://music.rice.edu](http://music.rice.edu)

**Bachelor of Music (BMus) Degree with a Major in Horn Performance**

**Program Learning Outcomes for the BMus Degree**

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program
- A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Horn Performance</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BMus Degree with a Major in Horn Performance</td>
<td>120</td>
</tr>
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### Degree Requirements

#### Music Theory

- MUSI 211  THEORY I  3
- MUSI 212  THEORY II  3
- MUSI 311  THEORETICAL STUDIES III  3
- MUSI 312  THEORETICAL STUDIES IV  3
- Select 1 from the following:  3
  - MUSI 316  EXPERIMENTAL SOUND AND VIDEO
  - MUSI 378  CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC
  - MUSI 403  BASIC ELECTRONIC MUSIC
  - MUSI 404  ELECTRONIC MUSIC COMPOSITION
  - MUSI 405  MUSIC BUSINESS AND LAW
  - MUSI 416  ORCHESTRATION
  - MUSI 417  MUSIC FOR MEDIA
  - MUSI 512  ANALYTICAL SYSTEMS
  - MUSI 513  MODAL COUNTERPOINT
  - MUSI 514  SCORE READING AND THEORY AT THE KEYBOARD
  - MUSI 517  EARLY MODERN MASTERS
  - MUSI 613  TONAL COUNTERPOINT
  - MUSI 617  MUSIC SINCE 1950

#### Aural Skills and Performance Techniques

<table>
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<tr>
<th>Code</th>
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<tr>
<td>MUSI 231</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE I</td>
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<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE II</td>
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<td>MUSI 331</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES III</td>
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<td>MUSI 332</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
<td>2</td>
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<tr>
<td>MUSI 431</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES V</td>
<td>2</td>
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#### Music History

- MUSI 222 / MDEM 222  MEDIEVAL AND RENAISSANCE ERAS  3
- MUSI 321  BAROQUE AND EARLY CLASSICAL ERAS  3
- MUSI 322  CLASSICAL AND ROMANTIC ERAS  3
- MUSI 421  THE MODERN ERA  3

#### Individual and Ensemble Study

- MUSI 461  HORN FOR MAJORS (minimum of 8 semesters)  3
- MUSI 337  UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)  2
- MUSI 338  UNDERGRADUATE CHAMBER MUSIC (minimum of 4 semesters)  1

#### Recitals

- MUSI 341  JUNIOR RECITAL  0
- MUSI 441  SENIOR RECITAL  0

#### Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

Total Credit Hours Required for the Major in Horn Performance  81

Total Credit Hours Required for the BMus Degree with a Major in Horn Performance  120

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

### Policies for the BMus Degree

#### Admission

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university's Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities also must provide an audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.
Academic Standards
Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
A minimum grade of “B−” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors, a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of “C+” or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

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Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested. Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudit. Students should explain the reasons for their withdrawal to the dean before leaving campus.

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At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates, except BA students, must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

Performance
Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

For additional information, please see the School of Music website at: http://music.rice.edu

Opportunities for the BMus Degree
Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

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The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

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A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

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Bachelor of Music (BMus) Degree
Program Learning Outcomes for the BMus Degree
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.

3. Acquire a fundamental understanding of the relationship between music history and music performance.

4. Develop superior technical collaborative skills in the student's major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program
- A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Music History</td>
<td>78-89</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BMus Degree with a Major in Music History</td>
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### Degree Requirements

<table>
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<tr>
<td></td>
<td>Music Theory</td>
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</tr>
<tr>
<td>MUSI 211</td>
<td>THEORY I</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 212</td>
<td>THEORY II</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 312</td>
<td>THEORETICAL STUDIES IV</td>
<td>3</td>
</tr>
<tr>
<td>Select 1 from the following:</td>
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</tr>
<tr>
<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td></td>
</tr>
<tr>
<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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</tr>
<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
<td></td>
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<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
<td></td>
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<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
<td></td>
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<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td></td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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</table>

### Aural Skills and Performance Techniques

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MUSI 231</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE I</td>
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<tr>
<td>MUSI 232</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE II</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 331</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES III</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 332</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 431</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES V</td>
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### Music History

<table>
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<tr>
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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 222 / MDEM 222</td>
<td>MEDIEVAL AND RENAISSANCE ERAS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 321</td>
<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 322</td>
<td>CLASSICAL AND ROMANTIC ERAS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 421</td>
<td>THE MODERN ERA</td>
<td>3</td>
</tr>
</tbody>
</table>

### Instrumental or Vocal Study

Select a minimum of 6 semesters from the Concentration or Instrument or Voice for Majors (see course list below)

### Undergraduate Chorus or Orchestra

Select a minimum of 5 semesters from the following:

- MUSI 335 UNDERGRADUATE CHORUS
- MUSI 337 UNDERGRADUATE ORCHESTRA

### Foreign Language

Select 1 year of a foreign language by completing course numbers 141 and 142 from language course offerings or equivalency as determined by university exam. German (GERM) is highly recommended.

### Advanced Musicology Coursework

Select 3 courses from Advanced Musicology courses/seminars (see course list below)

Select 1 additional course from Advanced Musicology courses/seminars or 1 Advanced Theory Course (see course list below)

### Senior Thesis

Select 1 Advanced Musicology course/seminars or 1 Advanced Theory Course (see course list below)

### Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.
## Instrumental or Vocal Study

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MUSI 351</td>
<td>CONCENTRATION FLUTE</td>
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</tr>
<tr>
<td>MUSI 353</td>
<td>CONCENTRATION OBOE</td>
<td></td>
</tr>
<tr>
<td>MUSI 355</td>
<td>CONCENTRATION CLARINET</td>
<td></td>
</tr>
<tr>
<td>MUSI 357</td>
<td>CONCENTRATION BASSOON</td>
<td></td>
</tr>
<tr>
<td>MUSI 361</td>
<td>CONCENTRATION HORN</td>
<td></td>
</tr>
<tr>
<td>MUSI 363</td>
<td>CONCENTRATION TRUMPET</td>
<td></td>
</tr>
<tr>
<td>MUSI 365</td>
<td>CONCENTRATION TROMBONE</td>
<td></td>
</tr>
<tr>
<td>MUSI 367</td>
<td>CONCENTRATION TUBA</td>
<td></td>
</tr>
<tr>
<td>MUSI 371</td>
<td>CONCENTRATION PERCUSSION</td>
<td></td>
</tr>
<tr>
<td>MUSI 373</td>
<td>CONCENTRATION VOICE</td>
<td></td>
</tr>
<tr>
<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
<td></td>
</tr>
<tr>
<td>MUSI 383</td>
<td>CONCENTRATION ORGAN</td>
<td></td>
</tr>
<tr>
<td>MUSI 387</td>
<td>CONCENTRATION HARP</td>
<td></td>
</tr>
<tr>
<td>MUSI 391</td>
<td>CONCENTRATION VIOLIN</td>
<td></td>
</tr>
<tr>
<td>MUSI 393</td>
<td>CONCENTRATION VIOLA</td>
<td></td>
</tr>
<tr>
<td>MUSI 395</td>
<td>CONCENTRATION VIOLONCELLO</td>
<td></td>
</tr>
<tr>
<td>MUSI 397</td>
<td>CONCENTRATION VIOLONCELLO</td>
<td></td>
</tr>
<tr>
<td>MUSI 451</td>
<td>FLUTE FOR MAJORS</td>
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</tr>
<tr>
<td>MUSI 453</td>
<td>OBOE FOR MAJORS</td>
<td></td>
</tr>
<tr>
<td>MUSI 455</td>
<td>CLARINET FOR MAJORS</td>
<td></td>
</tr>
<tr>
<td>MUSI 457</td>
<td>BASSOON FOR MAJORS</td>
<td></td>
</tr>
<tr>
<td>MUSI 461</td>
<td>HORN FOR MAJORS</td>
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<tr>
<td>MUSI 463</td>
<td>TRUMPET FOR MAJORS</td>
<td></td>
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<tr>
<td>MUSI 465</td>
<td>TROMBONE FOR MAJORS</td>
<td></td>
</tr>
<tr>
<td>MUSI 467</td>
<td>TUBA FOR MAJORS</td>
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</tr>
<tr>
<td>MUSI 471</td>
<td>PERCUSSION FOR MAJORS</td>
<td></td>
</tr>
<tr>
<td>MUSI 473</td>
<td>VOICE FOR MAJORS</td>
<td></td>
</tr>
<tr>
<td>MUSI 481</td>
<td>PIANO FOR MAJORS</td>
<td></td>
</tr>
<tr>
<td>MUSI 483</td>
<td>ORGAN FOR MAJORS</td>
<td></td>
</tr>
<tr>
<td>MUSI 487</td>
<td>HARP FOR MAJORS</td>
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</tr>
<tr>
<td>MUSI 491</td>
<td>VIOLIN FOR MAJORS</td>
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</tr>
<tr>
<td>MUSI 493</td>
<td>VIOLA FOR MAJORS</td>
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<tr>
<td>MUSI 495</td>
<td>VIOLONCELLO FOR MAJORS</td>
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<tr>
<td>MUSI 497</td>
<td>DOUBLE BASS FOR MAJORS</td>
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## Advanced Musicology Courses

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC (Recommended)</td>
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<tr>
<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
<td></td>
</tr>
<tr>
<td>MDEM 429</td>
<td>(Recommended)</td>
<td></td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td></td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<tr>
<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
<td></td>
</tr>
<tr>
<td>MUSI 529</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
<td></td>
</tr>
<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
<td></td>
</tr>
<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
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<tr>
<td>MUSI 552</td>
<td>WORDS AND MUSIC</td>
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<tr>
<td>MUSI 622</td>
<td>EARLY OPERA</td>
<td></td>
</tr>
<tr>
<td>MUSI 623</td>
<td>J. S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<td>MUSI 625</td>
<td>MOZART OPERAS</td>
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<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
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<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
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<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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## Advanced Theory Courses

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<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td></td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td></td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSTION</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
<td></td>
</tr>
</tbody>
</table>

## Policies for the BMus Degree

### Admission

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university's...
Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities also must provide an audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

**Academic Standards**

**Curriculum and Degree Requirements**

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

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For additional information, please see the School of Music website at: [http://music.rice.edu](http://music.rice.edu)

**Bachelor of Music (BMus) Degree with a Major in Music Theory**
Program Learning Outcomes for the BMus Degree

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program
- A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
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<th>Code</th>
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### Degree Requirements

#### Music Theory

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<tr>
<td>MUSI 211</td>
<td>THEORY I</td>
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<td>MUSI 212</td>
<td>THEORY II</td>
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</tr>
<tr>
<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
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</tr>
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<td>MUSI 312</td>
<td>THEORETICAL STUDIES IV</td>
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</tr>
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<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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#### Aural Skills and Performance Techniques

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<tr>
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<th>Credit Hours</th>
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<tr>
<td>MUSI 231</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE I</td>
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#### Music History

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<td>MUSI 222 / MDEM 222</td>
<td>MEDIEVAL AND RENAISSANCE ERAS</td>
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<td>MUSI 321</td>
<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
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<td>MUSI 322</td>
<td>CLASSICAL AND ROMANTIC ERAS</td>
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</tr>
<tr>
<td>MUSI 421</td>
<td>THE MODERN ERA</td>
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#### Music Academic Elective

Select 1 music academic elective course (see below for course list).

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<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
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<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<td>Course Code</td>
<td>Course Title</td>
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<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
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<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
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<td>MUSI 552</td>
<td>WORDS AND MUSIC</td>
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<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<td>SELECTED STUDIES IN MUSIC HISTORY</td>
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<td>MUSI 622</td>
<td>EARLY OPERA</td>
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<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<td>MUSI 625</td>
<td>MOZART OPERAS</td>
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<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
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<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
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<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
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</table>

### Policies for the BMus Degree

#### Admission
An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university's Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities also must provide an audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

#### Academic Standards

##### Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

##### Grading Policy
A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner:

> A music major who receives a grade of "C+" or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

#### Note:
For music history and musicology majors, a grade of "C+" or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of "C+" or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

#### Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

#### Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

#### Examinations
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

#### Performance
Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school's conducted ensembles as assigned.

For additional information, please see the School of Music website at: [http://music.rice.edu](http://music.rice.edu)

#### Opportunities for the BMus Degree

##### Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university
honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

**BMus/MMus Honors Program**

Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student’s fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

**Other Musical Opportunities**

**Lectures and Performances**

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website at: [http://music.rice.edu](http://music.rice.edu)

**Bachelor of Music (BMus) Degree with a Major in Oboe Performance**

**Program Learning Outcomes for the BMus Degree**

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

**Requirements for the BMus Degree**

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program
- A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
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<th>Code</th>
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<th>Credit Hours</th>
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<td>Total Credit Hours Required for the BMUS Degree with a Major in Oboe Performance</td>
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**Degree Requirements**

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<td>MUSI 211</td>
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<td>MUSI 212</td>
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<td>MUSI 311</td>
<td>THEORECTICAL STUDIES III</td>
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<td>MUSI 312</td>
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<td>Select 1 from the following:</td>
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<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td>**</td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td>**</td>
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<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
<td>**</td>
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<td></td>
<td><strong>Aural Skills and Performance Techniques</strong></td>
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<td>MUSI 231</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE I</td>
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<td>MUSI 232</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE II</td>
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<tr>
<td>MUSI 331</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES III</td>
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<tr>
<td>MUSI 332</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
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MUSI 431  AURAL SKILLS AND PERFORMANCE TECHNIQUES V  2

Music History
MUSI 222 / MDEM 222  MEDIEVAL AND RENAISSANCE ERAS  3
MUSI 321  BAROQUE AND EARLY CLASSICAL ERAS  3
MUSI 322  CLASSICAL AND ROMANTIC ERAS  3
MUSI 421  THE MODERN ERA  3

Individua and Ensemble Study
MUSI 453  OBOE FOR MAJORS (minimum of 8 semesters)  3
MUSI 337  UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)  2
MUSI 338  UNDERGRADUATE CHAMBER MUSIC (minimum of 4 semesters)  1
MUSI 339  UNDERGRADUATE ORCHESTRAL REPERTOIRE (minimum of 4 semesters)  1

Recitals
MUSI 341  JUNIOR RECITAL  0
MUSI 441  SENIOR RECITAL  0

Piano Proficiency Exam
Students must complete and pass the Piano Proficiency Exam

Total Credit Hours Required for the Major in Oboe Performance  85

University Graduation Requirements (p. 25)  35

Total Credit Hours  120

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

Policies for the BMus Degree
Admission
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For additional information, please see the School of Music website at: http://music.rice.edu

Bachelor of Music (BMus) Degree with a Major in Organ Performance

Program Learning Outcomes for the BMus Degree

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student's major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

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<th>Code</th>
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<td>Total Credit Hours Required for the BMus Degree with a Major in Organ Performance</td>
<td>120</td>
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Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>THEORY II</td>
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Aural Skills and Performance Techniques

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<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
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<td>MUSI 322</td>
<td>CLASSICAL AND ROMANTIC ERAS</td>
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Individual and Ensemble Study

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<td>ORGAN FOR MAJORS (minimum of 8 semesters)</td>
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<tr>
<td>MUSI 335</td>
<td>UNDERGRADUATE CHORUS (minimum of 6 semesters)</td>
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<tr>
<td>MUSI 381</td>
<td>CONCENTRATION PIANO (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 285</td>
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Additional Courses for Organ Majors

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<td>LITURGICAL ORGAN PLAYING</td>
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<td>MUSI 546</td>
<td>ACCOMPANYING AT THE ORGAN</td>
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</tr>
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<td>MUSI 445</td>
<td>KEYBOARD HARMONY AND FIGURED BASS I</td>
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<tr>
<td>MUSI 446</td>
<td>KEYBOARD HARMONY AND FIGURED BASS II</td>
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Recitals

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<td>MUSI 441</td>
<td>SENIOR RECITAL</td>
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Total Credit Hours Required for the Major in Organ Performance

Total Credit Hours: 85

University Graduation Requirements (p. 25) * 35

Total Credit Hours: 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

Policies for the BMus Degree

Admission

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university’s Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities also must provide an audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors, a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of “C+” or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Examinations

At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

Performance

Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

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Opportunities for the BMus Degree

BMus/MMus Honors Program

Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this
program is made in the student’s fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

Other Musical Opportunities

Lectures and Performances

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Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the school’s website at: http://music.rice.edu

Bachelor of Music (BMus) Degree with a Major in Percussion Performance

Program Learning Outcomes for the BMus Degree

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsals in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program
- A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

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<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<td>MUSI 416</td>
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<td>MUSI 613</td>
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<tr>
<td>MUSI 617</td>
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Aural Skills and Performance Techniques

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<td>MUSI 331</td>
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<td>MUSI 332</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
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Music History

MUSI 222 / MDEM 222 MEDIEVAL AND RENAISSANCE ERAS 3
MUSI 321 BAROQUE AND EARLY CLASSICAL ERAS 3
MUSI 322 CLASSICAL AND ROMANTIC ERAS 3
MUSI 421 THE MODERN ERA 3

Individual and Ensemble Study

MUSI 471 PERCUSSION FOR MAJORS (minimum of 8 semesters) 3
MUSI 337 UNDERGRADUATE ORCHESTRA (minimum of 8 semesters) 2
MUSI 338 UNDERGRADUATE CHAMBER MUSIC (minimum of 8 semesters) 1

Recitals

MUSI 341 JUNIOR RECITAL 0
MUSI 441 SENIOR RECITAL 0

Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

Total Credit Hours Required for the Major in Percussion Performance 85
University Graduation Requirements (p. 25) * 35

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Opportunities for the BMus Degree

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**Other Musical Opportunities**

**Lectures and Performances**

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For additional information, please see the School of Music website at: [http://music.rice.edu](http://music.rice.edu)

**Bachelor of Music (BMus) Degree with a Major in Piano Performance**

**Program Learning Outcomes for the BMus Degree**

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

**Requirements for the BMus Degree**

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program
- A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

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### Degree Requirements

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<td>MUSI 513</td>
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MUSI 222 / MDEM 222 MEDIEVAL AND RENAISSANCE ERAS 3
MUSI 321 BAROQUE AND EARLY CLASSICAL ERAS 3
MUSI 322 CLASSICAL AND ROMANTIC ERAS 3
MUSI 421 THE MODERN ERA 3

Individual and Ensemble Study

MUSI 481 PIANO FOR MAJORS (minimum of 8 semesters) 3

Select a minimum of 8 semesters from the following: 8

MUSI 335 UNDERGRADUATE CHORUS
MUSI 389 COLLABORATIVE PIANO SKILLS
MUSI 585 SONATA CLASS
MUSI 642 ACCOMPANYING
MUSI 338 UNDERGRADUATE CHAMBER MUSIC (minimum of 2 semesters) 1

Recitals

MUSI 341 JUNIOR RECITAL 0
MUSI 441 SENIOR RECITAL 0

Total Credit Hours Required for the Major in Piano Performance 71

University Credit Hours Requirements (p. 25) 49

Bachelor of Music (BMus) Degree with a Major in Piano Performance

Policies for the BMus Degree

Admission

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A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

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Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/re-audition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Examinations

At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

Performance

Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

For additional information, please see the School of Music website at: http://music.rice.edu

Opportunities for the BMus Degree

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university
honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

**BMus/MMus Honors Program**

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The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

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**Lectures and Performances**

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**Bachelor of Music (BMus) Degree with a Major in Trombone Performance**

**Program Learning Outcomes for the BMus Degree**

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

**Requirements for the BMus Degree**

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program
- A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

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<td>Total Credit Hours Required for the BMus Degree with a Major in Trombone Performance</td>
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**Degree Requirements**

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MUSI 332 AURAL SKILLS AND PERFORMANCE TECHNIQUES IV 2
MUSI 431 AURAL SKILLS AND PERFORMANCE TECHNIQUES V 2

Music History
MUSI 222 / MDEM 222 MEDIEVAL AND RENAISSANCE ERAS 3
MUSI 321 BAROQUE AND EARLY CLASSICAL ERAS 3
MUSI 322 CLASSICAL AND ROMANTIC ERAS 3
MUSI 421 THE MODERN ERA 3

Individual and Ensemble Study
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MUSI 337 UNDERGRADUATE ORCHESTRA (minimum of 8 semesters) 2
MUSI 338 UNDERGRADUATE CHAMBER MUSIC (minimum of 4 semesters) 1

Recitals
MUSI 341 JUNIOR RECITAL 0
MUSI 441 SENIOR RECITAL 0

Piano Proficiency Exam
Students must complete and pass the Piano Proficiency Exam

Total Credit Hours Required for the Major in Trombone Performance 81

University Graduation Requirements (p. 25) * 39

Total Credit Hours 120

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

Policies for the BMus Degree

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Bachelor of Music (BMus) Degree with a Major in Trumpet Performance

Program Learning Outcomes for the BMus Degree

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
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### Degree Requirements

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Aural Skills and Performance Techniques

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**Music History**

- MUSI 222 / MDIM 222: MEDIEVAL AND RENAISSANCE ERAS 3
- MUSI 321: BAROQUE AND EARLY CLASSICAL ERAS 3
- MUSI 322: CLASSICAL AND ROMANTIC ERAS 3
- MUSI 421: THE MODERN ERA 3

**Individual and Ensemble Study**

- MUSI 463: TRUMPET FOR MAJORS (minimum of 8 semesters) 3
- MUSI 337: UNDERGRADUATE ORCHESTRA (minimum of 8 semesters) 2
- MUSI 338: UNDERGRADUATE CHAMBER MUSIC (minimum of 4 semesters) 1

**Recitals**

- MUSI 341: JUNIOR RECITAL 0
- MUSI 441: SENIOR RECITAL 0

**Piano Proficiency Exam**

Students must complete and pass the Piano Proficiency Exam.

**Total Credit Hours Required for the Major in Trumpet Performance**

- 81

**University Graduation Requirements (p. 25)**

- 39

**Total Credit Hours**

- 120

**Footnotes and Additional Information**

* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.
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For additional information, please see the School of Music website at: http://music.rice.edu

Bachelor of Music (BMus) Degree with a Major in Tuba Performance

Program Learning Outcomes for the BMus Degree

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.

2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.

3. Acquire a fundamental understanding of the relationship between music history and music performance.

4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program
- A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

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<td>Total Credit Hours Required for the BMus Degree with a Major in Tuba Performance</td>
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### Aural Skills and Performance Techniques

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<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE II</td>
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### Music History

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<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
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<td>THE MODERN ERA</td>
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### Individual and Ensemble Study

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<td>TUBA FOR MAJORS (minimum of 8 semesters)</td>
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<td>MUSI 337</td>
<td>UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)</td>
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<td>MUSI 338</td>
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### Recitals

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<td>MUSI 341</td>
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<td>MUSI 441</td>
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### Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam.

### Total Credit Hours Required for the Major in Tuba Performance

<table>
<thead>
<tr>
<th>Total Credit Hours</th>
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### University Graduation Requirements (p. 25)

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<th>Total Credit Hours</th>
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### Total Credit Hours

<table>
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### Footnotes and Additional Information

- Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

### Recommended

It is recommended, though not required, that music students complete MUSI 305 and MUSI 403, in addition to the requirements listed above.

### Policies for the BMus Degree

#### Admission

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university’s Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities also must provide an audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

#### Academic Standards

##### Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

##### Grading Policy

A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

**Note:** For music history and musicology majors, a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of “C+” or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

#### Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

#### Examinations

At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first
semester and continue study until they can meet the examination requirements.

**Performance**

Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

For additional information, please see the School of Music website at: [http://music.rice.edu](http://music.rice.edu)

**Opportunities for the BMus Degree**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

**BMus/MMus Honors Program**

Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student’s fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

**Other Musical Opportunities**

**Lectures and Performances**

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website at: [http://music.rice.edu](http://music.rice.edu)

**Bachelor of Music (BMus) Degree with a Major in Viola Performance**

**Program Learning Outcomes for the BMus Degree**

Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

**Requirements for the BMus Degree**

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program
- A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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**Degree Requirements**

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**Bachelor of Music (BMus) Degree with a Major in Viola Performance**

Rice University
Bachelor of Music (BMus) Degree with a Major in Viola Performance

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* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

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Opportunities for the BMus Degree

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Bachelor of Music (BMus) Degree with a Major in Violin Performance

Program Learning Outcomes for the BMus Degree
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student's major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

- The requirements for one major offered by the BMus degree program
- A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BMUS Degree with a Major in Violin Performance</td>
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Degree Requirements

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2017-2018 General Announcements
Bachelor of Music (BMus) Degree with a Major in Violin Performance

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<td>MUSI 378</td>
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<td>MUSI 512</td>
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<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<tr>
<td>MUSI 617</td>
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Aural Skills and Performance Techniques

<table>
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<tr>
<td>MUSI 231</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE I</td>
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<tr>
<td>MUSI 232</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUE II</td>
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<td>MUSI 331</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES III</td>
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<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES V</td>
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Music History

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<td>MUSI 222 / MDEM 222</td>
<td>MEDIEVAL AND RENAISSANCE ERAS</td>
<td>3</td>
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<td>MUSI 321</td>
<td>BAROQUE AND EARLY CLASSICAL ERAS</td>
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<td>CLASSICAL AND ROMANTIC ERAS</td>
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Individual and Ensemble Study

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<tr>
<td>MUSI 491</td>
<td>VIOLIN FOR MAJORS (minimum of 8 semesters)</td>
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<tr>
<td>MUSI 337</td>
<td>UNDERGRADUATE ORCHESTRA (minimum of 8 semesters)</td>
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<tr>
<td>MUSI 338</td>
<td>UNDERGRADUATE CHAMBER MUSIC (minimum of 6 semesters)</td>
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Recitals

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<td>MUSI 341</td>
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<td>MUSI 441</td>
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Piano Proficiency Exam

Students must complete and pass the Piano Proficiency Exam

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Violin Performance</td>
<td>83</td>
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University Graduation Requirements (p. 25) * 37

Total Credit Hours 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

Policies for the BMus Degree

Admission

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university's Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities also must provide an audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a BMus degree seeking student and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors, a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as noted above. For music theory majors, a grade of "C+" or lower in any advanced music theory course is considered unsatisfactory and will be evaluated as noted above.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.
Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Examinations
At the end of each semester, a jury examination in applied music may be given over the material studied during the semester. All degree candidates except BA students must demonstrate keyboard proficiency by examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.

Performance
Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school’s conducted ensembles as assigned.

For additional information, please see the School of Music website at: http://music.rice.edu

Opportunities for the BMus Degree
Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

BMus/MMus Honors Program
Shepherd School students who demonstrate truly exceptional musical and academic accomplishment may apply for the BMus/MMus five-year coordinated program. This program, often referred to in the school as the BMus/MMus Honors Program, allows for the completion and awarding of both the BMus and MMus degrees concurrently. Application to this program is made in the student’s fifth or sixth semester of undergraduate studies.

The same general university requirements apply, but students seeking the combined BMus/MMus degrees must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor’s degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the Shepherd School Student Handbook.

Other Musical Opportunities
Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website at: http://music.rice.edu

Bachelor of Music (BMus) Degree with a Major in Vocal Performance
Program Learning Outcomes for the BMus Degree
Upon completing the BMus degree, students will be able to:

1. Demonstrate technical and musical competence in solo performance, composition, or music-historical research appropriate to the standards of a four-year undergraduate program.
2. Possess intermediate analytical skills in music theory and an understanding of how those skills inform music performance.
3. Acquire a fundamental understanding of the relationship between music history and music performance.
4. Develop superior technical collaborative skills in the student’s major area through a combination of practice, coaching, and rehearsal in large and small ensembles.

Requirements for the BMus Degree
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BMus degree must complete:

• The requirements for one major offered by the BMus degree program
• A minimum of 120 credit hours to satisfy degree requirements

All students pursuing the BMus degree in any major must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. These students are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
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<td></td>
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<tr>
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<td>Total Credit Hours Required for the BMus Degree with a Major in Vocal Performance</td>
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### Degree Requirements

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<th>Code</th>
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<tbody>
<tr>
<td>MUSI 211</td>
<td>THEORY I</td>
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<tr>
<td>MUSI 212</td>
<td>THEORY II</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 311</td>
<td>THEORETICAL STUDIES III</td>
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</tr>
<tr>
<td>MUSI 312</td>
<td>THEORETICAL STUDIES IV</td>
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<tr>
<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td>3</td>
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<tr>
<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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</tr>
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<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>VOICE FOR MAJORS (minimum of 8 semesters)</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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</tr>
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<td>THE MODERN ERA</td>
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<td>MEDIEVAL AND RENAISSANCE ERAS</td>
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<tr>
<td>MUSI 431</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES V</td>
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<td>MUSI 432</td>
<td>AURAL SKILLS AND PERFORMANCE TECHNIQUES IV</td>
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<td>MODAL COUNTERPOINT</td>
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<tr>
<td>MUSI 513</td>
<td>ORCHESATION</td>
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<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 515</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 517</td>
<td>MUSIC SINCE 1950</td>
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<td>MUSI 578</td>
<td>FRENCH DICTION</td>
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<td>VOICE REPERTOIRE I</td>
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<td>MUSI 580</td>
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<td>GER 141</td>
<td>FIRST YEAR GERMAN I</td>
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### Music History

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<td>CLASSICAL AND ROMANTIC ERAS</td>
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<td>MUSI 423</td>
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### Individual and Ensemble Study

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<td>MUSI 473</td>
<td>VOICE FOR MAJORS (minimum of 8 semesters)</td>
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<td>MUSI 335</td>
<td>UNDERGRADUATE CHORUS (minimum of 8 semesters)</td>
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<td>MUSI 336</td>
<td>UNDERGRADUATE OPERA WORKSHOP (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 571</td>
<td>VOCAL COACHING (minimum of 2 semesters)</td>
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</tr>
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</table>

### Policies for the BMus Degree

#### Admission

An audition, in person, is required of each undergraduate applicant. A recorded audition may be considered in lieu of a live audition in extreme circumstances. The Shepherd School faculty and the university's Committee on Admission jointly determine admission, the latter basing its evaluation on successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities also must provide an audition, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

#### Academic Standards

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### Grading Policy

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student will be discontinued as a BMus degree seeking student and
merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors, a grade of “C+” or lower
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lower in any advanced music theory course is considered unsatisfactory
and will be evaluated as noted above.

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requirements.

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For additional information, please see the School of Music website
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Opportunities for the BMus Degree
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of both the BMus and MMus degrees concurrently. Application to this
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according to major area.

The first five semesters of course work in this program parallel the core
curriculum of the bachelor’s degrees. The sixth semester is a transitional
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Other Musical Opportunities
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A visiting lecture series, a professional concert series, and numerous
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opportunities for students to enjoy a wide spectrum of music.

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honors, please see Latin Honors (p. 47) (summa cum laude, magna cum
laude, and cum laude) and Distinction in Research and Creative Work
(p. 47). Some departments have department-specific Honors awards or
designations.

For additional information, please see the School of Music website
at: http://music.rice.edu

Doctor of Musical Arts (DMA) Degree
in the field of Cello Performance

Program Learning Outcomes for the DMA
Degree
Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or
composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory
and a profound understanding of how those skills inform music
performance.
3. Demonstrate a thorough understanding of the relationship between
music history and music performance with greater familiarity of a
wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their
professional-level performance skills.
5. Develop working knowledge of and have experience with both
classroom teaching and studio teaching methods at the conservatory
and university levels.

Requirements for the DMA Degree
For general university requirements, see Graduate Degrees (p. 49).
Students pursuing the DMA degree must complete:
• A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Cello Performance

Summary

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<th>Title</th>
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Degree Requirements

Performance Requirements

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<td>MUSI 695</td>
<td>VIOLONCELLO FOR MAJORS-ADVANCED (minimum of 8 semesters)</td>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<td>MUSI 751</td>
<td>DOCTORAL RECITAL</td>
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Field of Study Specific Requirements

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<tr>
<td>MUSI 492</td>
<td>STRING TECHNOLOGY</td>
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DMA Core Requirements

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<tr>
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<td>CLASSROOM PEDAGOGY</td>
<td>3</td>
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<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 733</td>
<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
<td>3</td>
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<td>MUSI 735</td>
<td>DOCTORAL SEMINAR II: REPERTORY</td>
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<td>SOLO REPERTORY FOR DOCTORAL STUDENTS</td>
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<td>MUSI 738</td>
<td>DOCTORAL INDIVIDUAL PROJECT</td>
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<td>MUSI 739</td>
<td>PEDAGOGY FOR DOCTORAL STUDENTS</td>
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Academic Coursework

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<table>
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<td>RENAISSANCE MUSIC</td>
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<tr>
<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td></td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td></td>
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<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<tr>
<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
<td></td>
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<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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Select 2 courses from the following: 6

<table>
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<tr>
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<tr>
<td>MUSI 432</td>
<td>GRADUATE AURAL SKILLS REVIEW</td>
<td></td>
</tr>
<tr>
<td>MUSI 281</td>
<td>SECONDARY PIANO</td>
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</table>

Elective Requirements

Select 11 credit hours at the 300-level or above 11

Classroom Teaching

Students must complete the Classroom Teaching requirement

Examinations

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency
- Written and oral qualifying examinations

Doctoral Document

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tr>
<td>MUSI 750</td>
<td>DOCTORAL DOCUMENT (minimum of 2 semesters)</td>
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</tbody>
</table>

Total Credit Hours 90

Footnotes and Additional Information

1 At least six of the required eight semesters of MUSI 695 Violoncello for Majors-Advanced must be taken residency as a DMA student.

2 Students pursuing the DMA degree on a string instrument must be enrolled in MUSI 635 Advanced Orchestra during four of their six semesters of residency. Within those four semesters are eight rotations which are generally fulfilled by two chamber orchestra rotations each semester. The student in consultation with their major teacher may choose from Chamber Orchestra, Symphony Orchestra, Opera Orchestra or the Modular Ensemble Framework (MEF) for up to four of the eight rotations. They may also elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.

3 Five (5) doctoral recitals performed while in residency as a DMA student as follows:
   - Two (2) Solo recitals
   - One (1) Lecture recital
   - One (1) Chamber Music recital
   - One (1) Concerto with orchestra

4 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.

2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.

5 Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.

6 Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count towards the total number of hours required for the degree.

7 The doctoral document must be publicly defended.
MUSI 534  PROGRAM MUSIC IN THE 19TH CENTURY
MUSI 537  SATIE, COCTEAU, & LES SIX: PARIS IN THE 1920S AND BEYOND
MUSI 543  MUSIC AND MODERNISM IN FRANCE
MUSI 551  MUSIC OF RICHARD STRAUSS
MUSI 552  WORDS AND MUSIC
MUSI 621  SELECTED STUDIES IN MUSIC HISTORY
MUSI 622  EARLY OPERA
MUSI 623  J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION
MUSI 624  SEMINAR ON A SELECTED COMPOSER
MUSI 625  MOZART OPERAS
MUSI 626  THE CLASSICAL STYLE
MUSI 627  ROMANTIC SONGS AND PIANO PIECES
MUSI 721  MUSIC OF SCHOENBERG
MUSI 722  MUSIC OF STRAVINSKY

Music Theory Courses
Select 2 from the following:

MUSI 316  EXPERIMENTAL SOUND AND VIDEO
MUSI 378  CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC
MUSI 403  BASIC ELECTRONIC MUSIC
MUSI 404  ELECTRONIC MUSIC COMPOSITION
MUSI 405  MUSIC BUSINESS AND LAW
MUSI 416  ORCHESTRATION
MUSI 417  MUSIC FOR MEDIA
MUSI 512  ANALYTICAL SYSTEMS
MUSI 513  MODAL COUNTERPOINT
MUSI 514  SCORE READING AND THEORY AT THE KEYBOARD
MUSI 516  ADVANCED ORCHESTRATION
MUSI 517  EARLY MODERN MASTERS
MUSI 605  ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS
MUSI 606  ADVANCED COMPUTER SOUND SYNTHESIS
MUSI 611  CLASSROOM PEDAGOGY
MUSI 613  TONAL COUNTERPOINT
MUSI 614  SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION
MUSI 615  MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION
MUSI 617  MUSIC SINCE 1950
MUSI 711  ANALYTICAL APPROACHES
MUSI 712  SEMINAR IN ADVANCED ANALYSIS
MUSI 713  SPECIAL TOPICS IN ADVANCED ANALYSIS
MUSI 723  AESTHETICS OF MUSIC

Grading Policy
A minimum grade of “B-“ is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

For additional information, please see the School of Music website: http://music.rice.edu

Opportunities for the DMA Degree
Other Musical Opportunities
Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu

Doctor of Musical Arts (DMA) Degree in the field of Clarinet Performance

Program Learning Outcomes for the DMA Degree
Upon completing the DMA degree, students will be able to:
1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Graduate Degrees (p. 49). Students pursuing the DMA degree must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Clarinet Performance

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
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Total Credit Hours Required for the DMA Degree in the field of Clarinet Performance 90

Degree Requirements

Performance Requirements

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<td>CLARINET FOR MAJORS-ADVANCED (minimum of 8 semesters)</td>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<td>MUSI 751</td>
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DMA Core Requirements

<table>
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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
<td>3</td>
</tr>
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<td>MUSI 733</td>
<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
<td>3</td>
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<tr>
<td>MUSI 735</td>
<td>DOCTORAL SEMINAR II: REPERTORY</td>
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<tr>
<td>MUSI 736</td>
<td>SOLO REPERTORY FOR DOCTORAL STUDENTS</td>
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<td>MUSI 738</td>
<td>DOCTORAL INDIVIDUAL PROJECT</td>
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<tr>
<td>MUSI 739</td>
<td>PEDAGOGY FOR DOCTORAL STUDENTS</td>
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</tbody>
</table>

Academic Coursework

Select 4 courses from the Music History course offerings (see below for course list) 12
Select 2 courses from the Music Theory course offerings (see below for course list) 6

Elective Requirements

Select 13 credit hours at the 300-level or above 5 13

Classroom Teaching

Students must complete the Classroom Teaching requirement

Examinations

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency
- Written and oral qualifying examinations

Doctoral Document

MUSI 750 | DOCTORAL DOCUMENT (minimum of 2 semesters) | 3

Footnotes and Additional Information

1 At least six of the required eight semesters of MUSI 655 *Clarinet for Majors-Advanced* must be taken during residency as a DMA student.

2 Students pursuing the DMA degree on a wind instrument or percussion must be enrolled in MUSI 635 *Advanced Orchestra* during four of their six semesters of residency. They may elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.

3 Doctoral recital requirements can be fulfilled in any of the following combinations for four (4) total performed while a DMA student:

- three (3) solo recital and one (1) lecture recital;
- two (2) solo recitals, one (1) lecture recital, one (1) mock audition

4 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.

5 2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.

6 Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 *Graduate Independent Study* can count towards degree requirements.

7 Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. All doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 *Graduate Aural Skills Review* and/or MUSI 281 *Secondary Piano* must be taken, but neither will count towards the total number of hours required for the degree.

The doctoral document must be publicly defended.

Music History and Theory Courses

<table>
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<tr>
<th>Code</th>
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<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
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<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
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<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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</table>

2017-2018 General Announcements
Policies for the DMA Degree

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of "C+" or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of "C+" or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of "C+" or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

For additional information, please see the School of Music website: http://music.rice.edu

Opportunities for the DMA Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu

Doctor of Musical Arts (DMA) Degree in the field of Composition

Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Graduate Degrees (p. 49).

Students pursuing the DMA degree must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Composition

Summary

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Degree Requirements

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<tr>
<td>MUSI 601</td>
<td>COMPOSITION FOR MAJORS ADVANCED AND GRADUATES (minimum of 6 semesters)</td>
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<td>MUSI 603</td>
<td>GRADUATE COMPOSITION SEMINAR (minimum of 6 semesters)</td>
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<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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Performance Requirements

Select 8 credit hours in Performance coursework

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<tr>
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<td>DMA Core Requirements</td>
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<tr>
<th>Code</th>
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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
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<td>MUSI 735</td>
<td>DOCTORAL SEMINAR II: REPERTORY</td>
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<tr>
<td>MUSI 738</td>
<td>DOCTORAL INDIVIDUAL PROJECT</td>
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</table>

Footnotes and Additional Information

1. Two (2) doctoral recitals of original compositions.
2. Performance coursework may be satisfied by any combination of private instrumental and/or vocal study (such as MUSI 251:297 except MUSI 281 Secondary Piano, MUSI 351:373, MUSI 381:398), classes in conducting or score reading, or performance in large ensembles or sonata class (such as MUSI 334, MUSI 436, MUSI 444, MUSI 502, MUSI 514, MUSI 585 MUSI 636, or MUSI 640). Piano lessons are strongly recommended.
3. 6 courses (3 credit hours each) comprise the 18 credit hours required of Music History coursework.
4. 4 courses (3 credit hours each) comprise the 12 credit hours required of Music Theory coursework.
5. Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count toward degree requirements.
6. Students are required to write an original composition of substantial dimensions. The composition must be publicly defended and submitted, following the university’s regulations and procedures for candidacy, oral examination, and thesis (p. 64).
### BIBLIOGRAPHY AND RESEARCH METHODS

- MUSI 523

### AMERICAN MUSIC

- MUSI 524

### PERFORMANCE PRACTICES SEMINAR

- MUSI 525

### WOMEN IN MUSIC

- MUSI 526

### TOPICS IN EARLY MUSIC

- MUSI 528

### TOPICS IN THE 17TH AND 18TH CENTURIES

- MUSI 529

### TOPICS IN 19TH AND 20TH CENTURIES

- MUSI 530

### MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD

- MUSI 534

### PROGRAM MUSIC IN THE 19TH CENTURY

- MUSI 537

### MUSIC AND MODERNISM IN FRANCE

- MUSI 543

### MUSIC OF RICHARD STRAUSS

- MUSI 551

### WORDS AND MUSIC

- MUSI 552

### SELECTED STUDIES IN MUSIC HISTORY

- MUSI 621

### EARLY OPERA

- MUSI 622

### J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION

- MUSI 623

### SEMINAR ON A SELECTED COMPOSER

- MUSI 624

### MOZART OPERAS

- MUSI 625

### THE CLASSICAL STYLE

- MUSI 626

### ROMANTIC SONGS AND PIANO PIECES

- MUSI 627

### MUSIC OF SCHOENBERG

- MUSI 671

### MUSIC SINCE 1950

- MUSI 723

### MUSIC OF STRAVINSKY

- MUSI 724

### ANALYTICAL APPROACHES

- MUSI 711

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### SEMINAR IN ADVANCED ANALYSIS

- MUSI 712

### SPECIAL TOPICS IN ADVANCED ANALYSIS

- MUSI 713

### AESTHETICS OF MUSIC

- MUSI 714

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### Policies for the DMA Degree

#### Academic Standards

**Curriculum and Degree Requirements**

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**

A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

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### Opportunities for the DMA Degree

#### Other Musical Opportunities

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Doctor of Musical Arts (DMA) Degree in the field of Double Bass Performance

Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Graduate Degrees (p. 49).

Students pursuing the DMA degree must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Double Bass Performance

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
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<td>Total Credit Hours Required for the DMA Degree in the field of Double Bass Performance</td>
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Degree Requirements

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<tr>
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<td>Performance Requirements</td>
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<tr>
<td>MUSI 697</td>
<td>DOUBLE BASS FOR MAJORS-ADVANCED (minimum of 8 semesters)</td>
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<td>Field of Study Specific Requirements</td>
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<td>MUSI 492</td>
<td>STRING TECHNOLOGY</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 733</td>
<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
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<td>Examinations</td>
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<td></td>
<td>Written and oral qualifying examinations</td>
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<td>Doctoral Document</td>
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<tr>
<td>MUSI 750</td>
<td>DOCTORAL DOCUMENT (minimum of 2 semesters)</td>
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</tbody>
</table>

Total Credit Hours 90

Footnotes and Additional Information

1. At least six of the required eight semesters of MUSI 697 Double Bass for Majors-Advanced must be taken during residency as a DMA student.
2. Students pursuing the DMA degree on a string instrument must be enrolled in MUSI 635 Advanced Orchestra during four of their six semesters of residency. Within those four semesters are eight rotations which are generally fulfilled by two chamber orchestra rotations each semester. The student in consultation with their major teacher may choose from Chamber Orchestra, Symphony Orchestra, Opera Orchestra or the Modular Ensemble Framework (MEF) for up to four of the eight rotations. They may also elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.
3. Four (4) doctoral recitals performed while in residency as a DMA student as follows:
   - Two (2) Solo recitals
   - One (1) Lecture recital
   - One (1) Chamber Music recital
4. 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.
5. 2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.
6. Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.
Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count towards the total number of hours required for the degree.

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<td>RENAISSANCE MUSIC</td>
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<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<td>MUSIC AND MODERNISM IN FRANCE</td>
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<td>MUSI 552</td>
<td>WORDS AND MUSIC</td>
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<td>SELECTED STUDIES IN MUSIC HISTORY</td>
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<td>MUSI 622</td>
<td>EARLY OPERA</td>
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<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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### Policies for the DMA Degree

#### Academic Standards

**Curriculum and Degree Requirements**

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**

A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner.

A music major who receives a grade of "C+" or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of "C+" or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

**Note:** For music history and musicology majors a grade of "C+" or lower in any music history course is considered unsatisfactory and will be evaluated as above.

**Graduate degree requirement:** a minimum grade point average of 2.67 is necessary for graduation.

**Leaves of Absence and Voluntary Withdrawal**

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.
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**Opportunities for the DMA Degree**

**Other Musical Opportunities**

**Lectures and Performances**

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: [http://music.rice.edu](http://music.rice.edu)

**Doctor of Musical Arts (DMA) Degree in the field of Flute Performance**

**Program Learning Outcomes for the DMA Degree**

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

**Requirements for the DMA Degree**

For general university requirements, see Graduate Degrees (p. 49). Students pursuing the DMA degree must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

**Requirements for the DMA Degree in the field of Flute Performance**

**Summary**

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<thead>
<tr>
<th>Code</th>
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**Degree Requirements**

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<td>MUSI 635</td>
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<td>DMA Core Requirements</td>
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<td>ANALYTICAL APPROACHES</td>
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<td>Select 2 courses from the Music Theory course offerings (see below for course list)</td>
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<td>Piano proficiency</td>
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<td>Total Credit Hours</td>
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</table>

**Footnotes and Additional Information**

1. At least six of the required eight semesters of MUSI 651 *Flute for Majors-Advanced* must be taken during residency as a DMA student.
2. Students pursuing the DMA degree on a wind instrument or percussion must be enrolled in MUSI 635 *Advanced Orchestra* during four of their six semesters of residency. They may elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.
3. Doctoral recital requirements can be fulfilled in any of the following combinations for four (4) total performed while a DMA student:
   - three (3) solo recitals and one (1) lecture recital; or
   - two (2) solo recitals, one (1) lecture recital, one (1) mock audition

4. 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.
   2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.
Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.

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### Music History and Theory Courses

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Doctor of Musical Arts (DMA) Degree in the field of Oboe Performance
Program Learning Outcomes for the DMA Degree
Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree
For general university requirements, see Graduate Degrees (p. 49). Students pursuing the DMA degree must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Oboe Performance

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<td>DOCTORAL RECITAL</td>
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<td>OBOE TECHNOLOGY</td>
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<td>MUSI 738</td>
<td>DOCTORAL INDIVIDUAL PROJECT</td>
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<td>MUSI 739</td>
<td>PEDAGOGY FOR DOCTORAL STUDENTS</td>
<td>3</td>
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</table>

Academic Coursework
Select 4 courses from the Music History course offerings (see below for course list) 12
Select 2 courses from the Music Theory course offerings (see below for course list) 6

Elective Requirements
Select 11 credit hours at the 300-level or above 11

Classroom Teaching
Students must complete the Classroom Teaching requirement

Examinations
Students must demonstrate the following proficiencies:
- Piano proficiency
- Aural skills proficiency
- Written and oral qualifying examinations

Doctoral Document
MUSI 750 | DOCTORAL DOCUMENT (minimum of 2 semesters) | 3 |

Total Credit Hours
90

Footnotes and Additional Information

1 At least six of the required eight semesters of MUSI 653 Oboe for Majors-Advanced must be taken during residency as a DMA student.
Students pursuing the DMA degree on a wind instrument or percussion must be enrolled in MUSI 635 Advanced Orchestra during four of their six semesters of residency. They may elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.

Four (4) doctoral recitals performed while in residency as a DMA student as follows:
- Two (2) Solo recitals
- One (1) Lecture recital
- One (1) Mock Audition

4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.
2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.

Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate independent Study can count towards degree requirements.

Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count towards the total number of hours required for the degree.

The doctoral document must be publicly defended.

Music History and Theory Courses

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### Policies for the DMA Degree

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For additional information, please see the School of Music website: http://music.rice.edu

Opportunities for the DMA Degree

Other Musical Opportunities
Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu

Doctor of Musical Arts (DMA) Degree in the field of Organ Performance

Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Graduate Degrees (p. 49).

Students pursuing the DMA degree must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Organ Performance

Summary

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Degree Requirements

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<td>Select 4 courses from the Music History course offerings (see below for course list)</td>
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<tr>
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<td>Select 2 courses from the Music Theory course offerings (see below for course list)</td>
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<td></td>
<td>Elective Requirements</td>
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<td>Select 11 credit hours at the 300-level or above</td>
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<td>Students must complete the Classroom Teaching requirement</td>
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<td></td>
<td>Examinations</td>
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<tr>
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<td>Students must demonstrate the following proficiencies:</td>
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2017-2018 General Announcements
Aural skills proficiency
Written and oral qualifying examinations

**Doctoral Document**

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<td>MUSI 750</td>
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</table>

Total Credit Hours 92

**Footnotes and Additional Information**

1. At least six of the required eight semesters of MUSI 683 Organ for Majors-Advanced must be taken during residency as a DMA student.

2. MUSI 736 Solo Repertory for Doctoral Students is required for a minimum of 2 semesters (1 semester as a Performance Requirement and 1 semester as a DMA Core Requirement).

3. Four (4) doctoral recitals performed while in residency as a DMA student as follows:
   - Two (2) Solo recitals
   - One (1) Lecture recital
   - One (1) Chamber recital

4. 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.

2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.

5. Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.

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7. The doctoral document must be publicly defended.

**Music History and Theory Courses**

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Opportunities for the DMA Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu

Doctor of Musical Arts (DMA) Degree in the field of Percussion Performance

Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Graduate Degrees (p. 49). Students pursuing the DMA degree must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Percussion Performance

Summary

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Degree Requirements

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Performance Requirements

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DMA Core Requirements

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<td>MUSI 739</td>
<td>PEDAGOGY FOR DOCTORAL STUDENTS</td>
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</table>
Academic Coursework

Select 4 courses from the Music History course offerings (see below for course list)  
Select 2 courses from the Music Theory course offerings (see below for course list)  

Elective Requirements

Select 13 credit hours at the 300-level or above  

Classroom Teaching

Students must complete the Classroom Teaching requirement  

Examinations

Students must demonstrate the following proficiencies:
- Piano proficiency
- Aural skills proficiency
- Written and oral qualifying examinations

Doctoral Document

MUSI 750 DOCTORAL DOCUMENT (minimum of 2 semesters)  

Total Credit Hours  

Footnotes and Additional Information

At least 6 of the required 8 semesters of MUSI 671 Percussion for Majors-Advanced must be taken during residency as a DMA student.

Students pursuing the DMA degree on a wind instrument or percussion must be enrolled in MUSI 635 Advanced Orchestra during four of their six semesters of residency. They may elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.

Four (4) doctoral recitals performed while in residence as a DMA student as follows:
- Two (2) Solo recitals
- One (1) Chamber Music recital
- One (1) Lecture recital

4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.

2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.

Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.

Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count towards the total number of hours required for the degree.

The doctoral document must be publicly defended.

Music History and Theory Courses

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Doctor of Musical Arts (DMA) Degree
in the field of Piano Performance

Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Graduate Degrees (p. 49).

Students pursuing the DMA degree must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Piano Performance

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Degree Requirements

Performance Requirements

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DMA Core Requirements

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Opportunities for the DMA Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: [http://music.rice.edu](http://music.rice.edu)
Rice University

MUSI 735 DOCTORAL SEMINAR II: REPERTORY 3
MUSI 736 SOLO REPERTORY FOR DOCTORAL STUDENTS 2
MUSI 738 DOCTORAL INDIVIDUAL PROJECT 3
MUSI 739 PEDAGOGY FOR DOCTORAL STUDENTS 3

Academic Coursework 4
Select 4 courses from the Music History course offerings (see below for course list) 12
Select 2 courses from the Music Theory course offerings (see below for course list) 6

Elective Requirements
Select 15 credit hours at the 300-level or above 5 15

Classroom Teaching
Students must complete the Classroom Teaching requirement

Examinations 6
Students must demonstrate the following proficiencies:
- Aural skills proficiency
- Written and oral qualifying examinations

Doctoral Document
MUSI 750 DOCTORAL DOCUMENT (minimum of 2 semesters) 7

Total Credit Hours 90

Footnotes and Additional Information
1 At least six of the required eight semesters of MUSI 681 Piano for Majors-Advanced must be taken during residency as a DMA student.
2 MUSI 736 Solo Repertory for Doctoral Students is required for a total of 3 semesters (2 semesters for Performance Requirements and 1 semester for DMA Core Requirements).
3 Five (5) doctoral recitals performed while in residence as a DMA student as follows:
   - Two (2) Solo recitals
   - One (1) Lecture recital
   - One (1) Chamber Music recital
   - One (1) Concerto with Orchestra
4 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.
   2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.
5 Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.
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7 The doctoral document must be publicly defended.

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2017-2018 General Announcements
Doctor of Musical Arts (DMA) Degree in the field of Viola Performance

Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Graduate Degrees (p. 49). Students pursuing the DMA degree must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Viola Performance

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**Field of Study Specific Requirements**

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**Academic Coursework**

Select 4 courses from the Music History course offerings (see below for course list) 12
Select 2 courses from the Music Theory course offerings (see below for course list) 6

**Elective Requirements**

Select 11 credit hours at the 300-level or above 11

**Classroom Teaching**

Students must complete the Classroom Teaching requirement

**Examinations**

Students must demonstrate the following proficiencies:
- Piano proficiency
- Aural skills proficiency
- Written and oral qualifying examinations

**Doctoral Document**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 750</td>
<td>DOCTORAL DOCUMENT (minimum of 2 semesters)</td>
<td>3</td>
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</table>

**Total Credit Hours**

90

**Footnotes and Additional Information**

1 At least 6 of the required 8 semesters of MUSI 693 Viola for Majors-Advanced must be taken during residency as a DMA student.

2 Students pursuing the DMA degree on a string instrument must be enrolled in MUSI 635 Advanced Orchestra during four of their six semesters of residency. Within those four semesters are eight rotations which are generally fulfilled by two chamber orchestra rotations each semester. The student in consultation with their major teacher may choose from Chamber Orchestra, Symphony Orchestra, Opera Orchestra or the Modular Ensemble Framework (MEF) for up to four of the eight rotations. They may also elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.

3 Doctoral recital requirements can be fulfilled in any of the following combinations for five (5) total performed while a DMA student:
- two (2) solo recitals, one (1) lecture recital, one (1) chamber music recital, and one (1) concerto with orchestra; or
- three (3) solo recitals, one (1) lecture recital, one (1) chamber music recital; or
- two (2) solo recitals, one (1) lecture recital, two (2) chamber music recitals

4 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.

2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.

5 Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.

6 Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count towards the total number of hours required for the degree.

7 The doctoral document must be publicly defended.

**Music History or Theory Courses**

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<tr>
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<td>MUSIC OF THE MIDDLE AGES</td>
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<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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<td>MUSI 524</td>
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<td>WOMEN IN MUSIC</td>
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<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<td>SELECTED STUDIES IN MUSIC HISTORY</td>
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<td>MUSI 622</td>
<td>EARLY OPERA</td>
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<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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**Doctor of Musical Arts (DMA) Degree in the field of Violin Performance**

### Music Theory Courses

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<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<td>BASIC ELECTRONIC MUSIC</td>
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<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>CLASSROOM PEDAGOGY</td>
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<td>TONAL COUNTERPOINT</td>
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<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<td>MUSI 711</td>
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<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
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</table>

### Policies for the DMA Degree

#### Academic Standards

**Curriculum and Degree Requirements**

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**

A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

**Note:** For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

**Graduate degree requirement:** a minimum grade point average of 2.67 is necessary for graduation.

#### Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

For additional information, please see the School of Music website: [http://music.rice.edu](http://music.rice.edu)

### Opportunities for the DMA Degree

#### Other Musical Opportunities

**Lectures and Performances**

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: [http://music.rice.edu](http://music.rice.edu)

### Doctor of Musical Arts (DMA) Degree in the field of Violin Performance

#### Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Graduate Degrees (p. 49). Students pursuing the DMA degree must complete:

- A minimum of 90 credit hours beyond the bachelor’s degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Violin Performance

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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Degree Requirements

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<th>Code</th>
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<td>Performance Requirements</td>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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Field of Study Specific Requirements

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<tr>
<td>MUSI 492</td>
<td>STRING TECHNOLOGY</td>
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DMA Core Requirements

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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<tr>
<td>MUSI 733</td>
<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
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<td>MUSI 735</td>
<td>DOCTORAL SEMINAR II: REPERTORY</td>
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<td>MUSI 736</td>
<td>SOLO REPERTORY FOR DOCTORAL STUDENTS</td>
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<td>MUSI 738</td>
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<tr>
<td>MUSI 739</td>
<td>PEDAGOGY FOR DOCTORAL STUDENTS</td>
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</tbody>
</table>

Academic Coursework

Select 4 courses from the Music History course offerings (see below for course list) 12
Select 2 courses from the Music Theory course offerings (see below for course list) 6

Elective Requirements

Select 11 credit hours at the 300-level or above 11

Classroom Teaching

Students must complete the Classroom Teaching requirement

Examinations

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency
- Written and oral qualifying examinations

Doctoral Document

MUSI 750 DOCTORAL DOCUMENT (minimum of 2 semesters) 3

Total Credit Hours 90

Footnotes and Additional Information

1. At least 6 of the required 8 semesters of MUSI 691 Violin for Majors-Advanced must be taken during residency as a DMA student.

2. Students pursuing the DMA degree on a string instrument must be enrolled in MUSI 635 Advanced Orchestra during four of their six semesters of residency. Within those four semesters are eight rotations which are generally fulfilled by two chamber orchestra rotations each semester. The student in consultation with their major teacher may choose from Chamber Orchestra, Symphony Orchestra, Opera Orchestra or the Modular Ensemble Framework (MEF) for up to four of the eight rotations. They may also elect to enroll in one or two additional semesters or be required to do so by their major teacher. The student in consultation with their major teacher will choose the semesters for participation.

3. Five (5) doctoral recitals performed while in residency as a DMA student as follows:
   - Two (2) Solo recitals
   - One (1) Lecture recital
   - One (1) Chamber Music recital
   - One (1) Concerto with orchestra

4. 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.

2 courses (3 credit hours each) comprise the 6 credit hours required of Music Theory coursework.

5. Graduate academic coursework taken elsewhere may be transferred with the approval of the relevant Department Chair. Additional hours of required performance coursework may not count toward the elective requirement. A maximum of three (3) credit hours of MUSI 649 Graduate Independent Study can count towards degree requirements.

6. Diagnostic examinations in music history and music theory are given prior to admission to The Shepherd School, and play an important role in the admissions decision. Weaknesses in these areas will be addressed by courses designated by the chairs of the respective departments. These will count within either the Academic Coursework or Elective category. Doctoral students must also pass proficiency exams in aural skills and piano. These exams are scheduled at the beginning of each academic year. If required, MUSI 432 Graduate Aural Skills Review and/or MUSI 281 Secondary Piano must be taken, but neither will count towards the total number of hours required for the degree.

7. The doctoral document must be publicly defended.

Music History and Theory Courses

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<tr>
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</tr>
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<tbody>
<tr>
<td>MUSI 422</td>
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<tr>
<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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<tr>
<td>MUSI 524</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
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</table>
Doctor of Musical Arts (DMA) Degree in the field of Vocal Performance

Academic Standards

Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner:

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If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

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For additional information, please see the School of Music website: http://music.rice.edu

Opportunities for the DMA Degree

Other Musical Opportunities

Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu
Program Learning Outcomes for the DMA Degree

Upon completing the DMA degree, students will be able to:

1. Demonstrate technical and musical competence in performance or composition at a professional level.
2. Develop highly developed analytical skills in advanced music theory and a profound understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance with greater familiarity of a wide variety of historical and contemporary performance practices.
4. Develop career development skills that complement their professional-level performance skills.
5. Develop working knowledge of and have experience with both classroom teaching and studio teaching methods at the conservatory and university levels.

Requirements for the DMA Degree

For general university requirements, see Graduate Degrees (p. 49). Students pursuing the DMA degree must complete:

- A minimum of 90 credit hours beyond the bachelor's degree to satisfy degree requirements.

Requirements for the DMA Degree in the field of Vocal Performance

Summary

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<th>Code</th>
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<tr>
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Degree Requirements

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<td>MUSI 570 ADVANCED OPERA STUDIES (minimum of 2 semesters)</td>
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<td>MUSI 572 GRADUATE OPERA PERFORMANCE (minimum of 2 semesters)</td>
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Academic Coursework

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<tr>
<td></td>
<td>Select 2 courses from the Music Theory course offerings (see below for course list)</td>
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<td>Select 15-17 credit hours at the 300-level or above</td>
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Examinations

Students must demonstrate the following proficiencies:
- Piano proficiency
- Aural skills proficiency
- Written and oral qualifying examinations

Doctoral Document

<table>
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<tbody>
<tr>
<td>MUSI 750</td>
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Total Credit Hours

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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>90</td>
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</tbody>
</table>

Footnotes and Additional Information

1. At least 6 of the required 8 semesters of MUSI 673 Voice for Majors-Advanced must be taken during residency as a DMA student.
2. Four (4) doctoral recitals performed while in residency as a DMA student as follows:
   - Two (2) Solo recitals
   - One (1) Lecture recital
   - One (1) Chamber recital
3. 4 courses (3 credit hours each) comprise the 12 credit hours required of Music History coursework.
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Music History and Theory Courses

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<tr>
<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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Doctor of Musical Arts (DMA) Degree in the field of Vocal Performance

MUSI 524 AMERICAN MUSIC
MUSI 525 PERFORMANCE PRACTICES SEMINAR
MUSI 526 WOMEN IN MUSIC
MUSI 527 TOPICS IN EARLY MUSIC
MUSI 528 TOPICS IN THE 17TH AND 18TH CENTURIES
MUSI 529 TOPICS IN 19TH AND 20TH CENTURIES
MUSI 530 MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD
MUSI 534 PROGRAM MUSIC IN THE 19TH CENTURY
MUSI 537 SATIE, COCTEAU, & LES SIX: PARIS IN THE 1920s AND BEYOND
MUSI 543 MUSIC AND MODERNISM IN FRANCE
MUSI 551 MUSIC OF RICHARD STRAUSS
MUSI 552 WORDS AND MUSIC
MUSI 554 PROGRAM MUSIC IN THE 19TH CENTURY
MUSI 557 SATIE, COCTEAU, & LES SIX: PARIS IN THE 1920s AND BEYOND
MUSI 561 J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION
MUSI 564 SEMINAR ON A SELECTED COMPOSER
MUSI 565 MOZART OPERAS
MUSI 568 THE CLASSICAL STYLE
MUSI 571 MUSIC OF SCHOENBERG
MUSI 572 MUSIC OF STRAVINSKY

Music Theory Courses

MUSI 316 EXPERIMENTAL SOUND AND VIDEO
MUSI 378 CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC
MUSI 403 BASIC ELECTRONIC MUSIC
MUSI 404 ELECTRONIC MUSIC COMPOSITION
MUSI 405 MUSIC BUSINESS AND LAW
MUSI 416 ORCHESTRATION
MUSI 417 MUSIC FOR MEDIA
MUSI 512 ANALYTICAL SYSTEMS
MUSI 513 MODAL COUNTERPOINT
MUSI 514 SCORE READING AND THEORY AT THE KEYBOARD
MUSI 516 ADVANCED ORCHESTRATION
MUSI 517 EARLY MODERN MASTERS
MUSI 605 ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS
MUSI 606 ADVANCED COMPUTER SOUND SYNTHESIS
MUSI 611 CLASSROOM PEDAGOGY
MUSI 613 TONAL COUNTERPOINT
MUSI 614 SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION
MUSI 615 MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION
MUSI 617 MUSIC SINCE 1950
MUSI 711 ANALYTICAL APPROACHES
MUSI 712 SEMINAR IN ADVANCED ANALYSIS
MUSI 713 SPECIAL TOPICS IN ADVANCED ANALYSIS
MUSI 723 AESTHETICS OF MUSIC

Policies for the DMA Degree

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

For additional information, please see the School of Music website: http://music.rice.edu

Opportunities for the DMA Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu
Master of Music (MMus) Degree in the field of Bassoon Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree

The MMUS degrees can be thesis or non-thesis master's degrees depending on the field declared. For general university requirements for thesis master's degrees, please see Thesis Master's Degrees (p. 67). For general university requirements for non-thesis master's degrees, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary

<table>
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<th>Code</th>
<th>Title</th>
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<tr>
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<td>Total Credit Hours Required for the MMus Degree in the field of Bassoon Performance</td>
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Degree Requirements

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<tr>
<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
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Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see below for course list)
Select 1 additional course from Music Theory or Music History courses (see below for course list)
Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list)
Select 6 credit hours from the Elective Requirements (see below for course list)

Proficiencies

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours

44

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

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<td>MUSIC SINCE 1950</td>
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Additional Music Theory Courses

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<td>MUSIC BUSINESS AND LAW</td>
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<td>ORCHESTRATION</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 605</td>
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<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 713</td>
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### Master of Music (MMus) Degree in the field of Bassoon Performance

#### Music History Courses

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<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
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<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>MUSI 534</td>
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<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
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<td>MUSI 551</td>
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<td>MUSI 552</td>
<td>WORDS AND MUSIC</td>
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<td>MUSI 621</td>
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<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<td>MOZART OPERAS</td>
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<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
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<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
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<td>MUSIC OF STRAVINSKY</td>
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#### Music Career and Skills Enhancement Courses

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<th>Course Title</th>
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<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
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<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
</tr>
<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
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<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
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<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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#### Elective Requirements

Select 6 credit hours from the following:
- Any course at the 300-level or above
- Any language course at the 100-level or above
- Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
- MUSI 342 RICE JAZZ ENSEMBLE
- MUSI 345 APPLIED STUDIES IN JAZZ
- MUSI 381 CONCENTRATION PIANO
- MUSI 436 COLLEGium MUSICUM
- MUSI 444 PRACTicum IN CONTEMPORARY MUSIC
- MUSI 585 SONATA CLASS
- MUSI 649 GRADUATE INDEPENDENT STUDY

### Footnotes and Additional Information

1. No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2. Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

### Policies for the MMus Degree

**Admission**

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

**Academic Standards**

**Curriculum and Degree Requirements**

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**

A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:
A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudit. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website: http://music.rice.edu

Opportunities for the MMus Degree
Other Musical Opportunities
Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu

Master of Music (MMus) Degree in the field of Cello Performance
Program Learning Outcomes for the MMus Degree
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree
The MMUS degrees can be thesis or non-thesis master’s degrees depending on the field declared. For general university requirements for thesis master’s degrees, please see Thesis Master’s Degrees (p. 67). For general university requirements for non-thesis master’s degrees, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary

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<th>Code</th>
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Degree Requirements

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<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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<td>MUSI 741</td>
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<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
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Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see below for course list) 3

Select 1 additional course from the Music Theory or Music History courses (see below for course lists) 3

Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list) 4

Select 6 credit hours as Elective Requirements (see below for course list) 6

Proficiencies 2

Students must demonstrate the following proficiencies:

Piano proficiency
Aural skills proficiency

Total Credit Hours 44

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

Approved Music Theory Courses

Select 1 course from the following:

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<tr>
<td>MUSI 512</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<td>EARLY MODERN MASTERS</td>
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<td>MUSI 613</td>
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Additional Music Theory Courses

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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>MUSIC FOR MEDIA</td>
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<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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MUSI 723 | AESTHETICS OF MUSIC | 3

Music History Courses

Select 1 course from the following (or select 1 additional Music Theory Course):

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Music Career and Skills Enhancement Courses

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MUSI 515  MUSIC ENTREPRENEURSHIP  
MUSI 518  THE ART AND BUSINESS OF STUDIO TEACHING  
MUSI 519  THEMATIC PROGRAMMING: THE ART OF THE RECITAL  
MUSI 532  THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY  
MUSI 540  APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM  

**Elective Requirements**

Select 6 credit hours from the following:

- Any course at the 300-level or above  
- Any language course at the 100-level or above  
- Any additional Music Theory, Music History, or Music Career and Skills Enhancement course  
- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)  
- MUSI 342  RICE JAZZ ENSEMBLE  
- MUSI 345  APPLIED STUDIES IN JAZZ  
- MUSI 381  CONCENTRATION PIANO  
- MUSI 436  COLLEGIUM MUSICUM  
- MUSI 444  PRACTICUM IN CONTEMPORARY MUSIC  
- MUSI 585  SONATA CLASS  
- MUSI 649  GRADUATE INDEPENDENT STUDY  

**Footnotes and Additional Information**

1. No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.  
2. Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

**Policies for the MMus Degree Admission**

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

**Academic Standards**

**Curriculum and Degree Requirements**

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**

A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of "C+" or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of "C+" or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

**Note:** For music history and musicology majors a grade of "C+" or lower in any music history course is considered unsatisfactory and will be evaluated as above.

**Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.**

**Leaves of Absence and Voluntary Withdrawal**

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

**Performance**

Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school's conducted ensembles as assigned.

**Thesis**

A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website: [http://music.rice.edu](http://music.rice.edu)

**Opportunities for the MMus Degree Other Musical Opportunities**

**Lectures and Performances**

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: [http://music.rice.edu](http://music.rice.edu)
Master of Music (MMus) Degree in the field of Clarinet Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree

The MMUS degrees can be thesis or non-thesis master's degrees depending on the field declared. For general university requirements for thesis master's degrees, please see Thesis Master's Degrees (p. 67). For general university requirements for non-thesis master's degrees, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
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Degree Requirements

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<td>Performance Requirements</td>
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<td>CLARINET FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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<td>MUSI 531</td>
<td>ORCHESTRAL REPETOIRE (minimum of 4 semesters)</td>
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<td>MASTER'S RECITAL I</td>
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<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
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</table>

Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see below for course list) 3
Select 1 additional course from the Music Theory or Music History courses (see below for course lists) 3
Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list) 4
Select 6 credit hours from the Elective Requirements (see below for course list) 1

Proficiencies

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours 44

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

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<tr>
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<td>MUSI 613</td>
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<td>Additional Music Theory Courses</td>
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<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<td>MUSI 378</td>
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### MUSI 723 AESTHETICS OF MUSIC

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- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
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- MUSI 649 GRADUATE INDEPENDENT STUDY

### Footnotes and Additional Information

1. No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2. Deficiencies in these areas will result in remedial coursework being added to a student's degree plan.

### Policies for the MMus Degree

#### Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

#### Academic Standards

#### Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

#### Grading Policy

A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner:
A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudit. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website: http://music.rice.edu

Opportunities for the MMus Degree
Other Musical Opportunities

Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu

Master of Music (MMus) Degree in the field of Composition

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree

The MMUS degrees can be thesis or non-thesis master’s degrees depending on the field declared. For general university requirements for thesis master’s degrees, please see Thesis Master’s Degrees (p. 67). For general university requirements for non-thesis master’s degrees, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Composition</td>
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Degree Requirements

<table>
<thead>
<tr>
<th>Composition Requirements</th>
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<tbody>
<tr>
<td>Code</td>
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<tr>
<td>MUSI 601</td>
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<tr>
<td>MUSI 603</td>
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<tr>
<td>MUSI 512</td>
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<tr>
<td>MUSI 513 or MUSI 613</td>
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<td>MUSI 516</td>
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<tr>
<td>MUSI 517</td>
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<tr>
<td>MUSI 617</td>
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</tbody>
</table>
MUSI 403 BASIC ELECTRONIC MUSIC \(^1\) 3
MUSI 404 ELECTRONIC MUSIC COMPOSITION \(^1\) 3
MUSI 641 MASTER'S RECITAL I 0
MUSI 647 MASTER'S THESIS \(^2\) 3

Other Requirements
Select 6 credit hours from the Elective Requirements (see below for course list) \(^3\) 6
Select 2 courses from Performance Coursework (see below for course list) \(^4\) 2-6

Proficiencies \(^5\)
Students must demonstrate the following proficiencies:
- Piano proficiency \(^4\)
- Aural skills proficiency

Total Credit Hours 48-52

Other Requirements
Students must complete 6 credit hours from the Elective Requirements, and 2 courses from the Performance Coursework lists below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td><strong>Elective Requirements</strong></td>
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<tr>
<td></td>
<td>Select 6 credit hours from the following:</td>
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<tr>
<td></td>
<td>Any course at the 300-level or above</td>
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<td>Any language course at the 100-level or above</td>
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<tr>
<td></td>
<td>Any additional Music Theory, Music History, or Music Career and Skills Enhancement course</td>
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<td></td>
<td>Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)</td>
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<tr>
<td></td>
<td>MUSI 342 RICE JAZZ ENSEMBLE</td>
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<td></td>
<td>MUSI 345 APPLIED STUDIES IN JAZZ</td>
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<td>MUSI 381 CONCENTRATION PIANO</td>
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<td>MUSI 649 GRADUATE INDEPENDENT STUDY</td>
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<td><strong>Performance Coursework</strong> (^4)</td>
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<td>Select 2 courses from the following:</td>
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<td>Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)</td>
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<td>Concentration Lessons (any course between MUSI 351 and MUSI 373)</td>
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<td>Concentration Lessons (any course between MUSI 381 and MUSI 397)</td>
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<tr>
<td></td>
<td>MUSI 334 CAMPANILE ORCHESTRA</td>
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<td>MUSI 436 COLLEGIUM MUSICUM</td>
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<td></td>
<td>MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC</td>
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<td></td>
<td>MUSI 502 Conducting: An Overview of Practical Skills</td>
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<td>MUSI 514 Score Reading and Theory at the Keyboard</td>
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<td>MUSI 585 SONATA CLASS</td>
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<td></td>
<td>MUSI 640 RICE CHORALE - ADVANCED</td>
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</tbody>
</table>

Footnotes and Additional Information
\(^1\) Electronic Music courses are chosen following faculty advisement.
\(^2\) The master's thesis must be publicly defended.
\(^3\) No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.
\(^4\) Piano lessons are strongly recommended as the Performance Coursework for MMus students in the field of Composition until piano proficiency is proven. Performance hours may be satisfied by any combination of private instrumental or vocal study, classes in conducting or score reading, or performance in sonata class or large ensembles.
\(^5\) Deficiencies in these areas will result in remedial coursework being added to a student's degree plan.

Policies for the MMus Degree

Admission
For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

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Note: For music history and musicology majors a grade of "C+" or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the
Master of Music (MMus) Degree in the field of Double Bass Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree

The MMUs degrees can be thesis or non-thesis master's degrees depending on the field declared. For general university requirements for thesis master's degrees, please see Thesis Master's Degrees (p. 67). For general university requirements for non-thesis master's degrees, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

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Summary

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<tr>
<th>Code</th>
<th>Title</th>
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Degree Requirements

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<td>MUSI 697</td>
<td>DOUBLE BASS FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 2 semesters)</td>
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<td>MUSI 531</td>
<td>ORCHESTRAL REPETTOIRE (minimum of 4 semesters)</td>
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<td>MUSI 599</td>
<td>STRING PEDAGOGY</td>
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<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
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<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
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<tr>
<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
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<td><strong>Academic Coursework</strong></td>
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<td>Select 1 course from the Approved Music Theory course offerings (see below for course list)</td>
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<td>Select 1 additional course from the Music Theory or Music History courses (see below for course lists)</td>
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<td>Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list)</td>
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<td>Select 6 credit hours from the Elective Requirements (see below for course list)</td>
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<tr>
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<td><strong>Proficiencies</strong></td>
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<td>Students must demonstrate the following proficiencies:</td>
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<tr>
<td></td>
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<td></td>
<td>Aural skills proficiency</td>
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<tr>
<td></td>
<td>Total Credit Hours</td>
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</tr>
</tbody>
</table>

Opportunities for the MMus Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website at: http://music.rice.edu

For additional information, please see the School of Music website at: http://music.rice.edu
### Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td></td>
<td><strong>Approved Music Theory Courses</strong></td>
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<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND</td>
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<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<td><strong>Additional Music Theory Courses</strong></td>
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<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND</td>
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<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE</td>
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<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER</td>
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<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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<td>MUSI 723</td>
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<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
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<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<td><strong>Music Career and Skills Enhancement Courses</strong></td>
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<td>MGMT 621</td>
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<td>BUSINESS PLAN DEVELOPMENT</td>
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<td>SOCIAL ENTERPRISE</td>
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<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
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<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION:</td>
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<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING,</td>
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<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/BODY</td>
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<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
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<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
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<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
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<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
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<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
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<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
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<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO</td>
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<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s</td>
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<td>MUSIC AND MODERNISM IN FRANCE</td>
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<td>MUSIC OF RICHARD STRAUSS</td>
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<td>WORDS AND MUSIC</td>
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<td>EARLY OPERA</td>
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<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL</td>
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<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<td>MUSI 625</td>
<td>MOZART OPERAS</td>
<td></td>
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<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
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<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
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<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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<tr>
<td></td>
<td><strong>Elective Requirements</strong></td>
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<td>Select 6 credit hours from the following:</td>
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<td>Any course at the 300-level or above</td>
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<td></td>
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</tr>
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</table>
Any additional Music Theory, Music History, or Music Career and Skills Enhancement course

Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)

MUSI 342 RICE JAZZ ENSEMBLE

MUSI 345 APPLIED STUDIES IN JAZZ

MUSI 381 CONCENTRATION PIANO

MUSI 436 COLLEGIUM MUSICUM

MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC

MUSI 585 SONATA CLASS

MUSI 649 GRADUATE INDEPENDENT STUDY

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

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A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

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Master of Music (MMus) Degree in the field of Flute Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree

The MMUS degrees can be thesis or non-thesis master's degrees depending on the field declared. For general university requirements for thesis master's degrees, please see Thesis Master's Degrees (p. 67). For general university requirements for non-thesis master's degrees, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Flute Performance</td>
<td>44</td>
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</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Performance Requirements</td>
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<tr>
<td>MUSI 651</td>
<td>FLUTE FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
<td>3</td>
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<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPertoire (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
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</tr>
<tr>
<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
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<tr>
<td>or MUSI 631 Mock Audition</td>
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<tr>
<td></td>
<td>Academic Coursework</td>
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</tr>
<tr>
<td>Select 1 course from the Approved Music Theory course offerings (see below for course list)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Select 1 additional course from the Music Theory or Music History courses (see below for course lists)</td>
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<td></td>
</tr>
<tr>
<td>Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list)</td>
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</tr>
<tr>
<td>Select 6 credit hours from the Elective Requirements (see below for course list)</td>
<td>6</td>
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</tbody>
</table>

**Proficiencies**

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours

44

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td></td>
<td>Approved Music Theory Courses</td>
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<tr>
<td>Select 1 course from the following:</td>
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<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND</td>
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<tr>
<td>MUSI 615</td>
<td>MUSIC THEORY COMPOSITION</td>
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<tr>
<td>MUSI 616</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND</td>
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<tr>
<td>MUSI 617</td>
<td>COMPOSITION</td>
<td></td>
</tr>
<tr>
<td>MUSI 618</td>
<td>MUSIC SINCE 1950</td>
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Additional Music Theory Courses

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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<tr>
<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND</td>
<td></td>
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<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
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Music History Courses

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<tr>
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<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
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<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<tr>
<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
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<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
<td></td>
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<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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### Master of Music (MMus) Degree in the field of Flute Performance

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<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
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<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
</tr>
<tr>
<td>MUSI 552</td>
<td>WORDS AND MUSIC</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
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<tr>
<td>MUSI 622</td>
<td>EARLY OPERA</td>
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<td>MUSI 623</td>
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<th>Course Title</th>
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<tr>
<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
</tr>
<tr>
<td>MGMT 625</td>
<td>CREATIVE ENTREPRENEURSHIP</td>
</tr>
<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
</tr>
<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
</tr>
<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
</tr>
<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
</tr>
<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
</tr>
<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION</td>
</tr>
<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
</tr>
<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
</tr>
<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
</tr>
<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
</tr>
<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
</tr>
<tr>
<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN’S BODY</td>
</tr>
<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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- MGMT 621 THE NEW ENTERPRISE
- MGMT 625 CREATIVE ENTREPRENEURSHIP
- MGMT 629 BUSINESS PLAN DEVELOPMENT
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- MUSI 500 IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES
- MUSI 501 ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING
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- MUSI 503 MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION
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- MUSI 508 FUNDAMENTALS OF PRIVATE TEACHING
- MUSI 510 PROFESSIONAL DEVELOPMENT FOR MUSICIANS
- MUSI 515 MUSIC ENTREPRENEURSHIP
- MUSI 518 THE ART AND BUSINESS OF STUDIO TEACHING
- MUSI 519 THEMATIC PROGRAMMING: THE ART OF THE RECITAL
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Master of Music (MMus) Degree in the field of Harp Performance
Program Learning Outcomes for the MMus Degree
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
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3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
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The MMus degrees can be thesis or non-thesis master’s degrees depending on the field declared. For general university requirements for thesis master’s degrees, please see Thesis Master’s Degrees (p. 67). For general university requirements for non-thesis master’s degrees, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MMus degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary
<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the MMus Degree in the field of Harp Performance</td>
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Degree Requirements
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<tr>
<td>MUSI 687</td>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<td>MUSI 636</td>
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<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
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<td>MASTER'S RECITAL II</td>
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<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
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Academic Coursework
Select 1 course from the Approved Music Theory course offerings (see below for course list) 3
Select 1 additional course from the Music Theory or Music History courses (see below for course list) 3
Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list) 4
Select 6 credit hours from the Elective Requirements (see below for course list) 1 6

Proficiencies

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours 44

2017-2018 General Announcements
**Academic Coursework**

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

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<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 513</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<tr>
<td>MUSI 614</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<td><strong>Additional Music Theory Courses</strong></td>
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<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<td>ORCHESTRATION</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>MUSI 723</td>
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<td>MUSI 429</td>
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<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
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<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<td>MUSI 529</td>
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<td>MGMT 621</td>
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<td>MGMT 625</td>
<td>CREATIVE ENTREPRENEURSHIP</td>
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<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
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<td>MGMT 676</td>
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<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
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<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
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<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
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<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION</td>
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<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
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</tr>
<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
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<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
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<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
<td></td>
</tr>
<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
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<tr>
<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN’S BODY</td>
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<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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<td><strong>Elective Requirements</strong></td>
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Select 6 credit hours from the following:
- Any course at the 300-level or above
- Any language course at the 100-level or above
Any additional Music Theory, Music History, or Music Career and Skills Enhancement course

Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)

MUSI 342 RICE JAZZ ENSEMBLE
MUSI 345 APPLIED STUDIES IN JAZZ
MUSI 381 CONCENTRATION PIANO
MUSI 436 COLLEGIUM MUSICUM
MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC
MUSI 585 SONATA CLASS
MUSI 649 GRADUATE INDEPENDENT STUDY

Footnotes and Additional Information
1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.
2 Deficiencies in these areas will result in remedial coursework being added to a student's degree plan.

Policies for the MMus Degree

Admission
For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards

Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of "C+" or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of "C+" or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of "C+" or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school's conducted ensembles as assigned.

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website: http://music.rice.edu

Opportunities for the MMus Degree

Other Musical Opportunities

Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu

Master of Music (MMus) Degree in the field of Horn Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:
1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree

The MMUS degrees can be thesis or non-thesis master's degrees depending on the field declared. For general university requirements for thesis master's degrees, please see Thesis Master's Degrees (p. 67). For general university requirements for non-thesis master's degrees, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary

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<th>Credit Hours</th>
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<td>Total Credit Hours Required for the MMus Degree in the field of Horn Performance</td>
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Degree Requirements

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<td>Performance Requirements</td>
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<td>MUSI 661</td>
<td>HORN FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
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</tr>
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<td></td>
<td>or MUSI 631 MOCK AUDITION</td>
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Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see below for course list) 3
Select 1 additional course from the Music Theory or Music History courses (see below for course list) 3
Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list) 4
Select 6 credit hours from the Elective Requirements (see below for course list) 6

Proficiencies 2

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours 44

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

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Select 1 course from the following:

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<td>MUSI 512</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<td>MUSI 517</td>
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<td>MUSI 615</td>
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Additional Music Theory Courses

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<td>MUSI 378</td>
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<td>SCORE THEORY AT THE KEYBOARD</td>
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<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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Music History Courses

Select 1 course from the following (or select 1 additional Music Theory Course): 3

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<td>MUSI 422</td>
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<td>MUSIC OF THE MIDDLE AGES</td>
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<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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MUSI 530  MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD
MUSI 534  PROGRAM MUSIC IN THE 19TH CENTURY
MUSI 537  SATIE, COCTEAU, & LES SIX: PARIS IN THE 1920s AND BEYOND
MUSI 543  MUSIC AND MODERNISM IN FRANCE
MUSI 551  MUSIC OF RICHARD STRAUSS
MUSI 552  WORDS AND MUSIC
MUSI 621  SELECTED STUDIES IN MUSIC HISTORY
MUSI 622  EARLY OPERA
MUSI 623  J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION
MUSI 624  SEMINAR ON A SELECTED COMPOSER
MUSI 625  MOZART OPERAS
MUSI 626  THE CLASSICAL STYLE
MUSI 627  ROMANTIC SONGS AND PIANO PIECES
MUSI 721  MUSIC OF SCHOENBERG
MUSI 722  MUSIC OF STRAVINSKY

Music Career and Skills Enhancement Courses

Select 2 courses from the following:

LPCR 200  ADVANCED MENTAL TRAINING
MGMT 621  THE NEW ENTERPRISE
MGMT 625  CREATIVE ENTREPRENEURSHIP
MGMT 629  BUSINESS PLAN DEVELOPMENT
MGMT 676  SOCIAL ENTERPRISE
MUSI 413  INTRODUCTION TO DALCROZE EURHYTHMICS
MUSI 500  IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES
MUSI 501  ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING
MUSI 502  CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS
MUSI 503  MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION
MUSI 507  TECHNOLOGY FOR MUSICIANS
MUSI 508  FUNDAMENTALS OF PRIVATE TEACHING
MUSI 510  PROFESSIONAL DEVELOPMENT FOR MUSICIANS
MUSI 515  MUSIC ENTREPRENEURSHIP
MUSI 518  THE ART AND BUSINESS OF STUDIO TEACHING
MUSI 519  THEMATIC PROGRAMMING: THE ART OF THE RECITAL
MUSI 532  THE FELDENKRAIS METHOD AND THE MUSICIAN’S BODY
MUSI 540  APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM

Elective Requirements

Select 6 credit hours from the following:

Any course at the 300-level or above
Any language course at the 100-level or above

Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
MUSI 342  RICE JAZZ ENSEMBLE
MUSI 345  APPLIED STUDIES IN JAZZ
MUSI 381  CONCENTRATION PIANO
MUSI 436  COLLEGIUM MUSICUM
MUSI 444  PRACTICUM IN CONTEMPORARY MUSIC
MUSI 585  SONATA CLASS
MUSI 649  GRADUATE INDEPENDENT STUDY

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2 Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

Policies for the MMus Degree

Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.
Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMUs students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMUs students must participate in the school's conducted ensembles as assigned.

Thesis
A thesis is required for MMUs students in the field of Musicology. In lieu of a thesis, MMUs students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website: [http://music.rice.edu](http://music.rice.edu)

Opportunities for the MMUs Degree
Other Musical Opportunities

Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: [http://music.rice.edu](http://music.rice.edu)

Master of Music (MMus) Degree in the field of Musicology
Program Learning Outcomes for the MMus Degree
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree
The MMUS degrees can be thesis or non-thesis master's degrees depending on the field declared. For general university requirements for thesis master's degrees, please see Thesis Master's Degrees (p. 67). For general university requirements for non-thesis master's degrees, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Musicology</td>
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Degree Requirements

Musicology and Music Theory Coursework

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<tr>
<td>MDME 429</td>
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<tr>
<td>or MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
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</tr>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS 1</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 647</td>
<td>MASTER'S THESIS (minimum of 2 semesters) 2</td>
<td>3</td>
</tr>
<tr>
<td>Select 7 courses from Advanced Musicology course offerings (see below for course list) 1</td>
<td>21</td>
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</table>

Other Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select 15 credit hours from Elective Requirements (see below for course list) 3</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Select 2 courses from Performance Coursework (see below for course list)</td>
<td>2-6</td>
<td></td>
</tr>
</tbody>
</table>

Proficiencies 4

Students must demonstrate the following proficiencies:

- Piano
- Aural Skills
- German Language

Total Credit Hours 50-54

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Musicology Select 7 courses from the following:</td>
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</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td></td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
<td></td>
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</tbody>
</table>
MUSI 525 PERFORMANCE PRACTICES SEMINAR
MUSI 526 WOMEN IN MUSIC
MUSI 527 TOPICS IN EARLY MUSIC
MUSI 528 TOPICS IN THE 17TH AND 18TH CENTURIES
MUSI 529 TOPICS IN 19TH AND 20TH CENTURIES
MUSI 530 MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD
MUSI 534 PROGRAM MUSIC IN THE 19TH CENTURY
MUSI 537 SATIE, COCTEAU, & LES SIX: PARIS IN THE 1920s AND BEYOND
MUSI 543 MUSIC AND MODERNISM IN FRANCE
MUSI 551 MUSIC OF RICHARD STRAUSS
MUSI 552 WORDS AND MUSIC
MUSI 622 EARLY OPERA
MUSI 623 J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION
MUSI 624 SEMINAR ON A SELECTED COMPOSER
MUSI 625 MOZART OPERAS
MUSI 626 THE CLASSICAL STYLE
MUSI 627 ROMANTIC SONGS AND PIANO PIECES
MUSI 721 MUSIC OF SCHOENBERG
MUSI 722 MUSIC OF STRAVINSKY

Elective Requirements 3
Select 15 credit hours from the following: 15
Any course at the 300-level or above
Any language course at the 100-level or above
Any additional Advanced Musicology course (see above for course list)
Any Music Theory or Music Career and Skills Enhancement course (see below for course list)
Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
MUSI 342 RICE JAZZ ENSEMBLE
MUSI 345 APPLIED STUDIES IN JAZZ
MUSI 381 CONCENTRATION PIANO
MUSI 436 COLLEGIUM MUSICUM
MUSI 502 CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS
MUSI 514 SCORE READING AND THEORY AT THE KEYBOARD
MUSI 649 GRADUATE INDEPENDENT STUDY

Performance Coursework
Select 2 courses from the following: 2-6
Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
Concentration Lessons (any course between MUSI 351 and MUSI 373)
Concentration Lessons (any course between MUSI 381 and MUSI 397)
MUSI 334 CAMPANILE ORCHESTRA
MUSI 436 COLLEGIUM MUSICUM
MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC

MUSI 502 CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS
MUSI 514 SCORE READING AND THEORY AT THE KEYBOARD
MUSI 636 ADVANCED CHAMBER MUSIC
MUSI 640 RICE CHORALE - ADVANCED

Footnotes and Additional Information
1 Graduate-level Music Theory coursework may replace MUSI 512 and/or some of the seven (7) required Advanced Musicology courses with faculty approval.
2 The master’s thesis must be publicly defended.
3 No more than three (3) credit hours of MUSI 649 Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) will not fulfill this requirement.
4 Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan. German language proficiency may be met by one of the following experiences:
  • 4 years of German language instruction at the high-school level;
  • 2 year of German language instruction at the college-level;
  • GERM 141 and GERM 142 at Rice (or an equivalent accelerated course);
  • Passage of a proficiency exam (300 words, 3 hours, with dictionary).

Music Theory or Music Career and Skills Enhancement Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td></td>
</tr>
<tr>
<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
<td></td>
</tr>
<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td></td>
</tr>
<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
<td></td>
</tr>
<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
<td></td>
</tr>
<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
<td></td>
</tr>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td></td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td></td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td></td>
</tr>
<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
<td></td>
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<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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### Music Career and Skills Enhancement Courses

<table>
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<tr>
<th>Course Code</th>
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<tr>
<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
</tr>
<tr>
<td>MGMT 625</td>
<td>CREATIVE ENTREPRENEURSHIP</td>
</tr>
<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
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<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
</tr>
<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
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<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
</tr>
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</table>

### Policies for the MMus Degree

#### Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

#### Academic Standards

##### Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

##### Grading Policy

A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of "C+" or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of "C+" or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

**Note:** For music history and musicology majors a grade of "C+" or lower in any music history course is considered unsatisfactory and will be evaluated as above.

**Graduate degree requirement:** A minimum grade point average of 2.67 is necessary for graduation.

##### Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

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### Performance

Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school's conducted ensembles as assigned.

### Thesis

A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website at: [http://music.rice.edu](http://music.rice.edu)

### Opportunities for the MMus Degree

#### Other Musical Opportunities

##### Lectures and Performances

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website at: [http://music.rice.edu](http://music.rice.edu)

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**Master of Music (MMus) Degree in the field of Oboe Performance**

---
Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree

The MMUS degrees can be thesis or non-thesis master's degrees depending on the field declared. For general university requirements for thesis master's degrees, please see Thesis Master's Degrees (p. 67). For general university requirements for non-thesis master's degrees, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Oboe Performance</td>
<td>44</td>
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Degree Requirements

<table>
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<tr>
<th>Code</th>
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<td>Performance Requirements</td>
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<tr>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 653</td>
<td>OBOE FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
<td>1</td>
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<td>MUSI 531</td>
<td>ORCHESTRAL REPertoire (minimum of 4 semesters)</td>
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<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
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<td>MUSI 741</td>
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<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
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<table>
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<tr>
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<tbody>
<tr>
<td></td>
<td>Academic Coursework</td>
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<table>
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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Select 1 course from the Approved Music Theory course offerings (see below for course list)</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list)</td>
<td>4</td>
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<tr>
<td></td>
<td>Select 6 credit hours from the Elective Requirements (see below for course list)</td>
<td>6</td>
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<table>
<thead>
<tr>
<th>Proficiencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students must demonstrate the following proficiencies:</td>
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<tr>
<td>Piano proficiency</td>
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<tr>
<td>Aural skills proficiency</td>
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</table>

Total Credit Hours 44

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Approved Music Theory Courses</td>
<td></td>
</tr>
</tbody>
</table>

Select 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td></td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td></td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
<td></td>
</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
<td></td>
</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
<td></td>
</tr>
</tbody>
</table>

Additional Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
<td></td>
</tr>
<tr>
<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
<td></td>
</tr>
<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
<td></td>
</tr>
<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
<td></td>
</tr>
<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
<td></td>
</tr>
<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
<td></td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td></td>
</tr>
<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
<td></td>
</tr>
<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
<td></td>
</tr>
<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
<td></td>
</tr>
<tr>
<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
<td></td>
</tr>
</tbody>
</table>

Music History Courses

Select 1 additional course from the Music Theory or Music History courses (see below for course list) 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Select 1 course from the following (or select 1 additional Music Theory Course):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
</tr>
<tr>
<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
</tr>
<tr>
<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
</tr>
<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
</tr>
<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
</tr>
<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
</tr>
<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
</tr>
<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
</tr>
<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
</tr>
<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
</tr>
<tr>
<td>MUSI 552</td>
<td>WORDS AND MUSIC</td>
</tr>
<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
</tr>
<tr>
<td>MUSI 622</td>
<td>EARLY OPERA</td>
</tr>
<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
</tr>
<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
</tr>
<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
</tr>
<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
</tr>
<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
</tr>
<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
</tr>
<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
</tr>
</tbody>
</table>

Music Career and Skills Enhancement Courses 4

Select 2 courses from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
</tr>
<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
</tr>
<tr>
<td>MGMT 625</td>
<td>CREATIVE ENTREPRENEURSHIP</td>
</tr>
<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
</tr>
<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO Dalcroze EURHYTHMICS</td>
</tr>
<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
</tr>
<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
</tr>
<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
</tr>
<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION</td>
</tr>
<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
</tr>
<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
</tr>
<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
</tr>
<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
</tr>
<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
</tr>
<tr>
<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
</tr>
<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN’S BODY</td>
</tr>
<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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</table>

Elective Requirements 1

Select 6 credit hours from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any course at the 300-level or above</td>
<td></td>
</tr>
<tr>
<td>Any language course at the 100-level or above</td>
<td></td>
</tr>
<tr>
<td>Any additional Music Theory, Music History, or Music Career and Skills Enhancement course</td>
<td></td>
</tr>
<tr>
<td>Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)</td>
<td></td>
</tr>
<tr>
<td>MUSI 342</td>
<td>RICE JAZZ ENSEMBLE</td>
</tr>
<tr>
<td>MUSI 345</td>
<td>APPLIED STUDIES IN JAZZ</td>
</tr>
<tr>
<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
</tr>
<tr>
<td>MUSI 436</td>
<td>COLLEGIUM MUSICUM</td>
</tr>
<tr>
<td>MUSI 444</td>
<td>PRACTICUM IN CONTEMPORARY MUSIC</td>
</tr>
<tr>
<td>MUSI 585</td>
<td>SONATA CLASS</td>
</tr>
<tr>
<td>MUSI 649</td>
<td>GRADUATE INDEPENDENT STUDY</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1. No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2. Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

Policies for the MMus Degree

Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of "C+" or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student
on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of "C+" or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of "C+" or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMUs students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMUs students must participate in the school’s conducted ensembles as assigned.

Thesis
A thesis is required for MMUs students in the field of Musicology. In lieu of a thesis, MMUs students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website: [http://music.rice.edu](http://music.rice.edu)

Opportunities for the MMUs Degree
Other Musical Opportunities

Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: [http://music.rice.edu](http://music.rice.edu)

Master of Music (MMus) Degree in the field of Orchestral Conducting

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree

The MMUS degrees can be thesis or non-thesis master’s degrees depending on the field declared. For general university requirements for thesis master’s degrees, please see Thesis Master’s Degrees (p. 67). For general university requirements for non-thesis master’s degrees, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMUs degree candidate; private or group lessons beyond this may result in additional fees.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Credit Hours Required for the MMus Degree in the field of Orchestral Conducting</td>
<td>47</td>
<td></td>
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</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conducting Requirements 1</td>
<td>MUSI 637 ADVANCED CONDUCTING FOR MAJORS (minimum of 4 semesters)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MUSI 533 GRADUATE CONDUCTING SEMINAR (minimum of 4 semesters)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>MUSI 635 ADVANCED ORCHESTRA (minimum of 2 semesters)</td>
<td>2</td>
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</table>

Performance Technique Coursework

Select 4 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MUSI 475 THEORY OF VOCAL PERFORMANCE TECHNIQUES</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>MUSI 531 ORCHESTRAL REPETTOIRE (001 Orchestral Repertoire • Violin)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>MUSI 531 ORCHESTRAL REPETTOIRE (005 Orchestral Repertoire • Woodwind)</td>
<td>1</td>
</tr>
</tbody>
</table>

1 For additional information, please see the School of Music website: [http://music.rice.edu](http://music.rice.edu)
Master of Music (MMus) Degree in the field of Orchestral Conducting

Academic Coursework

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td>3</td>
</tr>
</tbody>
</table>

Other Requirements

Select 6 credit hours from Elective Requirements (see below for course list) 2

Select 8 credit hours (minimum of 4 semesters) from Concentration Lessons (see below for course list) 8

Proficiencies 3

Students must demonstrate the following proficiencies:

- Orchestration
- Piano proficiency
- Aural skills proficiency

Total Credit Hours 47

Other Requirements

Students must complete 6 credit hours from the Elective Requirements, and 2 courses from the Performance Coursework lists below.

Policies for the MMus Degree

Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of "C+" or lower in their major applied area will be placed on music probation. Music probation signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of "C+" or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

For music history and musicology majors a grade of "C+" or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

For additional information, please see the School of Music website at: http://music.rice.edu

Footnotes and Additional Information

1 Recitals for the MMus degree in the field of Orchestral Conducting are optional. Conducting experience with the orchestra replaces the recital requirements typically found in the MMus degree for other fields of study.

2 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

3 Deficiencies in these areas will result in remedial coursework being added to a student's degree plan. Proficiency in Orchestration is defined as MUSI 416 or the equivalent.
Opportunities for the MMus Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website at: http://music.rice.edu

Master of Music (MMus) Degree in the field of Organ Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree

The MMUS degrees can be thesis or non-thesis master's degrees depending on the field declared. For general university requirements for thesis master's degrees, please see Thesis Master's Degrees (p. 67). For general university requirements for non-thesis master's degrees, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Organ Performance</td>
<td>51</td>
</tr>
</tbody>
</table>

Degree Requirements

Performance Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 683</td>
<td>ORGAN FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 640</td>
<td>RICE CHORALE - ADVANCED (minimum of 2 semesters)</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 285</td>
<td>SECONDARY HARPSICHORD</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
<td>0</td>
</tr>
<tr>
<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
<td>0</td>
</tr>
</tbody>
</table>

Field of Study Specific Coursework

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 545</td>
<td>LITURGICAL ORGAN PLAYING</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 547</td>
<td>CHURCH MUSIC SEMINAR I</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 548</td>
<td>CHURCH MUSIC SEMINAR II</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 608</td>
<td>IMPROVISATION AT THE ORGAN (minimum of 2 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 645</td>
<td>ORGAN LITERATURE BEFORE 1750</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 646</td>
<td>ORGAN LITERATURE SINCE 1750</td>
<td>3</td>
</tr>
</tbody>
</table>

Academic Coursework

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select 1 course from the Approved Music Theory course offerings (see below for course list)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Select 6 credit hours from the Elective Requirements (see below for course list)</td>
<td>6</td>
</tr>
</tbody>
</table>

Proficiencies

Students must demonstrate the following proficiency:

- Aural skills proficiency

Total Credit Hours 51

Academic Coursework

Academic Coursework is comprised of at least 2 courses (6 credit hours) from the Music Theory, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>6</td>
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<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td></td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td></td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
<td></td>
</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSTION</td>
<td></td>
</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
<td></td>
</tr>
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</table>

Music Career and Skills Enhancement Courses
Select 2 from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
</tr>
<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
</tr>
<tr>
<td>MGMT 625</td>
<td>CREATIVE ENTREPRENEURSHIP</td>
</tr>
<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
</tr>
<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
</tr>
<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING</td>
</tr>
<tr>
<td></td>
<td>MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
</tr>
<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
</tr>
<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
</tr>
<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION</td>
</tr>
<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
</tr>
<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
</tr>
<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
</tr>
<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
</tr>
<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
</tr>
<tr>
<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
</tr>
<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
</tr>
<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO</td>
</tr>
<tr>
<td></td>
<td>IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
</tr>
</tbody>
</table>

Elective Requirements
Select 6 credit hours from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Any course at the 300-level or above</td>
</tr>
<tr>
<td></td>
<td>Any language course at the 100-level or above</td>
</tr>
<tr>
<td></td>
<td>Any additional Music Theory, Music History, or Music</td>
</tr>
<tr>
<td></td>
<td>Career and Skills Enhancement course</td>
</tr>
<tr>
<td></td>
<td>Secondary Lessons (any course between MUSI 251 and</td>
</tr>
<tr>
<td></td>
<td>MUSI 297 with the exception of MUSI 281)</td>
</tr>
<tr>
<td>MUSI 342</td>
<td>RICE JAZZ ENSEMBLE</td>
</tr>
<tr>
<td>MUSI 345</td>
<td>APPLIED STUDIES IN JAZZ</td>
</tr>
<tr>
<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
</tr>
<tr>
<td>MUSI 436</td>
<td>COLLEGIUM MUSICUM</td>
</tr>
<tr>
<td>MUSI 444</td>
<td>PRACTICUM IN CONTEMPORARY MUSIC</td>
</tr>
<tr>
<td>MUSI 585</td>
<td>SONATA CLASS</td>
</tr>
<tr>
<td>MUSI 649</td>
<td>GRADUATE INDEPENDENT STUDY</td>
</tr>
</tbody>
</table>

Additional Music Theory Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
</tr>
<tr>
<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN</td>
</tr>
<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
</tr>
<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
</tr>
<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
</tr>
<tr>
<td>MUSI 416</td>
<td>ORCHESTRAIATION</td>
</tr>
<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
</tr>
<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
</tr>
<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
</tr>
<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
</tr>
<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
</tr>
<tr>
<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
</tr>
<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
</tr>
<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
</tr>
</tbody>
</table>

Music History Courses
See Electives Requirement Options Above:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
</tr>
<tr>
<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
</tr>
<tr>
<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
</tr>
<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
</tr>
<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
</tr>
<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
</tr>
<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
</tr>
<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND</td>
</tr>
<tr>
<td></td>
<td>BEYOND</td>
</tr>
<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
</tr>
<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
</tr>
<tr>
<td>MUSI 552</td>
<td>WORDS AND MUSIC</td>
</tr>
<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
</tr>
<tr>
<td>MUSI 622</td>
<td>EARLY OPERA</td>
</tr>
<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
</tr>
<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
</tr>
<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
</tr>
<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
</tr>
<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
</tr>
<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHENBROG</td>
</tr>
<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2 Deficiencies in this area will result in remedial coursework being added to a student’s degree plan. MMus students in the field of Organ Performance do not have to demonstrate piano proficiency.
Policies for the MMus Degree

Admission
For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards
Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website: http://music.rice.edu

Opportunities for the MMus Degree
Other Musical Opportunities
Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu

Master of Music (MMus) Degree in the field of Percussion Performance
Program Learning Outcomes for the MMus Degree
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree
The MMUS degrees can be thesis or non-thesis master’s degrees depending on the field declared. For general university requirements for thesis master’s degrees, please see Thesis Master’s Degrees (p. 67). For general university requirements for non-thesis master’s degrees, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.
Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Percussion Performance</td>
<td>48</td>
</tr>
</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 671</td>
<td>PERCUSSION FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 472</td>
<td>GENERAL PERCUSSION STUDIES (minimum of 4 semesters)</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPETTOIRE (minimum of 4 semesters)</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
<td>0</td>
</tr>
<tr>
<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
<td>0</td>
</tr>
<tr>
<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
<td></td>
</tr>
</tbody>
</table>

Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see below for course list) 3
Select 1 additional course from the Music Theory or Music History courses (see below for course lists) 3
Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list) 4
Select 6 credit hours from the Elective Requirements (see below for course list) 6

Proficiencies

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours 48

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td></td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td></td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
<td>3</td>
</tr>
</tbody>
</table>

Approved Music Theory Courses

Select 1 course from the following:

- MUSI 615 MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION
- MUSI 617 MUSIC SINCE 1950

Additional Music Theory Courses

- MUSI 316 EXPERIMENTAL SOUND AND VIDEO
- MUSI 378 CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC
- MUSI 403 BASIC ELECTRONIC MUSIC
- MUSI 404 ELECTRONIC MUSIC COMPOSITION
- MUSI 405 MUSIC BUSINESS AND LAW
- MUSI 416 ORCHESTRATION
- MUSI 417 MUSIC FOR MEDIA
- MUSI 514 SCORE READING AND THEORY AT THE KEYBOARD
- MUSI 605 ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS
- MUSI 606 ADVANCED COMPUTER SOUND SYNTHESIS
- MUSI 611 CLASSROOM PEDAGOGY
- MUSI 711 ANALYTICAL APPROACHES
- MUSI 712 SEMINAR IN ADVANCED ANALYSIS
- MUSI 713 SPECIAL TOPICS IN ADVANCED ANALYSIS
- MUSI 723 AESTHETICS OF MUSIC

Music History Courses

Select 1 course from the following (or select 1 additional Music Theory Course):

- MUSI 422 RENAISSANCE MUSIC
- MUSI 429 MUSIC OF THE MIDDLE AGES
- MUSI 523 BIBLIOGRAPHY AND RESEARCH METHODS
- MUSI 524 AMERICAN MUSIC
- MUSI 525 PERFORMANCE PRACTICES SEMINAR
- MUSI 526 WOMEN IN MUSIC
- MUSI 527 TOPICS IN EARLY MUSIC
- MUSI 528 TOPICS IN THE 17TH AND 18TH CENTURIES
- MUSI 529 TOPICS IN 19TH AND 20TH CENTURIES
- MUSI 530 MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD
- MUSI 534 PROGRAM MUSIC IN THE 19TH CENTURY
- MUSI 537 SATIE, COCTEAU, & LES SIX: PARIS IN THE 1920s AND BEYOND
- MUSI 543 MUSIC AND MODERNISM IN FRANCE
- MUSI 551 MUSIC OF RICHARD STRAUSS
- MUSI 552 WORDS AND MUSIC
- MUSI 621 SELECTED STUDIES IN MUSIC HISTORY
- MUSI 622 EARLY OPERA
- MUSI 623 J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION
- MUSI 624 SEMINAR ON A SELECTED COMPOSER
- MUSI 625 MOZART OPERAS
- MUSI 626 THE CLASSICAL STYLE
- MUSI 627 ROMANTIC SONGS AND PIANO PIECES
- MUSI 721 MUSIC OF SCHOENBERG
MUSIC OF STRAVINSKY

Music Career and Skills Enhancement Courses

Select 2 courses from the following:

- LPCR 200 ADVANCED MENTAL TRAINING
- MGMT 621 THE NEW ENTERPRISE
- MGMT 625 CREATIVE ENTREPRENEURSHIP
- MGMT 629 BUSINESS PLAN DEVELOPMENT
- MGMT 676 SOCIAL ENTERPRISE
- MUSI 413 INTRODUCTION TO DALCROZE EURHYTHMICS
- MUSI 500 IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES
- MUSI 501 ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING
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- MUSI 519 THEMATIC PROGRAMMING: THE ART OF THE RECITAL
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- MUSI 540 APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM

Elective Requirements

Select 6 credit hours from the following:

- Any course at the 300-level or above
- Any language course at the 100-level or above
- Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
- MUSI 342 RICE JAZZ ENSEMBLE
- MUSI 345 APPLIED STUDIES IN JAZZ
- MUSI 381 CONCENTRATION PIANO
- MUSI 436 COLLEGIUM MUSICUM
- MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC
- MUSI 585 SONATA CLASS
- MUSI 649 GRADUATE INDEPENDENT STUDY

Footnotes and Additional Information

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Policies for the MMus Degree

Admission

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Master of Music (MMus) Degree in the field of Piano Chamber Music and Accompanying

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the school website: http://music.rice.edu

Opportunities for the MMus Degree
Other Musical Opportunities
Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the school website: http://music.rice.edu

Program Learning Outcomes for the MMus Degree
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree
The MMUS degrees can be thesis or non-thesis master’s degrees depending on the field declared. For general university requirements for thesis master’s degrees, please see Thesis Master’s Degrees (p. 67). For general university requirements for non-thesis master’s degrees, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Piano, Chamber Music, and Accompanying</td>
<td>46-50</td>
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Degree Requirements

Performance Requirements

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 689</td>
<td>PIANO FOR CHAMBER MUSIC AND ACCOMPANYING MAJORS, ADVANCED/GRADUATE (minimum of 4 semesters)</td>
<td>3</td>
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<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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Select a minimum of 4 semesters from the following: 4-8

- MUSI 635 ADVANCED ORCHESTRA
- MUSI 640 RICE CHORALE - ADVANCED
- MUSI 642 ACCOMPANYING
- MUSI 641 MASTER’S RECITAL I
- MUSI 741 MASTER’S RECITAL II

Field of Study Specific Coursework

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MUSI 414</td>
<td>PIANO CHAMBER MUSIC LITERATURE</td>
<td>3</td>
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<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 583</td>
<td>INSTRUMENTAL ACCOMPANYING TECHNIQUES</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 584</td>
<td>VOCAL ACCOMPANYING TECHNIQUES FOR PIANISTS</td>
<td>2</td>
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</table>

Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see below for course list) 3
Select 1 additional course from the Music Theory or Music History courses (see below for course list) 3
Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list) 4
Select 6 credit hours from the Elective Requirements (see below for course list) 1

Proficiencies ²

Students must demonstrate the following proficiency:

Aural Skills
MUSI 426 PIANO LITERATURE - SURVEY

Total Credit Hours 46-50

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td></td>
<td><strong>Approved Music Theory Courses</strong></td>
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<tr>
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<td>Select 1 course from the following:</td>
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<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td></td>
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<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<td></td>
<td><strong>Additional Music Theory Courses</strong></td>
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<tr>
<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
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<td></td>
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<td>Select 1 course from the following (or select 1 additional Music Theory Course):</td>
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<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
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<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
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<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
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<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
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<td></td>
<td><strong>Music Career and Skills Enhancement Courses</strong></td>
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<td>Select 2 courses from the following:</td>
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<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
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<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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<td>MGMT 625</td>
<td>CREATIVE ENTREPRENEURSHIP</td>
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<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
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<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
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<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
<td></td>
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<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
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<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
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<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
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<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION</td>
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<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
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<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
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<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
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<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
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<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
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<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN’S BODY</td>
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<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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<tr>
<td></td>
<td><strong>Elective Requirements</strong></td>
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<td>Select 6 credit hours from the following:</td>
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<tr>
<td>Any course at the 300-level or above</td>
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<tr>
<td>Any language course at the 100-level or above</td>
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<tr>
<td>Any additional Music Theory, Music History, or Music Career and Skills Enhancement course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUSI 342</td>
<td>RICE JAZZ ENSEMBLE</td>
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</tr>
<tr>
<td>MUSI 345</td>
<td>APPLIED STUDIES IN JAZZ</td>
<td></td>
</tr>
</tbody>
</table>
Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website: http://music.rice.edu

Opportunities for the MMus Degree
Other Musical Opportunities
Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu

Master of Music (MMus) Degree in the field of Piano Performance
Program Learning Outcomes for the MMus Degree
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.

Footnotes and Additional Information
1. No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2. Deficiencies in this area will result in remedial coursework being added to a student’s degree plan. MMus students in the field of Piano, Chamber Music, and Accompanying do not have to demonstrate piano proficiency. MUSI 426 Piano Literature is required if not completed at the undergraduate level. This course would be considered remedial and would not count towards the elective requirement.

Policies for the MMus Degree
Admission
For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards
Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree

The MMUS degrees can be thesis or non-thesis master's degrees depending on the field declared. For general university requirements for thesis master's degrees, please see Thesis Master's Degrees (p. 67). For general university requirements for non-thesis master's degrees, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Piano Performance</td>
<td>43-47</td>
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Degree Requirements

Performance Requirements

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<th>Credit Hours</th>
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<td>MUSI 681</td>
<td>PIANO FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 2 semesters)</td>
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<tr>
<td>MUSI 640</td>
<td>RICE CHORALE - ADVANCED (minimum of 2 semesters)</td>
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<td>MUSI 642</td>
<td>ACCOMPANYING (minimum of 2 semesters)</td>
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<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
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<tr>
<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
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Field of Study Specific Coursework

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<tr>
<td>MUSI 426</td>
<td>PIANO LITERATURE - SURVEY</td>
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<td>MUSI 588</td>
<td>PIANO PEDAGOGY</td>
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<td>MUSI 414</td>
<td>PIANO CHAMBER MUSIC LITERATURE</td>
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<td>MUSI 447</td>
<td>INTRODUCTION TO PIANO TECHNOLOGY</td>
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<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<tr>
<td>MUSI 619</td>
<td>HISTORY OF THE 20TH CENTURY PIANISM</td>
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<tr>
<td>MUSI 620</td>
<td>HISTORICAL OVERVIEW OF PIANO TECHNIQUE</td>
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</table>

Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see below for course list) 3
Select 1 additional course from Music Theory or Music History courses (see below for course lists) 3
Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list) 4
Select 6 credit hours from the Elective Requirements (see below for course list) 6

Proficiencies

Students must demonstrate the following proficiency:

Aural Skills

Total Credit Hours 43-47

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

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<td>ANALYTICAL SYSTEMS</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<tr>
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<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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Additional Music Theory Courses

Select 1 course from the following:

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<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
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<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
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<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
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<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
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<td>ANALYTICAL APPROACHES</td>
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<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
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<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
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<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
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</table>

Music History Courses

3
Select 1 course from the following (or select 1 additional Music Theory Course):

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<th>Course Title</th>
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<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
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<tr>
<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
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<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
</tr>
<tr>
<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
</tr>
<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
</tr>
<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
</tr>
<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
</tr>
<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
</tr>
<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<td>MUSIC OF RICHARD STRAUSS</td>
</tr>
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<td>MUSI 552</td>
<td>WORDS AND MUSIC</td>
</tr>
<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
</tr>
<tr>
<td>MUSI 622</td>
<td>EARLY OPERA</td>
</tr>
<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
</tr>
<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<td>MUSI 625</td>
<td>MOZART OPERAS</td>
</tr>
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<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
</tr>
<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
</tr>
<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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Music Career and Skills Enhancement Courses

Select 2 courses from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
</tr>
<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
</tr>
<tr>
<td>MGMT 625</td>
<td>CREATIVE ENTREPRENEURSHIP</td>
</tr>
<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
</tr>
<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
</tr>
<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
</tr>
<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
</tr>
<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
</tr>
<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION</td>
</tr>
<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
</tr>
<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
</tr>
<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
</tr>
<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
</tr>
<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
</tr>
<tr>
<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
</tr>
<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN’S BODY</td>
</tr>
<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
</tr>
</tbody>
</table>

Elective Requirements

Select 6 credit hours from the following:

- Any course at the 300-level or above
- Any language course at the 100-level or above
- Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
- MUSI 342 RICE JAZZ ENSEMBLE
- MUSI 345 APPLIED STUDIES IN JAZZ
- MUSI 381 CONCENTRATION PIANO
- MUSI 436 COLLEGIUM MUSICUM
- MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC
- MUSI 585 SONATA CLASS
- MUSI 649 GRADUATE INDEPENDENT STUDY

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2 Deficiencies in this area will result in remedial coursework being added to a student’s degree plan. MMus students in the field of Piano Performance do not have to demonstrate piano proficiency.

Policies for the MMus Degree

Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude...
graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website: http://music.rice.edu

Opportunities for the MMus Degree
Other Musical Opportunities
Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu

Master of Music (MMus) Degree
in the field of String Quartet Performance

Program Learning Outcomes for the MMus Degree
Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree
The MMus degrees can be thesis or non-thesis master’s degrees depending on the field declared. For general university requirements for thesis master’s degrees, please see Thesis Master’s Degrees (p. 67). For general university requirements for non-thesis master’s degrees, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

• A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
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Degree Requirements

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<th>Title</th>
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<tr>
<td></td>
<td>Performance Requirements</td>
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<tr>
<td>MUSI 698</td>
<td>ADVANCED STRING QUARTETS (minimum of 4 semesters)</td>
<td>3</td>
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<tr>
<td>MUSI 690</td>
<td>INDIVIDUAL INSTRUMENT COACHING FOR STRING QUARTET MAJORS (minimum of 4 semesters)</td>
<td>3</td>
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<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 2 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 705</td>
<td>APPRENTICESHIP - ARTISTIC OUTREACH (minimum of 4 semesters, 2 credit hours per semester)</td>
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2017-2018 General Announcements
Master of Music (MMus) Degree in the field of String Quartet Performance

MUSI 742 STRING QUARTET RECITAL (minimum of 3 semesters) 1 0
MUSI 741 MASTER’S RECITAL II 1 0

Academic Coursework

MUSI 405 MUSIC BUSINESS AND LAW 3
MUSI 407 CHAMBER MUSIC IN THE CLASSIC PERIOD 3

Select 1 from the following: 3

1 course from the Music History course offerings (see below for course list)
1 course from the Music Theory course offerings (see below for course list)
3 credit hours of Independent Study in Music History or Music Theory (MUSI 649)

Proficiencies 2

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours 45

Academic Coursework

<table>
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<tr>
<th>Code</th>
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<tbody>
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<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
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<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
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<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
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<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
<td></td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
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<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<td>MUSI 528</td>
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<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<td>WORDS AND MUSIC</td>
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<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
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<td>CLASSROOM PEDAGOGY</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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<td>MUSI 622</td>
<td>EARLY OPERA</td>
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<td>SEMINAR ON A SELECTED COMPOSER</td>
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<td>MUSI 625</td>
<td>MOZART OPERAS</td>
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<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
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<td>MUSI 649</td>
<td>GRADUATE INDEPENDENT STUDY</td>
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<td>MUSIC OF SCHOENBERG</td>
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</tr>
<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
<td></td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 Three (3) string quartet recitals (MUSI 742) and one (1) solo recital (MUSI 741) are required for the MMus degree in the field of String Quartet Performance.
2 Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

Policies for the MMus Degree

Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards

Curriculum and Degree Requirements

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A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

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If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.
Note: For music history and musicology majors a grade of "C+" or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

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For additional information, please see the School of Music website at: [http://music.rice.edu](http://music.rice.edu)

Opportunities for the MMus Degree
Other Musical Opportunities

Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website at: [http://music.rice.edu](http://music.rice.edu)

Master of Music (MMus) Degree in the field of Trombone Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree

The MMUS degrees can be thesis or non-thesis master’s degrees depending on the field declared. For general university requirements for thesis master’s degrees, please see Thesis Master’s Degrees (p. 67). For general university requirements for non-thesis master’s degrees, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Trombone Performance</td>
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Degree Requirements

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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Performance Requirements</td>
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</tr>
<tr>
<td>MUSI 665</td>
<td>TROMBONE FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
<td>1</td>
</tr>
<tr>
<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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</tr>
<tr>
<td>MUSI 641</td>
<td>MASTER’S RECITAL I</td>
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<tr>
<td>MUSI 741</td>
<td>MASTER’S RECITAL II</td>
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<tr>
<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
<td></td>
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</tbody>
</table>

Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see below for course list) 3

Select 1 additional course from the Music Theory or Music History courses (see below for course lists) 3

Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list) 4

Select 6 credit hours from the Elective Requirements (see below for course list) 6

Proficiencies 2

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours 44

Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.
### Approved Music Theory Courses

Select 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td></td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
<td></td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
<td></td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
<td>3</td>
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<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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</table>

### Additional Music Theory Courses

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
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<tr>
<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
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<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
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</tr>
<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
<td></td>
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<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
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<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
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<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
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### Music History Courses

Select 1 course from the following (or select 1 additional Music Theory Course):

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<td>MUSIC OF THE MIDDLE AGES</td>
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<tr>
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<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
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<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
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<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
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<td>MUSI 526</td>
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<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
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<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
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<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
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<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
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<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
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<tr>
<td>MUSI 552</td>
<td>WORDS AND MUSIC</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
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<tr>
<td>MUSI 622</td>
<td>EARLY OPERA</td>
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<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
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<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
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<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
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<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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### Music Career and Skills Enhancement Courses

Select 2 courses from the following:

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<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>LPCR 200</td>
<td>ADVANCED MENTAL TRAINING</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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</tr>
<tr>
<td>MGMT 625</td>
<td>CREATIVE ENTREPRENEURSHIP</td>
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<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
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<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
<td></td>
</tr>
<tr>
<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
<td></td>
</tr>
<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
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</tr>
<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
<td></td>
</tr>
<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION</td>
<td></td>
</tr>
<tr>
<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
<td></td>
</tr>
<tr>
<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
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<tr>
<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
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<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
<td></td>
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<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
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</tr>
<tr>
<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
<td></td>
</tr>
<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN’S BODY</td>
<td></td>
</tr>
<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
<td></td>
</tr>
</tbody>
</table>

### Elective Requirements

Select 6 credit hours from the following:

- Any course at the 300-level or above
- Any language course at the 100-level or above
- Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
- MUSI 342 | RICE JAZZ ENSEMBLE                                   |              |
- MUSI 345 | APPLIED STUDIES IN JAZZ                               |              |
- MUSI 348 | ADVANCED DANCE AND MOVEMENT                           |              |
Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

**Performance**

Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

**Thesis**

A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website: [http://music.rice.edu](http://music.rice.edu)

**Opportunities for the MMus Degree**

**Other Musical Opportunities**

**Lectures and Performances**

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: [http://music.rice.edu](http://music.rice.edu)

**Master of Music (MMus) Degree in the field of Trumpet Performance**

**Program Learning Outcomes for the MMus Degree**

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

**Requirements for the MMus Degree**

The MMUS degrees can be thesis or non-thesis master’s degrees depending on the field declared. For general university requirements for

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 381</td>
<td>CONCENTRATION PIANO</td>
</tr>
<tr>
<td>MUSI 436</td>
<td>COLLEGIUM MUSICUM</td>
</tr>
<tr>
<td>MUSI 444</td>
<td>PRACTICUM IN CONTEMPORARY MUSIC</td>
</tr>
<tr>
<td>MUSI 585</td>
<td>SONATA CLASS</td>
</tr>
<tr>
<td>MUSI 649</td>
<td>GRADUATE INDEPENDENT STUDY</td>
</tr>
</tbody>
</table>

**Footnotes and Additional Information**

1. No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2. Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

**Policies for the MMus Degree**

**Admission**

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

**Academic Standards**

**Curriculum and Degree Requirements**

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**

A minimum grade of “B –” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner.

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

**Note:** For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

**Graduate degree requirement:** a minimum grade point average of 2.67 is necessary for graduation.

**Leaves of Absence and Voluntary Withdrawal**

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.
Master of Music (MMus) Degree in the field of Trumpet Performance

thesis master's degrees, please see Thesis Master's Degrees (p. 67). For
general university requirements for non-thesis master's degrees, please
see Non-Thesis Master's Degrees (p. 66). Students pursuing the MMUS
degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to
  satisfy degree requirements

Students completing the MMus degree in all fields of study must
participate in core music, applied music, and other required music
courses as well as in chamber music and large ensembles, plus electives.
They are entitled to one hour of private lessons each week of each
semester they are enrolled as an MMus degree candidate; private or
group lessons beyond this may result in additional fees.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MMus Degree in the field of Trumpet Performance</td>
<td>44</td>
</tr>
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</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Performance Requirements</td>
<td></td>
</tr>
<tr>
<td>MUSI 663</td>
<td>TRUMPET FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
<td>3</td>
</tr>
<tr>
<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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<td>MUSI 531</td>
<td>ORCHESTRAL REPERTOIRE (minimum of 4 semesters)</td>
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<tr>
<td>MUSI 641</td>
<td>MASTER'S RECITAL I</td>
<td>0</td>
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<tr>
<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
<td>0</td>
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<tr>
<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
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</tr>
<tr>
<td></td>
<td>Academic Coursework</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 1 course from the Approved Music Theory course offerings (see below for course list)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select 1 additional course from the Music Theory or Music History courses (see below for course list)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Select 6 credit hours from the Elective Requirements (see below for course list)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Proficiencies 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Students must demonstrate the following proficiencies:</td>
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<tr>
<td></td>
<td>Piano proficiency</td>
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<tr>
<td></td>
<td>Aural skills proficiency</td>
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</tr>
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Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours)
from the Approved Music Theory course offerings, 1 course (3 credit
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courses (4 credit hours) from the Music Career and Skills Enhancement
course offerings, and 6 credit hours from the Elective Requirements.

Approved Music Theory Courses

Select 1 course from the following:

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Music History Courses

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<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
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<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
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<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
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MUSI 551 MUSIC OF RICHARD STRAUSS
MUSI 552 WORDS AND MUSIC
MUSI 621 SELECTED STUDIES IN MUSIC HISTORY
MUSI 622 EARLY OPERA
MUSI 623 J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION
MUSI 624 SEMINAR ON A SELECTED COMPOSER
MUSI 625 MOZART OPERAS
MUSI 626 THE CLASSICAL STYLE
MUSI 627 ROMANTIC SONGS AND PIANO PIECES
MUSI 721 MUSIC OF SCHOENBERG
MUSI 722 MUSIC OF STRAVINSKY

Music Career and Skills Enhancement Courses 4

Select 2 courses from the following:

LPCR 200 ADVANCED MENTAL TRAINING
MGMT 621 THE NEW ENTERPRISE
MGMT 625 CREATIVE ENTREPRENEURSHIP
MGMT 629 BUSINESS PLAN DEVELOPMENT
MGMT 676 SOCIAL ENTERPRISE
MUSI 413 INTRODUCTION TO DALCROZE EURHYTHMICS
MUSI 500 IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES
MUSI 501 ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING
MUSI 502 CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS
MUSI 503 MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION
MUSI 507 TECHNOLOGY FOR MUSICIANS
MUSI 508 FUNDAMENTALS OF PRIVATE TEACHING
MUSI 510 PROFESSIONAL DEVELOPMENT FOR MUSICIANS
MUSI 515 MUSIC ENTREPRENEURSHIP
MUSI 518 THE ART AND BUSINESS OF STUDIO TEACHING
MUSI 519 THEMATIC PROGRAMMING: THE ART OF THE RECITAL
MUSI 532 THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY
MUSI 540 APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM

Elective Requirements 1

Select 6 credit hours from the following:

Any course at the 300-level or above
Any language course at the 100-level or above
Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
MUSI 342 RICE JAZZ ENSEMBLE
MUSI 345 APPLIED STUDIES IN JAZZ

MUSI 381 CONCENTRATION PIANO
MUSI 436 COLLEGIUM MUSICUM
MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC
MUSI 585 SONATA CLASS
MUSI 649 GRADUATE INDEPENDENT STUDY

Footnotes and Additional Information

1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2 Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

Policies for the MMus Degree

Admission
For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards
Curriculum and Degree Requirements
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy
A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.
Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

For additional information, please see the School of Music website: http://music.rice.edu

**Opportunities for the MMus Degree**

**Other Musical Opportunities**

**Lectures and Performances**

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu

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**Master of Music (MMus) Degree in the field of Tuba Performance**

**Program Learning Outcomes for the MMus Degree**

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

**Requirements for the MMus Degree**

The MMUS degrees can be thesis or non-thesis master's degrees depending on the field declared. For general university requirements for thesis master's degrees, please see Thesis Master's Degrees (p. 67). For general university requirements for non-thesis master's degrees, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.
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<td>PERFORMANCE PRACTICES SEMINAR</td>
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- MUSI 585 SONATA CLASS
- MUSI 649 GRADUATE INDEPENDENT STUDY

### Footnotes and Additional Information

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Policies for the MMus Degree

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Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudit. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website: http://music.rice.edu

Opportunities for the MMus Degree
Other Musical Opportunities
Lectures and Performances
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For additional information, please see the School of Music website: http://music.rice.edu

Master of Music (MMus) Degree in the field of Viola Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree

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Summary

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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the MMus Degree in the field of Viola Performance</td>
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Degree Requirements

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<td>Performance Requirements</td>
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<td>MUSI 693</td>
<td>VIOLA FOR MAJORS-ADVANCED (minimum of 4 semesters)</td>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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<td>MUSI 531</td>
<td>ORCHESTRAL REPETTOIRE (minimum of 4 semesters)</td>
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<td>or MUSI 631 MOCK AUDITION</td>
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<td>Select 1 course from the Approved Music Theory course offerings (see below for course list)</td>
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<td>Select 1 additional course from the Music Theory or History courses (see below for course lists)</td>
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<tr>
<td></td>
<td>Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list)</td>
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<tr>
<td></td>
<td>Select 6 credit hours from the Elective Requirements (see below for course list)</td>
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<td>Proficiencies</td>
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<tr>
<td></td>
<td>Piano proficiency</td>
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<td></td>
<td>Aural skills proficiency</td>
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Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<td>MUSIC AND MODERNISM IN FRANCE</td>
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</tr>
<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
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<tr>
<td>MUSI 552</td>
<td>WORDS AND MUSIC</td>
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<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
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<tr>
<td>MUSI 622</td>
<td>EARLY OPERA</td>
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<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
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<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
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<td>MUSI 625</td>
<td>MOZART OPERAS</td>
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<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
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<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
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<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
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<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
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Music Career and Skills Enhancement Courses

<table>
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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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Select 2 courses from the following:

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<th>Course Code</th>
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<td>ADVANCED MENTAL TRAINING</td>
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<tr>
<td>MGMT 621</td>
<td>THE NEW ENTERPRISE</td>
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<td>MGMT 625</td>
<td>CREATIVE ENTREPRENEURSHIP</td>
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<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
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<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
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<td>MUSI 413</td>
<td>INTRODUCTION TO DALCROZE EURHYTHMICS</td>
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<tr>
<td>MUSI 500</td>
<td>IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES</td>
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<tr>
<td>MUSI 501</td>
<td>ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING</td>
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<tr>
<td>MUSI 502</td>
<td>CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS</td>
</tr>
<tr>
<td>MUSI 503</td>
<td>MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION</td>
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<td>MUSI 507</td>
<td>TECHNOLOGY FOR MUSICIANS</td>
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<td>MUSI 508</td>
<td>FUNDAMENTALS OF PRIVATE TEACHING</td>
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<td>MUSI 510</td>
<td>PROFESSIONAL DEVELOPMENT FOR MUSICIANS</td>
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<tr>
<td>MUSI 515</td>
<td>MUSIC ENTREPRENEURSHIP</td>
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<tr>
<td>MUSI 518</td>
<td>THE ART AND BUSINESS OF STUDIO TEACHING</td>
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<td>MUSI 519</td>
<td>THEMATIC PROGRAMMING: THE ART OF THE RECITAL</td>
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<tr>
<td>MUSI 532</td>
<td>THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY</td>
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<tr>
<td>MUSI 540</td>
<td>APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM</td>
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Elective Requirements

Select 6 credit hours from the following:

- Any course at the 300-level or above
- Any language course at the 100-level or above
- Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
- MUSI 342 RICE JAZZ ENSEMBLE
- MUSI 345 APPLIED STUDIES IN JAZZ
- MUSI 381 CONCENTRATION PIANO
- MUSI 436 COLLEGIUM MUSICUM
- MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC
- MUSI 585 SONATA CLASS
- MUSI 649 GRADUATE INDEPENDENT STUDY

Footnotes and Additional Information

1. No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2. Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

Policies for the MMus Degree

Admission

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

Academic Standards

Curriculum and Degree Requirements

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

Grading Policy

A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of “C+” or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of “C+” or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

Note: For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal

Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/re-audition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance

Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website: http://music.rice.edu

Opportunities for the MMus Degree

Other Musical Opportunities

Lectures and Performances

A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu

Master of Music (MMus) Degree in the field of Violin Performance

Program Learning Outcomes for the MMus Degree

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

Requirements for the MMus Degree

The MMUS degrees can be thesis or non-thesis master's degrees depending on the field declared. For general university requirements for thesis master's degrees, please see Thesis Master's Degrees (p. 67). For general university requirements for non-thesis master's degrees, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.

Summary

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<tbody>
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Degree Requirements

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<td>MUSI 691</td>
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<td>MUSI 635</td>
<td>ADVANCED ORCHESTRA (minimum of 4 semesters)</td>
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<td>MUSI 636</td>
<td>ADVANCED CHAMBER MUSIC (minimum of 4 semesters)</td>
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<td>MUSI 531</td>
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<td>0</td>
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<td>or MUSI 631</td>
<td>MOCK AUDITION</td>
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<tr>
<td>Select 1 course from the Approved Music Theory course offerings (see below for course list)</td>
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<td></td>
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<tr>
<td>Select 1 additional course from the Music Theory or Music History courses (see below for course lists)</td>
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<td></td>
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<tr>
<td>Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for course list)</td>
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<tr>
<td>Select 6 credit hours from the Elective Requirements (see below for course list)</td>
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<td>Students must demonstrate the following proficiencies:</td>
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</tr>
<tr>
<td>Piano proficiency</td>
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<tr>
<td>Aural skills proficiency</td>
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<td>Total Credit Hours</td>
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Academic Coursework

Academic Coursework is comprised of at least 1 course (3 credit hours) from the Approved Music Theory course offerings, 1 course (3 credit hours) from the Music Theory or Music History course offerings, 2 courses (4 credit hours) from the Music Career and Skills Enhancement course offerings, and 6 credit hours from the Elective Requirements.

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<td>MUSI 512</td>
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<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
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<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
<td></td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
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<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
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</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
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<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
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</table>
Master of Music (MMus) Degree in the field of Violin Performance

**Additional Music Theory Courses**

- MUSI 316 EXPERIMENTAL SOUND AND VIDEO
- MUSI 378 CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC
- MUSI 403 BASIC ELECTRONIC MUSIC
- MUSI 404 ELECTRONIC MUSIC COMPOSITION
- MUSI 405 MUSIC BUSINESS AND LAW
- MUSI 416 ORCHESTRATION
- MUSI 417 MUSIC FOR MEDIA
- MUSI 514 SCORE READING AND THEORY AT THE KEYBOARD
- MUSI 605 ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS
- MUSI 606 ADVANCED COMPUTER SOUND SYNTHESIS
- MUSI 611 CLASSROOM PEDAGOGY
- MUSI 711 ANALYTICAL APPROACHES
- MUSI 712 SEMINAR IN ADVANCED ANALYSIS
- MUSI 713 SPECIAL TOPICS IN ADVANCED ANALYSIS
- MUSI 723 AESTHETICS OF MUSIC

**Music History Courses**

Select 1 course from the following (or select 1 additional Music Theory Course):

- MUSI 422 RENAISSANCE MUSIC
- MUSI 429 MUSIC OF THE MIDDLE AGES
- MUSI 523 BIBLIOGRAPHY AND RESEARCH METHODS
- MUSI 524 AMERICAN MUSIC
- MUSI 525 PERFORMANCE PRACTICES SEMINAR
- MUSI 526 WOMEN IN MUSIC
- MUSI 527 TOPICS IN EARLY MUSIC
- MUSI 528 TOPICS IN THE 17TH AND 18TH CENTURIES
- MUSI 529 TOPICS IN 19TH AND 20TH CENTURIES
- MUSI 530 MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD
- MUSI 534 PROGRAM MUSIC IN THE 19TH CENTURY
- MUSI 537 SATIE, COCTEAU, & LES SIX: PARIS IN THE 1920s AND BEYOND
- MUSI 543 MUSIC AND MODERNISM IN FRANCE
- MUSI 551 MUSIC OF RICHARD STRAUSS
- MUSI 552 WORDS AND MUSIC
- MUSI 621 SELECTED STUDIES IN MUSIC HISTORY
- MUSI 622 EARLY OPERA
- MUSI 623 J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION
- MUSI 624 SEMINAR ON A SELECTED COMPOSER
- MUSI 625 MOZART OPERAS
- MUSI 626 THE CLASSICAL STYLE
- MUSI 627 ROMANTIC SONGS AND PIANO PIECES
- MUSI 721 MUSIC OF SCHOENBERG
- MUSI 722 MUSIC OF STRAVINSKY

**Music Career and Skills Enhancement Courses**

Select 2 courses from the following:

- LPCR 200 ADVANCED MENTAL TRAINING
- MGMT 621 THE NEW ENTERPRISE
- MGMT 625 CREATIVE ENTREPRENEURSHIP
- MGMT 629 BUSINESS PLAN DEVELOPMENT
- MGMT 676 SOCIAL ENTERPRISE
- MUSI 413 INTRODUCTION TO Dalcroze EURHYTHMICS
- MUSI 500 IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES
- MUSI 501 ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING
- MUSI 502 CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS
- MUSI 503 MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION
- MUSI 507 TECHNOLOGY FOR MUSICIANS
- MUSI 508 FUNDAMENTALS OF PRIVATE TEACHING
- MUSI 510 PROFESSIONAL DEVELOPMENT FOR MUSICIANS
- MUSI 515 MUSIC ENTREPRENEURSHIP
- MUSI 518 THE ART AND BUSINESS OF STUDIO TEACHING
- MUSI 519 THETMATIC PROGRAMMING: THE ART OF THE RECITAL
- MUSI 532 THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY
- MUSI 540 APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM

**Elective Requirements**

Select 6 credit hours from the following:

- Any course at the 300-level or above
- Any language course at the 100-level or above
- Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
- MUSI 342 RICE JAZZ ENSEMBLE
- MUSI 345 APPLIED STUDIES IN JAZZ
- MUSI 381 CONCENTRATION PIANO
- MUSI 436 COLLEGIUM MUSICUM
- MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC
- MUSI 585 SONATA CLASS
- MUSI 649 GRADUATE INDEPENDENT STUDY

**Footnotes and Additional Information**

1 No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.
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**Policies for the MMus Degree**

**Admission**
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**Academic Standards**

**Curriculum and Degree Requirements**
Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**
A minimum grade of “B-” is expected of all music students in their major applied area. A grade of “C+” or lower is considered unsatisfactory and will be evaluated in the following manner:

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**Note:** For music history and musicology majors a grade of “C+” or lower in any music history course is considered unsatisfactory and will be evaluated as above.

**Graduate degree requirement:** a minimum grade point average of 2.67 is necessary for graduation.

**Leaves of Absence and Voluntary Withdrawal**
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Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

**Thesis**
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website: [http://music.rice.edu](http://music.rice.edu)

**Opportunities for the MMus Degree**

**Other Musical Opportunities**

**Lectures and Performances**
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

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**Master of Music (MMus) Degree in the field of Vocal Performance**

**Program Learning Outcomes for the MMus Degree**

Upon completing the MMus degree, students will be able to:

1. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.
2. Develop advanced analytical skills in music theory and a deep understanding of how those skills inform music performance.
3. Demonstrate a thorough understanding of the relationship between music history and music performance.
4. Develop career development skills that complement their professional-level performance skills.
5. Demonstrate technical and musical competence in performance, composition, or historical scholarship at a professional level.

**Requirements for the MMus Degree**

The MMUS degrees can be thesis or non-thesis master’s degrees depending on the field declared. For general university requirements for thesis master’s degrees, please see Thesis Master’s Degrees (p. 67). For general university requirements for non-thesis master’s degrees, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MMUS degree programs must complete:

- A minimum of 43-54 credit hours depending on field of study to satisfy degree requirements

Students completing the MMus degree in all fields of study must participate in core music, applied music, and other required music courses as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as an MMus degree candidate; private or group lessons beyond this may result in additional fees.
## Summary

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<th>Code</th>
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<td>Total Credit Hours Required for the MMus Degree in the field of Vocal Performance</td>
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## Degree Requirements

### Performance Requirements

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<tr>
<td>MUSI 570</td>
<td>ADVANCED OPERA STUDIES (minimum of 4 semesters)</td>
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<td>MUSI 571</td>
<td>VOCAL COACHING (minimum of 4 semesters)</td>
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<td>MUSI 572</td>
<td>GRADUATE OPERA PERFORMANCE (minimum of 4 semesters)</td>
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<td>MUSI 587</td>
<td>GRADUATE DICTIOM FOR SINGERS (minimum of 2 semesters)</td>
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<td>MUSI 549</td>
<td>VOCAL PHYSIOLOGY &amp; FUNCTION</td>
<td>2</td>
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<td>MUSI 575</td>
<td>VOICE REPERTOIRE I</td>
<td>2</td>
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<tr>
<td>MUSI 576</td>
<td>VOICE REPERTOIRE II</td>
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<tr>
<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
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### Academic Coursework

Select 1 course from the Approved Music Theory course offerings (see below for list)  
Select 1 course from the Music History course offerings or an additional Music Theory course (see below for list)  
Select 2 courses from the Music Career and Skills Enhancement course offerings (see below for list)  
Select 6 credit hours from the Elective Requirements (see below for course list)  

### Additional Coursework

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<tr>
<th>Code</th>
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<td>GERM 141</td>
<td>FIRST YEAR GERMAN I</td>
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<tr>
<td>ITAL 141</td>
<td>FIRST YEAR ITALIAN I</td>
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<tr>
<td>GERM 142</td>
<td>FIRST YEAR GERMAN II</td>
<td>3</td>
</tr>
<tr>
<td>ITAL 142</td>
<td>FIRST YEAR ITALIAN II</td>
<td>3</td>
</tr>
</tbody>
</table>

### Proficiencies

Students must demonstrate the following proficiencies:

- Piano proficiency
- Aural skills proficiency

Total Credit Hours 48-52

## Approved Music Theory Courses

Select 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>MUSI 512</td>
<td>ANALYTICAL SYSTEMS</td>
</tr>
<tr>
<td>MUSI 513</td>
<td>MODAL COUNTERPOINT</td>
</tr>
<tr>
<td>MUSI 516</td>
<td>ADVANCED ORCHESTRATION</td>
</tr>
<tr>
<td>MUSI 517</td>
<td>EARLY MODERN MASTERS</td>
</tr>
<tr>
<td>MUSI 613</td>
<td>TONAL COUNTERPOINT</td>
</tr>
<tr>
<td>MUSI 614</td>
<td>SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION</td>
</tr>
<tr>
<td>MUSI 615</td>
<td>MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION</td>
</tr>
<tr>
<td>MUSI 617</td>
<td>MUSIC SINCE 1950</td>
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</table>

## Additional Music Theory Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
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<tbody>
<tr>
<td>MUSI 316</td>
<td>EXPERIMENTAL SOUND AND VIDEO</td>
</tr>
<tr>
<td>MUSI 378</td>
<td>CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC</td>
</tr>
<tr>
<td>MUSI 403</td>
<td>BASIC ELECTRONIC MUSIC</td>
</tr>
<tr>
<td>MUSI 404</td>
<td>ELECTRONIC MUSIC COMPOSITION</td>
</tr>
<tr>
<td>MUSI 405</td>
<td>MUSIC BUSINESS AND LAW</td>
</tr>
<tr>
<td>MUSI 416</td>
<td>ORCHESTRATION</td>
</tr>
<tr>
<td>MUSI 417</td>
<td>MUSIC FOR MEDIA</td>
</tr>
<tr>
<td>MUSI 514</td>
<td>SCORE READING AND THEORY AT THE KEYBOARD</td>
</tr>
<tr>
<td>MUSI 605</td>
<td>ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS</td>
</tr>
<tr>
<td>MUSI 606</td>
<td>ADVANCED COMPUTER SOUND SYNTHESIS</td>
</tr>
<tr>
<td>MUSI 611</td>
<td>CLASSROOM PEDAGOGY</td>
</tr>
<tr>
<td>MUSI 711</td>
<td>ANALYTICAL APPROACHES</td>
</tr>
<tr>
<td>MUSI 712</td>
<td>SEMINAR IN ADVANCED ANALYSIS</td>
</tr>
<tr>
<td>MUSI 713</td>
<td>SPECIAL TOPICS IN ADVANCED ANALYSIS</td>
</tr>
<tr>
<td>MUSI 723</td>
<td>AESTHETICS OF MUSIC</td>
</tr>
</tbody>
</table>

## Music History Courses

Select 1 course from the following (or select 1 additional Music Theory Course):

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MUSI 422</td>
<td>RENAISSANCE MUSIC</td>
</tr>
<tr>
<td>MUSI 429</td>
<td>MUSIC OF THE MIDDLE AGES</td>
</tr>
<tr>
<td>MUSI 523</td>
<td>BIBLIOGRAPHY AND RESEARCH METHODS</td>
</tr>
<tr>
<td>MUSI 524</td>
<td>AMERICAN MUSIC</td>
</tr>
<tr>
<td>MUSI 525</td>
<td>PERFORMANCE PRACTICES SEMINAR</td>
</tr>
<tr>
<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
</tr>
<tr>
<td>MUSI 527</td>
<td>TOPICS IN EARLY MUSIC</td>
</tr>
<tr>
<td>MUSI 528</td>
<td>TOPICS IN THE 17TH AND 18TH CENTURIES</td>
</tr>
<tr>
<td>MUSI 529</td>
<td>TOPICS IN 19TH AND 20TH CENTURIES</td>
</tr>
<tr>
<td>MUSI 530</td>
<td>MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD</td>
</tr>
<tr>
<td>MUSI 534</td>
<td>PROGRAM MUSIC IN THE 19TH CENTURY</td>
</tr>
<tr>
<td>MUSI 537</td>
<td>SATIE, COCTEAU, &amp; LES SIX: PARIS IN THE 1920s AND BEYOND</td>
</tr>
<tr>
<td>MUSI 543</td>
<td>MUSIC AND MODERNISM IN FRANCE</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>MUSI 551</td>
<td>MUSIC OF RICHARD STRAUSS</td>
</tr>
<tr>
<td>MUSI 552</td>
<td>WORDS AND MUSIC</td>
</tr>
<tr>
<td>MUSI 621</td>
<td>SELECTED STUDIES IN MUSIC HISTORY</td>
</tr>
<tr>
<td>MUSI 622</td>
<td>EARLY OPERA</td>
</tr>
<tr>
<td>MUSI 623</td>
<td>J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION</td>
</tr>
<tr>
<td>MUSI 624</td>
<td>SEMINAR ON A SELECTED COMPOSER</td>
</tr>
<tr>
<td>MUSI 625</td>
<td>MOZART OPERAS</td>
</tr>
<tr>
<td>MUSI 626</td>
<td>THE CLASSICAL STYLE</td>
</tr>
<tr>
<td>MUSI 627</td>
<td>ROMANTIC SONGS AND PIANO PIECES</td>
</tr>
<tr>
<td>MUSI 721</td>
<td>MUSIC OF SCHOENBERG</td>
</tr>
<tr>
<td>MUSI 722</td>
<td>MUSIC OF STRAVINSKY</td>
</tr>
</tbody>
</table>

**Music Career and Skills Enhancement Courses**

4 Select 2 courses from the following:

- LPCR 200 ADVANCED MENTAL TRAINING
- MGMT 621 THE NEW ENTERPRISE
- MGMT 625 CREATIVE ENTREPRENEURSHIP
- MGMT 629 BUSINESS PLAN DEVELOPMENT
- MGMT 676 SOCIAL ENTERPRISE
- MUSI 413 INTRODUCTION TO Dalcroze EURHYTHMICS
- MUSI 500 IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES
- MUSI 501 ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING
- MUSI 502 CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS
- MUSI 503 MUSIC AND PERFORMANCE: THE MIND/ BODY CONNECTION
- MUSI 507 TECHNOLOGY FOR MUSICIANS
- MUSI 508 FUNDAMENTALS OF PRIVATE TEACHING
- MUSI 510 PROFESSIONAL DEVELOPMENT FOR MUSICIANS
- MUSI 515 MUSIC ENTREPRENEURSHIP
- MUSI 518 THE ART AND BUSINESS OF STUDIO TEACHING
- MUSI 519 THEME PROGRAMMING: THE ART OF THE RECITAL
- MUSI 532 THE FELDENKRAIS METHOD AND THE MUSICIAN’S BODY
- MUSI 540 APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM

**Elective Requirements**

Select 6 credit hours from the following:

- Any course at the 300-level or above
- Any language course at the 100-level or above
- Any additional Music Theory, Music History, or Music Career and Skills Enhancement course
- Secondary Lessons (any course between MUSI 251 and MUSI 297 with the exception of MUSI 281)
- MUSI 342 RICE JAZZ ENSEMBLE
- MUSI 345 APPLIED STUDIES IN JAZZ
- MUSI 381 CONCENTRATION PIANO
- MUSI 436 COLLEGIUM MUSICUM
- MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC
- MUSI 585 SONATA CLASS
- MUSI 649 GRADUATE INDEPENDENT STUDY

**Footnotes and Additional Information**

1. No more than three (3) credit hours of MUSI 649 - Independent Study may fulfill this requirement. Remedial courses (such as MUSI 281, MUSI 432, MUSI 511, MUSI 521, or MUSI 522) and extra hours of required Performance Coursework (such as extra private instrumental or vocal study, ensembles, chamber music, vocal coaching, or repertoire classes) will not fulfill this requirement.

2. Language coursework is only required for MMus students in the field of Vocal Performance if not completed at the undergraduate level. Language coursework may be taken for Elective credit by Vocal Performance students only if the required coursework (or equivalent) is completed at the undergraduate level, otherwise language coursework is considered remedial and will not count toward the elective requirement.

3. Deficiencies in these areas will result in remedial coursework being added to a student’s degree plan.

**Policies for the MMus Degree**

**Admission**

For Instrumental Performance, Vocal Performance, and Orchestral Conducting applicants, an audition is required. Composition applicants must submit portfolios, and Musicology applicants must provide samples of their written work. Musicology applicants must also complete advanced music tests as well as the Graduate Record Examination for admission consideration.

**Academic Standards**

**Curriculum and Degree Requirements**

Further information on curricular requirements for all majors and degree programs is available from the Shepherd School of Music.

**Grading Policy**

A minimum grade of "B-" is expected of all music students in their major applied area. A grade of "C+" or lower is considered unsatisfactory and will be evaluated in the following manner:

A music major who receives a grade of "C+" or lower in their major applied area will be placed on music probation. Music probation signifies that the student’s work has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If a student receives a second semester of "C+" or lower in their major applied area, whether for consecutive semesters or not, the student will be discontinued as a music performance major and merit scholarship from the Shepherd School will be discontinued.

**Note:** For music history and musicology majors a grade of "C+" or lower in any music history course is considered unsatisfactory and will be evaluated as above.
Graduate degree requirement: a minimum grade point average of 2.67 is necessary for graduation.

Leaves of Absence and Voluntary Withdrawal
Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean’s office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

Performance
Students are expected to perform frequently during their residency at Rice. MMus students in any of the performance fields of study must present at least two full recitals. Composition and Conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all MMus students must participate in the school’s conducted ensembles as assigned.

Thesis
A thesis is required for MMus students in the field of Musicology. In lieu of a thesis, MMus students in the field of Composition must produce an original work of extended scope. Both thesis and original work must be publicly defended.

For additional information, please see the School of Music website: http://music.rice.edu

Opportunities for the MMus Degree
Other Musical Opportunities
Lectures and Performances
A visiting lecture series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Houston Ballet, Houston Masterworks Chorus, Da Camera, Context, and Chamber Music Houston, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

For additional information, please see the School of Music website: http://music.rice.edu

Nanoscale Science
Contact Information
Nanoscale Science
https://profms.rice.edu/
713-348-3188

Dagmar Beck
Program Director
dkbeck@rice.edu

Lindsey Hodge
Program Administrator
lindsey.hodge@rice.edu

Rice University introduced this degree program in fall 2002. This program combines a strong component in quantum theory, which governs the behavior of systems at the nanoscale, with the study of practical nano- and mesoscale devices. The program provides the student with the knowledge required to navigate successfully the emerging field of nanotechnology. New courses cover cutting-edge areas such as quantum behavior of nanostructures, quantum nanotechnology, nanoscale imaging, and the fabrication of nanostructures. In addition, a year-long course in methods of experimental physics ensures that students obtain the advanced practical skills valuable to industry.

The degree in Nanoscale Science is 1 of 5 degrees in the professional science master's (PSM) program at Rice University housed in the Wiess School of Natural Sciences. These master's degrees are designed for students seeking to gain further scientific core expertise coupled with enhanced management, communication, and leadership skills, instilling a level of scholastic proficiency that exceeds that of the bachelor's level, and creating the cross-functional aptitudes needed in modern industry. This will allow students to move more easily into management careers in consulting or research and development, design, and marketing of new science-based products.

A coordinated MBA/MSNS degree is offered in conjunction with the Jesse H. Jones Graduate School of Business.

Nanoscale Science does not currently offer an academic program at the undergraduate level.

Master's Program
• Master of Science in Nanoscale Science (MSNS) Degree (p. 645)

Coordinated Program
• Master of Business Administration (MBA) Degree / Master of Science in Nanoscale Science (MSNS) Degree (p. 645)

Director
F. Barry Dunning

Professors
Andrew R. Barron
Rui-Rui Du
Jason H. Hafner
Thomas C. Killian
Douglas Natelson
Frank R. Toffoletto

Assistant Professors
Isabell Thomann

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: Courses from various subjects may apply towards the graduate degree.
Department Description and Code
• Physics: PHYS

Graduate Degree Description and Code
• Master of Science in Nanoscale Science degree: MSNS

Graduate Degree Program Description and Code
• Degree Program in Nanoscale Science: NSSC

Master of Business Administration (MBA) Degree / Master of Science in Nanoscale Science (MSNS) Degree

Program Learning Outcomes for the MBA/MSNS Coordinated Degree Program
Upon completing the MBA/MSNS Coordinated Degree Program, students will:
1. Develop knowledge of quantum theory and its application to nano- and mesoscale devices.
2. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
3. Develop, evaluate, and implement business strategies and operational solutions holistically, effectively integrating management principles across the functional areas both as a leader and as a contributor.

Requirements for the MBA/MSNS Coordinated Degree Program
Students may earn a Master of Science degree from the Weiss School of Natural Sciences Professional Science Master’s (PSM) program in the following fields:
• Bioscience and Health Policy
• Environmental Analysis and Decision Making
• Nanoscale Science
• Space Studies
• Subsurface Geoscience

For the coordinated MBA/Master of Science degree from the professional master’s program, students must complete:
• A minimum of 14 courses (40-41 credit hours depending on course selection) to satisfy degree requirements.
• A 3-6 month internship. At the conclusion of the internship, students must present a summary of the internship project in both oral and written form as part of the professional master's seminar.
• A minimum of 30 credit hours at the 500-level or above.

In addition to the core science courses, students are required to complete a three to six month internship and take a set of cohort courses focusing on business and communication. Part-time students who already work in their area of study may fulfill the internship requirement by working on an approved project with their current employer. Certain course requirements may be waived based upon prior graduate coursework or industrial experience.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the PSM (Professional Science Masters) program director and the MSNS advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Policies for the MBA/MSNS Coordinated Degree Program
For additional information on these two degrees:
1. Please see the Business website: https://business.rice.edu/
2. Please see the Nanoscale Science website: https://profms.rice.edu/

Opportunities for the MBA/MSNS Coordinated Degree Program
For additional information on these two degrees:
1. Please see the Business website: https://business.rice.edu/
2. Please see the Nanoscale Science website: https://profms.rice.edu/

Master of Science in Nanoscale Science (MSNS) Degree

Program Learning Outcomes for the MSNS Degree
Upon completing the MSNS degree, students will:
1. Develop knowledge of quantum theory and its application to nano- and mesoscale devices.
2. Demonstrate written, oral, and visual communication skills to bridge the gaps between science and business.
3. Develop business and management skills, and obtain practical skills valuable to nanotechnology-related companies.

Requirements for the MSNS Degree
The MSNS degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MSNS degree must complete:
• A minimum of 14 courses (40-41 credit hours depending on course selection) to satisfy degree requirements.
• A 3-6 month internship. At the conclusion of the internship, students must present a summary of the internship project in both oral and written form as part of the professional master's seminar.
• A minimum of 30 credit hours at the 500-level or above.

Students plan their course schedules in consultation with the Weiss School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degree candidates can fulfill requirements for both degrees within 3 academic years.
## Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MSNS Degree</td>
<td>40-41</td>
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</table>

## Degree Requirements

### Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>PHYS 533</td>
<td>NANOSTRUCTURE AND NANOTECHNOLOGY I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 534</td>
<td>NANOSTRUCTURE AND NANOTECHNOLOGY II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 537</td>
<td>METHODS OF EXPERIMENTAL PHYSICS I</td>
<td>4</td>
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Select 1 from the following:

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<thead>
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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>PHYS 538</td>
<td>METHODS OF EXPERIMENTAL PHYSICS II</td>
<td>3-4</td>
</tr>
<tr>
<td>PHYS 539</td>
<td>CHARACTERIZATION AND FABRICATION AT THE NANOSCALE</td>
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<tr>
<td>PHYS 416</td>
<td>COMPUTATIONAL PHYSICS</td>
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<tr>
<td>PHYS 605</td>
<td>COMPUTATIONAL ELECTRODYNAMICS</td>
<td></td>
</tr>
<tr>
<td>ELEC 605</td>
<td>AND NANOPHOTONICS</td>
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<tr>
<td>ELEC 571</td>
<td>IMAGING AT THE NANOSCALE</td>
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### Cohort Courses

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSCI 610 / ENGI 610</td>
<td>MANAGEMENT FOR SCIENCE AND ENGINEERING</td>
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</tr>
<tr>
<td>NSCI 501</td>
<td>PROFESSIONAL MASTER'S SEMINAR (required for 2 semesters, 1st semester)</td>
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<tr>
<td>NSCI 501</td>
<td>PROFESSIONAL MASTER'S SEMINAR (required for 2 semesters, 2nd semester)</td>
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<tr>
<td>NSCI 511</td>
<td>SCIENCE POLICY, AND ETHICS</td>
<td>3</td>
</tr>
<tr>
<td>NSCI 512</td>
<td>PROFESSIONAL MASTER'S PROJECT</td>
<td>1</td>
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### Internship

1. Internship

### Recommended Electives

Select 6 elective courses from the following:

#### Nano-Materials

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MSNE 535 / PHYS 535</td>
<td>CRYSTALLOGRAPHY &amp; DIFFRACTION</td>
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<tr>
<td>MSNE 580</td>
<td>MICROSCOPY METHODS IN MATERIALS SCIENCE</td>
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<td>MSNE 614</td>
<td>SPECIAL TOPICS II</td>
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<tr>
<td>MSNE 650</td>
<td>NANOATERIALS AND NANOMECHANICS</td>
<td></td>
</tr>
<tr>
<td>PHYS 517</td>
<td>COMPUTATIONAL PHYSICS</td>
<td></td>
</tr>
<tr>
<td>PHYS 539</td>
<td>CHARACTERIZATION AND FABRICATION AT THE NANOSCALE</td>
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</table>

#### Nano-Optics and Nano-Photonics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>ELEC 568</td>
<td>LASER SPECTROSCOPY</td>
<td></td>
</tr>
<tr>
<td>ELEC 571</td>
<td>IMAGING AT THE NANOSCALE</td>
<td></td>
</tr>
<tr>
<td>ELEC 585 / BIOE 591</td>
<td>FUNDAMENTALS OF MEDICAL IMAGING I</td>
<td></td>
</tr>
<tr>
<td>ELEC 603</td>
<td>TOPICS IN NANOPHOTONICS</td>
<td></td>
</tr>
<tr>
<td>PHYS 569</td>
<td>ULTRAFAST OPTICAL PHENOMENA</td>
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#### Nano-Bio

### Management and Entrepreneurship

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BUSI 463</td>
<td>FOUNDATIONS OF ENTREPRENEURSHIP STRATEGY AND FUNDING</td>
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</tr>
<tr>
<td>MGMT 625</td>
<td>CREATIVE ENTREPRENEURSHIP</td>
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<tr>
<td>MGMT 629</td>
<td>BUSINESS PLAN DEVELOPMENT</td>
<td></td>
</tr>
<tr>
<td>MGMT 670</td>
<td>OPERATIONS STRATEGY</td>
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</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
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</tr>
<tr>
<td>MGMT 724</td>
<td>SOCIAL ENTREPRENEURSHIP</td>
<td></td>
</tr>
<tr>
<td>MGMT 734</td>
<td>TECHNOLOGY ENTREPRENEURIAL</td>
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</table>

### Other Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 505 / ENGI 505</td>
<td>ENGINEERING PROJECT MANAGEMENT AND ECONOMICS</td>
<td></td>
</tr>
<tr>
<td>ENGI 614</td>
<td>LEARNING HOW TO INNOVATE?</td>
<td></td>
</tr>
<tr>
<td>MGMT 574</td>
<td>OPERATIONS MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>MGMT 609</td>
<td>MANAGING ENERGY TRANSITIONS</td>
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<tr>
<td>MGMT 661</td>
<td>INTERNATIONAL BUSINESS LAW</td>
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<tr>
<td>MGMT 669</td>
<td>BUSINESS STRATEGY IN THE ENERGY INDUSTRY</td>
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<tr>
<td>MGMT 670</td>
<td>OPERATIONS STRATEGY</td>
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</tbody>
</table>

### Total Credit Hours

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>40-41</td>
</tr>
</tbody>
</table>

### Footnotes and Additional Information

1. An internship may be conducted under the guidance of a host company, government agency, or national laboratory. A summary of the internship project is required in both oral and written form as part of the Professional Master’s Project (NSCI 512).
2. To fulfill the remaining requirements for the Nanoscale Science degree program, students must complete a total of 6 additional courses (18 credit hours) as elective coursework from areas of specialization listed below, of which at least 6 credit hours must be science/engineering courses at the 500-level or above. Examples of courses and specializations that may be used as electives are listed here.
3. Each of these electives is not offered every year, and some courses may have prerequisites or require instructor permission. Most courses with the MGMT subject code carry 1.5 credit hours and last half of a semester.

### Policies for the MSNS Degree

#### Nanoscale Science Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Nanoscale Science publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Professional_Science_Masters_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Professional_Science_Masters_Handbook.pdf)

#### Admission

Admission to graduate study in nanoscale science is open to qualified students holding a bachelor's degree in physics, electrical engineering, or a related field that includes intermediate level work in mathematics,
electrodynamics, and quantum physics. Department faculty evaluate the previous academic record and credentials of each applicant individually.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

For additional information, please see the Nanoscale Science website: https://profms.rice.edu/

Opportunities for the MSNS Degree
Fifth-Year MSNS Degree Option for Rice Undergraduate Students
Rice undergraduate students have an option to pursue the MSNS degree by adding an additional fifth year to their four undergraduate years of science studies. Advanced Rice undergraduate students in good academic standing may apply to the graduate program during their junior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking required core courses of the Nanoscale Science program during their senior year. A plan of study based on their particular focus area will need to be approved by the PSM (Professional Science Masters) program director and the MSNS advisor.

As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for their bachelor’s degree and the MSNS degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).

• should be aware that there could be financial aid implications, if the conversion of undergraduate coursework to that of graduate-level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).

For additional information, please see the Nanoscale Science website: https://profms.rice.edu/

Naval Science
Contact Information
Naval Science
http://nrotc.rice.edu/
ROTC Annex Building
713-348-3940

Michael Carambas, USN
Department Chair
nrotcco@rice.edu

Students may enroll in the Naval Reserve Officers’ Training Corps (NROTC) program as scholarship or non-scholarship students.

An academic minor in Naval Science is also available to all Rice students in undergraduate degree-granting programs. The faculty and instructors in the program consist of active-duty military officers.

Minor
• Minor in Naval Science (p. 647)

Naval Science does not currently offer an academic program at the graduate level.

Chair and Professor
Michael A. Carambas, USN

Associate Professor
Matthew G. Roberts, USMC

Assistant Professors
Joshua E. Langham, USMC
Gerald C. Sellars, USN
Patrick Snow, USN

Undergraduate Advisors for Minor
Matthew G. Roberts, USMC
Gerald C. Sellars, USN

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: NAVA

Program Description and Code
• Naval Science: NAVA

Undergraduate Minor Description and Code
• Minor in Naval Science: NAVA

Minor in Naval Science
Program Learning Outcomes for Minor in Naval Science
Upon completing the minor in Naval Science, students will be able to:

1. Gain a broad understanding of the United States Navy and Marine Corps to include their current structure, organization, missions, and national security importance.

2. Become familiar through the historical process with the major events, attitudes, personalities, and circumstances that have shaped the naval service and their relative impact on American history.

3. Develop an understanding of Western moral traditions and ethical philosophy as they relate to military leadership and the conduct of warfare, to include Aristotle, Bentham, Mill, Kant, and Aquinas.

4. Develop skills in critical analysis and writing. They will use all methods to show full comprehension of all material.

Requirements for the Minor in Naval Science
Students pursuing a minor in Naval Science must complete:

• A minimum of 6 courses (18 credit hours) to satisfy the minor requirements.

• A minimum of 3 courses (9 credit hours) at the 300-level or higher
• A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

The minor in Naval Science (NAVA) is available to all degree-seeking Rice students in undergraduate degree-granting programs.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<thead>
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<th>Code</th>
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Minor Requirements

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Core Requirements

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<tr>
<td>NAVA 101</td>
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<td>NAVA 103</td>
<td>SEA POWER AND MARITIME AFFAIRS</td>
<td>3</td>
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<td>NAVA 203</td>
<td>LEADERSHIP AND MANAGEMENT I</td>
<td>3</td>
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<td>NAVA 402</td>
<td>LEADERSHIP AND ETHICS</td>
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Elective Requirements

Select 2 from the following: 6

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<td>NAVA 302</td>
<td>NAVAL OPERATIONS AND SEAMANSHIP</td>
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<td>NAVA 303</td>
<td>EVOLUTION OF WARFARE</td>
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<td>NAVA 403</td>
<td>NAVAL ENGINEERING</td>
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<td>NAVA 410</td>
<td>AMPHIBIOUS WARFARE</td>
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</table>

Total Credit Hours 18

Footnotes and Additional Information

1 All Naval Science (NAVA) courses are offered once every academic year with the exception of NAVA 303 and NAVA 410. These two courses are offered every other academic year.

Program Transfer Credit Guidelines

Students pursuing the minor in Naval Science should be aware of the following program-specific transfer credit guidelines:

• No more than 2 courses (6 credit hours) as transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
• Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Naval Science website: [http://nrotc.rice.edu/Naval_Science_Courses/](http://nrotc.rice.edu/Naval_Science_Courses/)

Opportunities for the Minor in Naval Science

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Naval Science website: [http://nrotc.rice.edu/Naval_Science_Courses/](http://nrotc.rice.edu/Naval_Science_Courses/)

Neuroscience

Contact Information

Behnaam Aazhang
Program Director
aaz@rice.edu

The Neuroscience program, housed in the BioSciences Department, provides a strong interdisciplinary education covering the breadth of fundamental disciplines on which neuroscience is based and includes multiple opportunities for experiential learning. Neuroscience uses diverse methodologies to investigate the brain and its relationship to the mind, and includes the analysis of brain structures related to specific cognitive processes and representations, investigations of the biochemical processes that occur in brain functions, and the interactions and correlations among the brain, behavior, and biology that can be observed and modeled. The primary aim of the neuroscience degree program is to provide an understanding of how the cognition and behavior of organisms are encoded in neural processes. Such an understanding of the brain, bringing to bear many types of knowledge, is necessary as a basis for understanding and solving many practical problems including but not limited to: neurophysiology of disease; treatment for pathologies related to aging, stroke, autism, and hearing and other impairments; human behavior relating to risk, addiction, and social pathologies; memory, learning, and acquisition of literacy; neural basis of emotion and its relation to human perception and behavior.
The Neuroscience program offers a broad range of introductory and advanced courses that lead to either a Bachelor of Arts (BA) Degree with a Major in Neuroscience or a Minor in Neuroscience. The BA degree is designed with the intent that all majors will gain a robust foundation in science and engineering basics and additional experience in the multidisciplinary core areas that contribute to the breadth of modern neuroscience. Project-based laboratory courses are required, and students will have the opportunity to pursue independent research. This program is appropriate for students with interests in pursuing advanced degrees in the future. The Minor is available for students who choose other majors but desire strong foundational knowledge of the diverse aspects of how the brain functions. Neuroscience students are encouraged to participate in undergraduate research, and numerous students have already availed themselves of the neuroscience research opportunities at Rice and within the Houston community.

**Bachelor’s Program**

- Bachelor of Arts (BA) Degree with a Major in Neuroscience  
  (ga.rice.edu/programs-study/departments-programs/natural-sciences/neuroscience/neuroscience-ba)

**Minor**

- Minor in Neuroscience (p. 649)

Neuroscience does not currently offer an academic program at the graduate level.

**Advisors**

Behnaam Aazhang  
David Caprette  
J. David Dickman  
Simon Fischer-Baum  
Jonathan Flynn  
Caleb Kemere  
Peter Lwigale

**Professors**

Behnaam Aazhang  
Richard Baraniuk  
Kathleen Beckingham  
Janet Braam  
Anthony Brandt  
John W. Clark  
James L. Dannemiller  
Michael Deem  
J. David Dickman  
Suzanne Kemmer  
Herbert Levine  
Randi C. Martin  
James McNew  
Marcia O’Malley  
Timothy Schroeder  
Charles Siewert  
Michael Stern  
Devika Subramanian  
Marina Vannucci  
Rick K. Wilson

**Assistant Professors**

Peter Lwigale  
Robert Raphael

**Assistant Professors**

Simon Fischer-Baum  
Caleb Kemere  
Alexander Morgan  
Ankit Patel  
Xaq Pitkow  
Amina Qutub  
Jacob Robinson  
Julia Saltz  
Rosa Uribe  
Weiwei Zhong

**Teaching Professor**

David Caprette

**Lecturer**

Jonathan Flynn

**Adjunct Professors**

Fabrizio Gabbiani  
Anne Sereno  
Harel Shoval

**Description and Code Legend**

*Note:* Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**

- Course offerings/subject code: NEUR

**Program Description and Code**

- Neuroscience: NEUR

**Undergraduate Major Description and Code**

- Major in Neuroscience: NEUX

**Undergraduate Minor Description and Code**

- Minor in Neuroscience: NEUR

**Minor in Neuroscience**

**Program Learning Outcomes for the Minor in Neuroscience**

Upon completing the minor in Neuroscience, students will be able to:

1. Demonstrate knowledge of the key issues, questions, and perspectives that define contemporary neuroscience.
2. Understand neuroscience as an interdisciplinary field and demonstrate the ability to draw on, and synthesize, key findings and concepts in the sciences, humanities and/or engineering in both the evaluation of existing theories and in the formulation and solution of new problems in neuroscience.
Requirements for the Minor in Neuroscience

Students pursuing a minor in Neuroscience must complete:

- A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
- A minimum of 3 courses (9 credit hours) at the 300-level or above.
- No more than 2 courses (6 credit hours) from study abroad or transfer credits. For additional program guidelines regarding transfer credit, see the Policies tab.
- At least 2 of the electives should be completed for the minor only (not shared or double-counted with another major).
- The requirements for 1 Area of Specialization (see list below). The Areas of Specialization for the minor in Neuroscience are:
  - Humanities and Social Science specialization (p. 650): represents cognitive and behavioral approaches to neuroscience.
  - Natural Sciences and Engineering specialization (p. 650): represents genetics, cellular/molecular, bioengineering, computation, and systems-level investigations.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Minor Requirements

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<td>Core Requirements</td>
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<td>FUNDAMENTAL NEUROSCIENCE SYSTEMS</td>
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<td>Area of Specialization</td>
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<td>Humanities and Social Science Track</td>
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Areas of Specialization

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<th>Area of Specialization</th>
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<td>Area of Specialization: Humanities and Social Science</td>
<td>NEUR 362 / PSYC 362</td>
<td>COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN</td>
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Footnotes and Additional Information

1. At least 2 of the electives should be completed for the minor only (not shared or double-counted with another major).
2. No more than 3 credits for research (NEUR 310 and/or NEUR 401/NEUR 402/NEUR 412) may be used to satisfy elective requirements for this specialization. Additionally, the entire course sequence NEUR 401/NEUR 402/NEUR 412 must be completed in order to apply this coursework toward the Neuroscience minor requirements.
3. NEUR 362/PSYC 362 may be used to fulfill this requirement.

Electives: Humanities and Social Science Specialization

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<td>LING 411 / ANTH 411</td>
<td>NEUROLINGUISTICS</td>
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<td>NEUR 301</td>
<td>ADVANCED COGNITIVE NEUROSCIENCE: ATTENTION AND PERCEPTION</td>
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<tr>
<td>NEUR 302</td>
<td>ADVANCED COGNITIVE NEUROSCIENCE: HIGHER MENTAL FUNCTIONS</td>
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<td>NEUR 364</td>
<td>COGNITIVE NEUROSCIENCE LAB</td>
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<tr>
<td>PHIL 103</td>
<td>PHILOSOPHICAL ASPECTS OF COGNITIVE SCIENCE</td>
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2017-2018 General Announcements
Rice University

PHIL 303 THEORY OF KNOWLEDGE 3
PHIL 312 PHILOSOPHY OF MIND 3
PHIL 358 PHILOSOPHY OF NEUROSCIENCE 3
PHIL 359 ANIMAL MINDS 3
PSYC 375 NEUROPSYCHOLOGY OF LANGUAGE AND MEMORY 3
PSYC 432 BRAIN AND BEHAVIOR 3

Electives: Natural Sciences and Engineering Specialization

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<td>BIOE 381 / ELEC 381</td>
<td>FUNDAMENTALS OF NERVE AND MUSCLE ELECTROPHYSIOLOGY</td>
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<td>BIOE 481 / ELEC 481 / NEUR 481</td>
<td>COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING</td>
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<td>BIOE 492</td>
<td>SENSORY NEUROENGINEERING</td>
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<td>COMP 440</td>
<td>ARTIFICIAL INTELLIGENCE</td>
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<td>EBIO 321 / NEUR 382</td>
<td>ANIMAL BEHAVIOR</td>
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<td>ELEC 382</td>
<td>INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE</td>
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<td>ELEC 475</td>
<td>LEARNING FROM SENSOR DATA</td>
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<td>NEUR 310</td>
<td>INDEPENDENT RESEARCH FOR NEUROSCIENCE UNDERGRADUATES</td>
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<td>NEUR 383</td>
<td>INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY</td>
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<td>NEUR 401 &amp; NEUR 402 &amp; NEUR 412</td>
<td>UNDERGRADUATE HONORS RESEARCH and UNDERGRADUATE HONORS RESEARCH SEMINAR</td>
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<td>NEUR 415 / CAAM 415 / ELEC 488</td>
<td>THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS</td>
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<td>NEUR 416 / CAAM 416 / ELEC 489</td>
<td>NEURAL COMPUTATION</td>
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Footnotes and Additional Information

1 Course is taught at UTHSCSA.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the minor in Neuroscience should be aware of the following program-specific transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Neuroscience website: http://neuroscience.rice.edu/.

Opportunities for the Minor in Neuroscience

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Research in Neuroscience

Research in highly encouraged for all neuroscience minors, and may opportunities are available for independent research at Rice and other institutions of the Texas Medical Center. Students can receive course credit for independent research through the courses NEUR 310 and NEUR 401, NEUR 402, and NEUR 412. There is a 3 credit hour limit for applying research courses to the NEUR minor degree requirements.

For additional information, please see the Neuroscience website: http://neuroscience.rice.edu/.

Philosophy

Contact Information

Philosophy
http://philosophy.rice.edu/
208 Humanities Building
713-348-2723

Donald Morrison
Department Chair
donaldm@rice.edu

Philosophy is best described as the attempt to think clearly and deeply about the fundamental questions that arise for us as human beings. What is the nature of knowledge (epistemology)? How are
Bachelor of Arts (BA) Degree with a Major in Philosophy

we to distinguish between what really is and what only seems to be (metaphysics)? What is the right thing to do (ethics)? Is there any meaning to existence? To study the history of philosophy is to study the best, most enduring answers given to these questions in the past. Because every other field of study adopts some stance toward these questions, though often implicitly, philosophical issues arise in the natural and social sciences, history, linguistics, literature, art, and so on. Special courses in philosophy deal with each of these.

Characteristic of philosophy are commitments to the construction and evaluation of arguments, to expressing thoughts clearly and precisely, and to defending one’s ideas and evaluating the ideas of others. The study of philosophy thus provides resources for critical participation in all realms of human endeavor.

The graduate program trains students to teach and pursue research in the main areas of department concentration: ethics (especially bioethics) and social and political philosophy, core portions of analytic philosophy (especially philosophy of mind), history of philosophy, and continental philosophy.

Bachelor’s Program
• Bachelor of Arts (BA) Degree with a Major in Philosophy (p. 652)

Master’s Program
• Master of Arts (MA) Degree in the field of Philosophy

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Philosophy (p. 654)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Chair
Donald Morrison

Director of Admissions
Gwendolyn Bradford

Director of Undergraduate Studies
Charles Siewart

Director of Graduate Studies
George Sher

Professors
Baruch Brody
Steven Crowell
H. Tristram Engelhardt, Jr.
Richard Grandy
Timothy Schroeder
George Sher
Charles Siewert

Associate Professor
Gwendolyn Bradford

Assistant Professors
Alexander Morgan
Vida Yao

Professor Emeritus
Mark Kulstad

Visiting Lecturer
Brian Miller

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: PHIL

Department Description and Code
• Philosophy : PHIL

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in Philosophy: PHIL

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Philosophy: PHIL

Bachelor of Arts (BA) Degree with a Major in Philosophy

Program Learning Outcomes for the BA Degree with a Major in Philosophy

Upon completing the BA degree with a major in Philosophy, students will be able to:

1. Demonstrate an understanding of the general historical development of philosophy and develop an in depth understanding of at least one historical period or movement.
2. Demonstrate the ability to read philosophical texts critically and with understanding of the problems and contexts.
3. Demonstrate the cognitive and formal abilities to evaluate critically philosophical arguments.
4. Demonstrate the ability to communicate clearly and logically their own views on a range of important philosophical problems.
Requirements for the BA Degree with a Major in Philosophy

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Philosophy must complete:

- A minimum of 10 courses (30 credit hours) from departmental (PHIL) course offerings to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 6 courses (18 credit hours) at the 300-level or above.

Students who are pursuing two majors (i.e., are double majors) and have declared the Philosophy major must complete:

- A minimum of 9 courses (27 credit hours) from departmental (PHIL) course offerings to satisfy major requirements.
- A minimum of 6 courses (18 credit hours) at the 300-level or above.

Double majors who drop the other major are required to meet the requirements listed for single majors.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<td>Total Credit Hours Required for the BA Degree with a Major in Philosophy</td>
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Degree Requirements

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<td>Core Courses</td>
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<td>HISTORY OF PHILOSOPHY II</td>
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<td>Value Theory</td>
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<td>PHIL 327</td>
<td>HISTORY OF SOCIAL AND POLITICAL PHILOSOPHY</td>
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<td>Elective Requirements</td>
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<td>Select 4 electives from departmental (PHIL) courses at the 300-level or above.</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Philosophy (for single majors)</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Philosophy (for double majors)</td>
<td>27</td>
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<tr>
<td></td>
<td>Additional Credit Hours to Complete BA Degree Requirements</td>
<td>30-33</td>
</tr>
<tr>
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<td>University Graduation Requirements (p. 25) *</td>
<td>60</td>
</tr>
<tr>
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<td>Total Credit Hours</td>
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</tr>
</tbody>
</table>

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Double majors who drop the other major are required to meet the requirements listed for single majors.

2 Double majors may satisfy this requirement by completing a total of 3 courses (9 credit hours) from departmental (PHIL) course offerings at the 300-level or above. Students pursuing departmental honors cannot apply PHIL 411 and PHIL 412 to the Elective Requirements. Students who pursue the senior thesis option must take PHIL 411 and PHIL 412. These courses are required in addition to major requirements and will not fulfill elective requirements. For more information, see the Opportunities tab.

Policies for the BA Degree with a Major in Philosophy

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.
Departmental Transfer Credit Guidelines
Students pursuing the major in Philosophy should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
- Transfer credit coursework from online-only courses cannot be used to count towards the major.

For additional information, please see the Philosophy website: http://philosophy.rice.edu

Opportunities for the BA Degree with a Major in Philosophy
Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Distinction in Research in Philosophy
Students must submit an application to be considered for “Distinction in Research in Philosophy” by April 1. Minimum qualifications are a 3.5 GPA in philosophy courses and enrollment in Honors Thesis course PHIL 412 or the Research Seminar for majors, PHIL 407. The work to be considered must be submitted to a committee appointed by the Chair, which will include the Director of Undergraduate Studies, any Honors Thesis supervisors, and the instructor(s) of the Research Seminar.

Senior Thesis and Departmental Honors in Philosophy
Qualified majors may apply before their senior year for directed research leading to a senior thesis, carried out during both semesters of the senior year. Each semester will require 3 credit hours; these 6 hours are in addition to the course hours required for the major.

To qualify for the program, students must have an approved research proposal and the agreement of a faculty member to serve as advisor for that project. Applicants will normally be required to have a GPA of 3.75 in philosophy courses and to have completed at least two upper-level courses in the distribution area of the proposed research. (See the major requirements for the definition of the distribution areas.) Applications should be submitted to the departmental director of undergraduate studies and will be evaluated by the department.

Students who are considering applying to write a senior thesis should consult the departmental director of undergraduate studies and potential advisors as early as possible. Normally students will apply before preregistration in the second semester of their junior year and will spend time during the following summer reading from a list they have developed with their advisor. The thesis normally will be between 7,500 and 15,000 words (approximately 30–60 pages) in length. Students will enroll in PHIL 411 and PHIL 412. Students accepted into the Rice Undergraduate Scholars Program should enroll in HONS 470 and HONS 471 and will be awarded departmental honors for their work in that program if they meet the requirements in this statement. Note that acceptance into the departmental honors program is a separate process from acceptance in RUSP, as is the evaluation for departmental honors.

To be considered for honors, the senior thesis must be completed by the beginning of April. The thesis will be read and evaluated by the advisor and a second reader chosen by the department, and the final decision on honors will be made by the entire faculty. A student will receive honors if he or she receives a grade of A+, A, or A- in PHIL 412. Completion of the major with at least a 3.5 GPA in all philosophy courses is required for departmental honors. Students who miss the April deadline for thesis submission but meet the university deadline for the semester will receive a grade and credit for completed work but will not be considered for honors. Students whose thesis is not awarded honors will receive a grade and credit for completed work.

For additional information, please see the Philosophy website: http://philosophy.rice.edu

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Doctor of Philosophy (PhD) Degree in the field of Philosophy
Program Learning Outcomes for the PhD Degree in the field of Philosophy
Upon completing the PhD degree in the field of Philosophy, students will be able to:

1. Demonstrate advanced skills of reading philosophical texts critically and with understanding of the problems and contexts.
2. Demonstrate the ability to communicate clearly and logically their own views on a range of important philosophical problems at an advanced level.
3. Demonstrate an understanding in depth of the content and context of one of the main areas of philosophy.
4. Propose, evaluate, and defend original views in at least one of the main areas of philosophy.
5. Complete a dissertation that makes an original contribution to their field.

Requirements for the MA and PhD Degrees in the field of Philosophy
The MA degree can be either a thesis or a non-thesis master’s degree depending on the option the student pursues. For general university requirements for thesis master’s degrees, please see Thesis Master’s Degrees (p. 67). For general university requirements for non-thesis master’s degrees, please see Non-Thesis Master’s Degrees (p. 66).

MA Degree Program
Students pursuing the non-thesis MA degree in the field of Philosophy must:

- Complete at least two semesters in residence at Rice University.
- Complete 42 credit hours of courses approved for graduate credit in philosophy at Rice University with a grade of B- (2.67 grade points) or better in each course.
- Accumulate an overall GPA of at least 3.0.
- Complete at least 30 credit hours in philosophy at the 500-level or higher.
- Satisfy the departmental logic requirement (PHIL 505 or examination).
- Complete at least 5 courses in an area of concentration.
• Satisfactorily complete departmental duties.
• File a petition for certification of the non-thesis master’s degree. This petition can be obtained from the graduate administrator and must be approved and signed by the department chair and submitted to the Office of Graduate and Postdoctoral Studies according to the deadlines posted in the Academic Calendar.

Students pursuing the thesis MA degree in the field of Philosophy must:
• Complete with high standing at least 30 credit hours in advanced courses approved by the department.
• Complete a written thesis on a subject approved by the department.
• Perform satisfactorily on a final oral examination (not limited to the student’s special field of study).

Summary

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
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<td>Total Credit Hours Required for the MA Degree in the field of Philosophy</td>
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</tbody>
</table>

**PhD Degree Program**

Students pursuing the PhD degree in the field of Philosophy must:
• Complete with high standing 42 credit hours of course work approved by the department (including logic).
• Demonstrate competence in logic.
• Pass a qualifying examination.
• Perform satisfactorily on an oral defense of their thesis proposal.
• Complete a written thesis on a subject approved by the department (at least one year of thesis research must be spent in residence).
• Perform satisfactorily on a final oral examination (not limited to the student’s special field of study)

Summary

<table>
<thead>
<tr>
<th>Code</th>
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</tbody>
</table>

**Policies for the PhD Degree in the field of Philosophy**

The Department of Physics and Astronomy offers undergraduate and graduate programs for a wide range of interests. The bachelor of arts degree with majors in physics or astronomy is suitable for students who wish to obtain a broad liberal arts education with a concentration in a physical science. The bachelor of science degree with majors in physics, astrophysics, or chemical physics provides preparation for employment or further study in physics, astrophysics, and related technical fields.

Research facilities and thesis supervision are available for MS and PhD students in atomic, molecular, and optical physics; biophysics; condensed matter physics; galactic astronomy; high energy astrophysics, nuclear and particle physics; and space physics.

**Bachelor’s Programs**
• Bachelor of Arts (BA) Degree with a Major in Astronomy
• Bachelor of Arts (BA) Degree with a Major in Physics
• Bachelor of Science (BS) Degree with a Major in Astrophysics
• Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Applied Physics
• Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Biological Physics
• Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Computational Physics
• Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in General Physics

**Minor**
• Minor in Physics

**Coordinated Program**
• Bachelor of Science (BS) Degree with a Major in Chemical Physics

*This degree is jointly managed by the Department of Chemistry and the Department of Physics and Astronomy. For more information, see Chemical Physics.*

**Master’s Program**
• Master of Science (MS) Degree in the field of Physics

**Doctoral Program**
• Doctor of Philosophy (PhD) Degree in the field of Physics
Although students are not normally admitted to a Master of Science (MS) degree program, graduate students may earn the MS as they work towards the PhD.

**Coordinated Program**

- Master of Science Teaching (MST) Degree (p. 693)

**Chair**

Douglas Natelson

**Professors**

David Alexander  
Matthew G. Baring  
Anthony A. Chan  
Pengcheng Dai  
Michael W. Deem  
Rui-Rui Du  
F. Barry Dunning  
Jason H. Hafner  
Naomi J. Halas  
Patrick M. Hartigan  
Huey W. Huang  
Randall G. Hulet  
Christopher Johns-Krull  
Thomas C. Killian  
Junichiro Kono  
Neal Lane  
Herbert Levine  
Eugene H. Levy  
Edison P. Liang  
Frederick C. Mackintosh  
Emilia Morosan  
Peter Nordlander  
Jose Onuchic  
B. Paul Padley  
Han Pu  
Patricia H. Reiff  
Jabus B. Roberts Jr.  
Gustavo E. Scuseria  
Qimiao Si  
Frank R. Toffoletto  
Peter Wolynes

**Associate Professors**

Stephen J. Bradshaw  
Stanley A. Dodds  
Karl M. Ecklund  
Franciscus J. M. Geurts  
Ching-Hwa Kiang  
Andriy Nevidomskyy

**Assistant Professors**

Mustafa Amin  
Matthew S. Foster  
Kaden Hazzard  
Andrea Isella  
Wei Li

**Professors Emeriti**

Paul A. Cloutier  
Thomas W. Hill  
Carl Rau  
Richard A. Wolf

**Instructors**

Robert Beard  
Michael Cone  
Jared Stenson  
Lam Yu

**Associate Research Professors**

Stanislav Sazykin  
Ian A. Smith  
Pablo P. Yepes

**Assistant Research Professor**

Petr Chaguine

**Adjunct Faculty**

James L. Burch  
Franklin R. Chang-Diaz  
Sergio Kapusta  
Stefan Kirchner  
Hui Li  
Gary A. Morris  
Carolyn Sumners  
J. Hunter Waite  
Jon C. Weisheit  
Michael Wiltberger  
Jian-Xin Zhu

**Description and Code Legend**

*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule:**

- Course offerings/subject code for Astronomy: ASTR  
- Course offerings/subject code for Physics: PHYS

**Department Description and Code**

- Physics and Astronomy: PHYS

**Undergraduate Degree Descriptions and Codes**

- Bachelor of Arts degree: BA  
- Bachelor of Science degree: BS

**Undergraduate Major Descriptions and Codes**

- Major in Physics (attached to the BA and BS degrees): PHYS  
- Major in Astronomy (attached to the BA degree): ASBA  
- Major in Astrophysics (attached to the BS degree): ASTR

**Undergraduate Major Concentration Descriptions and Codes**

- Major Concentration in Applied Physics (BS degree-PHYS majors): APPS
• Major Concentration in Biological Physics (BS degree-PHYS majors): BIPS
• Major Concentration in Computational Physics (BS degree-PHYS majors): COPS
• Major Concentration in General Physics (BS degree-PHYS majors): GEPS

Undergraduate Minor Description and Code
• Minor in Physics: PHYM

Graduate Degree Descriptions and Codes
• Master of Science Teaching degree: MST
• Master of Science degree: MS
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Physics: PHYS
• Degree Program in Science Teaching: STEA

Bachelor of Arts (BA) Degree with a Major in Astronomy

Program Learning Outcomes for the BA Degree with a Major in Astronomy

Upon completing the BA degree with a major in Astronomy, students will have:

• Acquired and be able to demonstrate a solid foundation of knowledge in astronomy.

Requirements for the BA Degree with a Major in Astronomy

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Astronomy must complete:

• A minimum of 52 credit hours to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 19 credit hours taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department’s undergraduate committee for input into Degree Works by the major's official certifier. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>&amp; PHYS 103</td>
<td>and MECHANICS DISCUSSION</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
<td>4</td>
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<tr>
<td>PHYS 102</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td>4</td>
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<tr>
<td>&amp; PHYS 104</td>
<td>and ELECTRICITY AND MAGNETISM DISCUSSION</td>
<td>4</td>
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<tr>
<td>PHYS 112</td>
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<td>PHYS 201</td>
<td>WAVES, LIGHT, AND HEAT</td>
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<td>PHYS 202</td>
<td>MODERN PHYSICS</td>
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<td>PHYS 301</td>
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<td>ASTR 360</td>
<td>INTRODUCTION TO ASTROPHYSICS-GALAXY AND COSMO</td>
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<td>ASTR 452</td>
<td>ASTROPHYSICS II: GALAXIES AND COSMOLOGY</td>
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<td>ASTR 470</td>
<td>SOLAR SYSTEM PHYSICS</td>
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<td>PHYS 480</td>
<td>INTRODUCTION TO PLASMA PHYSICS</td>
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<td>MULTIVARIABLE CALCULUS</td>
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<td>or MATH 222</td>
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<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
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</table>

Total Credit Hours Required for the Major in Astronomy 52

Additional Credit Hours Required to Complete BA Degree Requirements 8

University Graduation Requirements (p. 25) * 60

Total Credit Hours 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.
Policies for the BA Degree with a Major in Astronomy

Program Restrictions and Exclusions
Students pursuing the major in Astronomy should be aware of the following program restriction:

- Students pursuing the major in Astronomy may not additionally declare the minor in Physics.

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Astronomy should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Physics and Astronomy website: http://physics.rice.edu/.

Opportunities for the BA Degree with a Major in Astronomy

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Research in the Department of Physics and Astronomy
The Physics and Astronomy Department encourages undergraduate participation in research, both within the department and through extramural programs. For current opportunities, please visit the Department's website and click on the Undergraduate Study link, at: http://www.physics.rice.edu/.

For additional information, please see the Physics and Astronomy website: http://physics.rice.edu/.

Bachelor of Arts (BA) Degree with a Major in Physics

Program Learning Outcomes for the BA Degree with a Major in Physics
Upon completing the BA degree with a major in Physics, students will have:

1. Acquired and be able to demonstrate a solid foundation of knowledge in physics.

Requirements for the BA Degree with a Major in Physics
For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Physics must complete:

- A minimum of 47 credit hours to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 14 credit hours taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department's undergraduate committee for input into Degree Works by the major's official certifier. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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<td></td>
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Degree Requirements

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<td>PHYS 101</td>
<td>MECHANICS (WITH LAB)</td>
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</tr>
<tr>
<td>&amp; PHYS 103</td>
<td>and MECHANICS DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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</tr>
<tr>
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<td>Select 1 from the following:</td>
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</tr>
<tr>
<td>PHYS 102</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION</td>
<td></td>
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<tr>
<td>&amp; PHYS 104</td>
<td>and ELECTRICITY AND MAGNETISM DISCUSSION</td>
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<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
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<tr>
<td>PHYS 201</td>
<td>WAVES, LIGHT, AND HEAT</td>
<td>3</td>
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<td>PHYS 202</td>
<td>MODERN PHYSICS</td>
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<td>PHYS 231</td>
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<td>PHYS 301</td>
<td>INTERMEDIATE MECHANICS</td>
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<td>INTERMEDIATE ELECTRODYNAMICS</td>
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<td>PHYS 311</td>
<td>INTRODUCTION TO QUANTUM PHYSICS</td>
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<td>PHYS 425</td>
<td>STATISTICAL &amp; THERMAL PHYSICS</td>
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<td>Select 1 additional departmental (PHYS) or (ASTR) course at the 400-level or above.</td>
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<td>SINGLE VARIABLE CALCULUS II</td>
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<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
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</tr>
<tr>
<td>or MATH 221</td>
<td>HONORS CALCULUS III</td>
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<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
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Rice University

or MATH 222 HONORS CALCULUS IV

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<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td>3</td>
</tr>
<tr>
<td>1 MATH (Mathematics) or CAAM (Computational and Applied Mathematics) course at the 300-level or above.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours Required for the Major in Physics 47
Additional Credit Hours to Complete BA Degree Requirements 13
University Graduation Requirements (p. 25) * 60
Total Credit Hours 120

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

Policies for the BA Degree with a Major in Physics

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Physics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Physics and Astronomy website: http://physics.rice.edu/

Opportunities for the BA Degree with a Major in Physics

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Research in the Department of Physics and Astronomy

The Physics and Astronomy Department encourages undergraduate participation in research, both within the department and through extramural programs. For current opportunities, please visit the Department’s website and click on the Undergraduate Study link, at: http://www.physics.rice.edu/.

Bachelor of Science (BS) Degree with a Major in Astrophysics

Program Learning Outcomes for the BS Degree with a Major in Astrophysics

Upon completing the BS degree with a major in Astrophysics, students will be able to:

1. Demonstrate a solid foundation of knowledge in astrophysics and deeper knowledge of subdivisions of the field related to their interests.
2. Identify, formulate, and solve challenging scientific and technical problems as encountered in astrophysics.
3. Read basic scientific literature and communicate scientific results orally and in writing with scientists and the general public.
4. Conduct directed research.

Requirements for the BS Degree with a Major in Astrophysics

For general university requirements, see Graduation Requirements (p. 25).

Students pursuing the BS degree with a major in Astrophysics must complete:

- A minimum of 73 credit hours to satisfy major requirements.
- A minimum of 133 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 40 credit hours taken at the 300-level or above.

Students may obtain credit for some courses by advanced placement, and the department’s undergraduate committee can modify requirements to meet the needs of students with special backgrounds.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department’s undergraduate committee for input into Degree Works by the major’s official certifier. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
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<tr>
<td>Total Credit Hours Required for the BS Degree with a Major in Astrophysics</td>
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Degree Requirements

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<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>Select 1 from the following:</td>
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<tr>
<td>PHYS 101</td>
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</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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</table>

For additional information, please see the Physics and Astronomy website: http://physics.rice.edu/
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<table>
<thead>
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<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
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<td>PHYS 201</td>
<td>WAVES, LIGHT, AND HEAT</td>
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<td>PHYS 202</td>
<td>MODERN PHYSICS</td>
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<tr>
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<td>ELEMENTARY PHYSICS LAB</td>
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<td>INTERMEDIATE MECHANICS</td>
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<td>PHYS 302</td>
<td>INTERMEDIATE ELECTRODYNAMICS</td>
<td>4</td>
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<td>PHYS 311</td>
<td>INTRODUCTION TO QUANTUM PHYSICS I</td>
<td>3</td>
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<tr>
<td>PHYS 425</td>
<td>STATISTICAL &amp; THERMAL PHYSICS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 491 &amp; PHYS 493</td>
<td>UNDERGRADUATE RESEARCH and UNDERGRADUATE RESEARCH SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 492 &amp; PHYS 494</td>
<td>UNDERGRADUATE RESEARCH and UNDERGRADUATE RESEARCH SEMINAR</td>
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<td>ASTR 230</td>
<td>ASTRONOMY LAB</td>
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</tr>
<tr>
<td>ASTR 350</td>
<td>INTRODUCTION TO ASTROPHYSICS--stars</td>
<td>3</td>
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<td>ASTR 360</td>
<td>INTRODUCTION TO ASTROPHYSICS-GALAXY AND COSMO</td>
<td>3</td>
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<td>ASTR 400</td>
<td>UNDERGRADUATE RESEARCH SEMINAR (2 semesters total, for a minimum of 2 credit hours total, taken during any Fall and/or Spring semester)</td>
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Select 3 from the following: 9

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<th>Course Title</th>
<th>Credits</th>
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<td>ASTROPHYSICS I: SUN AND STARS</td>
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<tr>
<td>ASTR 452</td>
<td>ASTROPHYSICS II: GALAXIES AND COSMOLOGY</td>
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<tr>
<td>ASTR 470</td>
<td>SOLAR SYSTEM PHYSICS</td>
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<td>PHYS 312</td>
<td>INTRODUCTION TO QUANTUM PHYSICS II</td>
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</tr>
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<td>PHYS 480</td>
<td>INTRODUCTION TO PLASMA PHYSICS</td>
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</tr>
<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 221</td>
<td>HONORS CALCULUS III</td>
<td></td>
</tr>
<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 222</td>
<td>HONORS CALCULUS IV</td>
<td></td>
</tr>
<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td>3</td>
</tr>
<tr>
<td>CAAM 336</td>
<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours Required for the Major in Astrophysics: 73

University Graduation Requirements (p. 25): 60

Total Credit Hours: 133

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 PHYS 491 and PHYS 493 must be taken concurrently.
2 PHYS 492 and PHYS 494 must be taken concurrently.

Policies for the BS Degree with a Major in Astrophysics

Program Restrictions and Exclusions

Students pursuing the major in Astrophysics should be aware of the following program restriction:

- Students pursuing the major in Astrophysics may not additionally declare the minor in Physics.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Astrophysics should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Physics and Astronomy website: http://physics.rice.edu/

Opportunities for the BS Degree with a Major in Astrophysics

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Research in the Department of Physics and Astronomy

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For additional information, please see the Physics and Astronomy website: http://physics.rice.edu/

Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Applied Physics
Program Learning Outcomes for the BS Degree with a Major in Physics and a Major Concentration in Applied Physics

Upon completing the BS Degree with a major in Physics and a major concentration in Applied Physics, students will be able to:

1. Demonstrate a solid foundation of knowledge in physics and deeper knowledge of subdivisions of the field related to their interests.
2. Identify, formulate, and solve challenging scientific and technical problems as encountered in physics.
3. Read basic scientific literature and communicate scientific results orally and in writing with scientists and the general public.
4. Conduct directed research.

Requirements for the BS Degree with a Major in Physics and a Major Concentration in Applied Physics

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BS degree with a major in Physics and a major concentration in Applied Physics must complete:

- A minimum of 67-68 credit hours, depending on course selection, to satisfy major requirements.
- A minimum of 127-128 credit hours, depending on course selection, to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 36-37 credit hours, depending on course selection, taken at the 300-level or above.
- Core courses common to all major concentrations.
- The requirements for the major concentration in Applied Physics. When students declare the major (p. 12) in Physics, students must additionally identify and declare one of the major concentrations, either in:
  - Applied Physics (p. 661), or
  - Biological Physics (p. 662), or
  - Computational Physics (p. 664), or
  - General Physics (p. 666)

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

Students may obtain credit for some courses by advanced placement, and the department’s undergraduate committee can modify requirements to meet the needs of students with special backgrounds.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department’s undergraduate committee for input into Degree Works by the major’s official certifier. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
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<td>Total Credit Hours Required for the Major in Physics and a Major Concentration in Applied Physics</td>
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</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BS Degree with a Major in Physics and a Major Concentration in Applied Physics</td>
<td>127-128</td>
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Degree Requirements

Core Requirements

Select 1 from the following: 4

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 101 &amp; PHYS 103</td>
<td>MECHANICS (WITH LAB) and MECHANICS DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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</table>

Select 1 from the following: 4

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 102 &amp; PHYS 104</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td></td>
</tr>
</tbody>
</table>

PHYS 201 | WAVES, LIGHT, AND HEAT                     | 3            |
| PHYS 202     | MODERN PHYSICS                             | 3            |
| PHYS 231     | ELEMENTARY PHYSICS LAB                     | 1            |
| PHYS 301     | INTERMEDIATE MECHANICS                     | 4            |
| PHYS 311     | INTRODUCTION TO QUANTUM PHYSICS I          | 3            |
| PHYS 491     | UNDERGRADUATE RESEARCH                     | 3            |
| & PHYS 493    | UNDERGRADUATE RESEARCH SEMINAR             |              |
| PHYS 492     | UNDERGRADUATE RESEARCH                     | 3            |
| & PHYS 494    | UNDERGRADUATE RESEARCH SEMINAR             |              |
| MATH 101     | SINGLE VARIABLE CALCULUS I                 | 3            |
| MATH 102     | SINGLE VARIABLE CALCULUS II                | 3            |
| MATH 211     | ORDINARY DIFFERENTIAL EQUATIONS            | 3            |
|              | AND LINEAR ALGEBRA                         |              |
|              | or MATH 221      | HONORS CALCULUS III                       | 3            |
|              | or MATH 222     | MULTIVARIABLE CALCULUS                    | 3            |

Major Concentration in Applied Physics

PHYS 302 | INTERMEDIATE ELECTRODYNAMICS               | 3-4          |
|          | or ELEC 306      | APPLIED ELECTROMAGNETICS                  |              |
| PHYS 312 | INTRODUCTION TO QUANTUM PHYSICS II         | 3            |
|          | or ELEC 361      | QUANTUM MECHANICS FOR ENGINEERS           |              |
| PHYS 332 | JUNIOR PHYSICS LAB II                       | 2            |
| ELEC 364 | PHOTONICS MEASUREMENTS: PRINCIPLES AND PRACTICE | 3            |
| PHYS 412 | SOLID STATE PHYSICS 4                       | 3            |
| PHYS 425 | STATISTICAL & THERMAL PHYSICS               | 3            |
| ELEC 242 & ELEC 244 | FUNDAMENTALS OF ELECTRICAL ENGINEERING II and FUNDAMENTALS OF ELECTRICAL ENGINEERING II LABORATORY | 4            |
|          | or ELEC 243       | ELECTRONIC MEASUREMENT SYSTEMS            | 3            |
Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Biological Physics

Program Learning Outcomes for the BS Degree with a Major in Physics and a Major Concentration in Biological Physics

Upon completing the BS degree with a major in Physics and a major concentration in Biological Physics, students will be able to:

1. Demonstrate a solid foundation of knowledge in physics and deeper knowledge of subdivisions of the field related to their interests.
2. Identify, formulate, and solve challenging scientific and technical problems as encountered in physics.
3. Read basic scientific literature and communicate scientific results orally and in writing with scientists and the general public.
4. Conduct directed research.

Requirements for the BS Degree with a Major in Physics and a Major Concentration in Biological Physics

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BS degree with a major in Physics and a major concentration in Biological Physics must complete:

- A minimum of 75 credit hours to satisfy major requirements.
- A minimum of 135 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 32 credit hours taken at the 300-level or above.
- Core courses common to all major concentrations.
- The requirements for the major concentration in Biological Physics. When students declare the major (p. 12) in Physics, students must additionally identify and declare one of the major concentrations, either in:
  - Applied Physics (p. 661), or
  - Biological Physics (p. 662), or
  - Computational Physics (p. 664), or
  - General Physics (p. 666)

Because of the common core requirements, it is possible for students to change their major concentration, even after initially declaring...
the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

Students may obtain credit for some courses by advanced placement, and the department’s undergraduate committee can modify requirements to meet the needs of students with special backgrounds.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department’s undergraduate committee for input into Degree Works by the major’s official certifier. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<th>Code</th>
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<tr>
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<td>Total Credit Hours Required for the Major in Physics and a Major Concentration in Biological Physics</td>
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### Degree Requirements

#### Core Requirements

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>PHYS 101 &amp; PHYS 103</td>
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</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
<td>4</td>
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Select 1 from the following:

<table>
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<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<td>PHYS 112</td>
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<td>PHYS 201</td>
<td>WAVES, LIGHT, AND HEAT</td>
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</tr>
<tr>
<td>PHYS 202</td>
<td>MODERN PHYSICS</td>
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</tr>
<tr>
<td>PHYS 231</td>
<td>ELEMENTARY PHYSICS LAB</td>
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<td>PHYS 301</td>
<td>INTERMEDIATE MECHANICS</td>
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</tr>
<tr>
<td>PHYS 311</td>
<td>INTRODUCTION TO QUANTUM PHYSICS I</td>
<td>3</td>
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<tr>
<td>PHYS 491 &amp; PHYS 493</td>
<td>UNDERGRADUATE RESEARCH and UNDERGRADUATE RESEARCH SEMINAR</td>
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<tr>
<td>PHYS 492 &amp; PHYS 494</td>
<td>UNDERGRADUATE RESEARCH and UNDERGRADUATE RESEARCH SEMINAR</td>
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<td>MATH 101</td>
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<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
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<tr>
<td>or MATH 221</td>
<td>HONORS CALCULUS III</td>
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<tr>
<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS</td>
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<td>or MATH 222</td>
<td>HONORS CALCULUS IV</td>
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#### Major Concentration in Biological Physics

<table>
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<tr>
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<tr>
<td>PHYS 312</td>
<td>INTRODUCTION TO QUANTUM PHYSICS II</td>
<td>3</td>
</tr>
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<td>PHYS 355</td>
<td>INTRODUCTION TO BIOLOGICAL PHYSICS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 425</td>
<td>STATISTICAL &amp; THERMAL PHYSICS</td>
<td>3</td>
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<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY</td>
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<td>BIOC 301</td>
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<td>or BIOC 341</td>
<td>CELL BIOLOGY</td>
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<td>CHEM 121 &amp; CHEM 123</td>
<td>GENERAL CHEMISTRY I and GENERAL CHEMISTRY LABORATORY I</td>
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<td>CHEM 122 &amp; CHEM 124</td>
<td>GENERAL CHEMISTRY II and GENERAL CHEMISTRY LABORATORY II</td>
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</tr>
<tr>
<td>CHEM 211 &amp; CHEM 213</td>
<td>ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY DISCUSSION</td>
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<td>MATH 381 &amp; CAAM 336</td>
<td>INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS or DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
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</tbody>
</table>

Total Credit Hours Required for the Major in Physics and a Major Concentration in Biological Physics: 75

University Graduation Requirements (p. 25) *: 60

Total Credit Hours: 135

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1. PHYS 491 and PHYS 493 must be taken concurrently.

2. PHYS 492 and PHYS 494 must be taken concurrently.

3. Because of common core requirements, it is possible to change major concentrations even after declaring the major. See the Undergraduate tab of the Physics and Astronomy department listing for the requirements for each major concentration for the BS degree in Physics.

4. CHEM 121 and CHEM 123 can be satisfied by completing CHEM 151 and CHEM 153. CHEM 122 and CHEM 124 can be satisfied by completing CHEM 152 and CHEM 154.

### Policies for the BS Degree with a Major in Physics and a Major Concentration in Biological Physics

#### Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

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For additional information, please see the Physics and Astronomy website: http://physics.rice.edu/

Opportunities for the BS Degree with a Major in Physics and a Major Concentration in Biological Physics

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

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For additional information, please see the Physics and Astronomy website: http://physics.rice.edu/

Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Computational Physics

Program Learning Outcomes for the BS Degree with a Major in Physics and a Major Concentration in Computational Physics

Upon completing the BS degree with a major in Physics and a major concentration in Computational Physics, students will be able to:

1. Demonstrate a solid foundation of knowledge in physics and deeper knowledge of subdivisions of the field related to their interests.
2. Identify, formulate, and solve challenging scientific and technical problems as encountered in physics.
3. Read basic scientific literature and communicate scientific results orally and in writing with scientists and the general public.
4. Conduct directed research.

Requirements for the BS Degree with a Major in Physics and a Major Concentration in Computational Physics

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BS degree with a major in Physics and a major concentration in Computational Physics must complete:

• A minimum of 72 credit hours to satisfy major requirements.
• A minimum of 132 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 38 credit hours taken at the 300-level or above.
• Core courses common to all major concentrations.
• The requirements for the major concentration in Computational Physics. When students declare the major (p. 12) in Physics, students must additionally identify and declare one of the major concentrations, either in:
  • Applied Physics (p. 661), or
  • Biological Physics (p. 662), or
  • Computational Physics (p. 664), or
  • General Physics (p. 666)

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

Students may obtain credit for some courses by advanced placement, and the department’s undergraduate committee can modify requirements to meet the needs of students with special backgrounds.

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Summary

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<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Physics with a Major Concentration in Computational Physics</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BS Degree with a Major in Physics and Major Concentration in Computational Physics</td>
<td>132</td>
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Degree Requirements

<table>
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<td>PHYS 101</td>
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<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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<td>&amp; PHYS 104</td>
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<td>PHYS 202</td>
<td>MODERN PHYSICS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 231</td>
<td>ELEMENTARY PHYSICS LAB</td>
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<td>PHYS 301</td>
<td>INTERMEDIATE MECHANICS</td>
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<td>PHYS 311</td>
<td>INTRODUCTION TO QUANTUM PHYSICS I</td>
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<td>PHYS 491</td>
<td>UNDERGRADUATE RESEARCH</td>
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<td>PHYS 493</td>
<td>and UNDERGRADUATE RESEARCH SEMINAR ¹</td>
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<td>UNDERGRADUATE RESEARCH</td>
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<td>PHYS 494</td>
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<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
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<td>or MATH 221</td>
<td>HONORS CALCULUS III</td>
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<td>or MATH 222</td>
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<tr>
<td>or PHYS 425</td>
<td>STATISTICAL &amp; THERMAL PHYSICS</td>
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<td>CAAM 210</td>
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<td>CAAM 336</td>
<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
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<td>CAAM 453</td>
<td>NUMERICAL ANALYSIS I</td>
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<td>COMP 130</td>
<td>ELEMENTS OF ALGORITHMS AND COMPUTATION</td>
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<td>or COMP 140</td>
<td>COMPUTATIONAL THINKING</td>
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<td>CAAM 536 / CEVE 555</td>
<td>NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS</td>
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<td>CAAM 519</td>
<td>COMPUTATIONAL SCIENCE I</td>
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<tr>
<td>PHYS 580</td>
<td>INTRODUCTION TO PLASMA PHYSICS</td>
<td></td>
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</tbody>
</table>

Total Credit Hours Required for the Major in Physics and a Major Concentration in Computational Physics: 72

University Graduation Requirements (p. 25) ⁷: 60

Total Credit Hours: 132

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

¹ PHYS 491 and PHYS 493 must be taken concurrently.

² PHYS 492 and PHYS 494 must be taken concurrently.

³ Because of common core requirements, it is possible to change major concentrations even after declaring the major. See the Undergraduate tab of the Physics and Astronomy department listing for the requirements for each major concentration for the BS degree in Physics.

Policies for the BS Degree with a Major in Physics and a Major Concentration in Computational Physics

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

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- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

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Opportunities for the BS Degree with a Major in Physics and a Major Concentration in Computational Physics

Academic Honors

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Research in the Department of Physics and Astronomy

The Physics and Astronomy Department encourages undergraduate participation in research, both within the department and through extramural programs. For current opportunities, please visit the Department's website and click on the Undergraduate Study link, at: http://www.physics.rice.edu/.

For additional information, please see the Physics and Astronomy website: http://physics.rice.edu/

Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in General Physics
Program Learning Outcomes for the BS Degree with a Major in Physics and a Major Concentration in General Physics

Upon completing the BS degree with a major in Physics and a major concentration in General Physics, students will be able to:

1. Demonstrate a solid foundation of knowledge in physics and deeper knowledge of subdivisions of the field related to their interests.
2. Identify, formulate, and solve challenging scientific and technical problems as encountered in physics.
3. Read basic scientific literature and communicate scientific results orally and in writing with scientists and the general public.
4. Conduct directed research.

Requirements for the BS Degree with a Major in Physics and a Major Concentration in General Physics

For general university requirements, see Graduation Requirements (p. 25).

Students pursuing the BS degree with a major in Physics and a major concentration in General Physics must complete:

- A minimum of 64 credit hours to satisfy major requirements.
- A minimum of 124 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 37 credit hours taken at the 300-level or above.
- Core courses common to all major concentrations.
- The requirements for the major concentration in General Physics. When students declare the major (p. 12) in Physics, students must additionally identify and declare one of the major concentrations, either in:
  - Applied Physics (p. 661), or
  - Biological Physics (p. 662), or
  - Computational Physics (p. 664), or
  - General Physics (p. 666)

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

Students may obtain credit for some courses by advanced placement, and the department’s undergraduate committee can modify requirements to meet the needs of students with special backgrounds.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department’s undergraduate committee for input into Degree Works by the major’s official certifier. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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Degree Requirements

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<td>Total Credit Hours for the BS Degree with a Major in Physics and a Major Concentration in General Physics</td>
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Core Requirements

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<tr>
<td>PHYS 101</td>
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<td>MECHANICS DISCUSSION</td>
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<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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Select 1 from the following:

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</table>

<table>
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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>MODERN PHYSICS</td>
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<td>PHYS 231</td>
<td>ELEMENTARY PHYSICS LAB</td>
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<td>PHYS 301</td>
<td>INTERMEDIATE MECHANICS</td>
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<td>PHYS 311</td>
<td>INTRODUCTION TO QUANTUM PHYSICS I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 491</td>
<td>UNDERGRADUATE RESEARCH &amp; PHYS 493</td>
<td>UNDERGRADUATE RESEARCH SEMINAR</td>
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<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 221</td>
<td>HONORS CALCULUS III</td>
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<tr>
<td>or MATH 222</td>
<td>HONORS CALCULUS IV</td>
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Major Concentration in General Physics

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<td>PHYS 411</td>
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<td>PHYS 412</td>
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<td>PHYS 416</td>
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<td>CAAM 335 &amp; CAAM 336</td>
<td>MATRIX ANALYSIS and DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
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2017-2018 General Announcements
Policies for the BS Degree with a Major in Physics and a Major Concentration in General Physics

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Departmental Transfer Credit Guidelines

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For additional information, please see the Physics and Astronomy website: http://physics.rice.edu/

Opportunities for the BS Degree with a Major in Physics and a Major Concentration in General Physics

Academic Honors

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Doctor of Philosophy (PhD) Degree in the field of Physics

Program Learning Outcomes for the PhD Degree in the field of Physics

Upon completing the PhD degree in the field of Physics, students will:

1. Demonstrate advanced knowledge in foundational areas of physics and astronomy, and a mastery of their selected subfield.
2. Have the skills necessary to conduct independent research in physics and astronomy and become leaders in their chosen careers.
3. Have the ability to identify, formulate, and solve challenging scientific and technical problems as encountered in physics and astronomy.
4. Be proficient in reading the scientific literature and in oral and written communication of scientific results.
5. Be able to make an original and significant contribution to knowledge in their discipline.

Requirements for the PhD Degree in the field of Physics

For general university requirements, please see Doctoral Degrees (p. 64). To be eligible for the PhD degree, graduate students must demonstrate to the department their knowledge in the discipline and the ability to engage in advanced research. This normally is accomplished by: successfully completing required coursework; presenting a research progress report and proposal to a faculty committee; and passing an oral candidacy exam. Students must complete a total of 60 credit hours of approved graduate-level study at Rice and produce a research thesis under the direction of a departmental faculty member. At least two years of graduate study are required for the PhD.

Complete information about research opportunities, courses and other requirements can be found under the Department's website, on the Graduate Study link at http://physics.rice.edu/

Summary

<table>
<thead>
<tr>
<th>Code</th>
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<td>Total Credit Hours Required for the PhD Degree in the field of Physics</td>
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</table>

Policies for the PhD Degree in the field of Physics

Department of Physics and Astronomy Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Physics and Astronomy publishes a graduate program handbook, which can be found here:
Opportunities for the PhD Degree in the field of Physics
For additional information, please see the Physics and Astronomy website: http://physics.rice.edu/

Minor in Physics

Program Learning Outcomes for the Minor in Physics
Upon completing the minor in Physics, students will:

1. Acquire and demonstrate a solid foundation of knowledge in physics. This includes: basic mechanics, basic electromagnetism, Maxwell's equations in differential form, waves, interference and diffraction, special relativity, the Schrödinger equation, and the wave formulation of quantum mechanics.

2. Acquire and demonstrate knowledge in a number of advanced physics topics of their choosing.

Requirements for the Minor in Physics
Students pursuing the minor in Physics must complete:

- A minimum of 35 credit hours to satisfy minor requirements.
- A minimum of 26 credit hours to satisfy the Core Requirements.
- A minimum of 9 additional credit hours from departmental (PHYS) course offerings at the 300-level or above.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td><strong>Total Credit Hours Required for the Minor in Physics</strong></td>
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</table>

Minor Requirements

Core Requirements

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>PHYS 101 &amp; PHYS 103</td>
<td>MECHANICS (WITH LAB) and MECHANICS DISCUSSION</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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Select 1 from the following:

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<th>Credit Hours</th>
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</thead>
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<td>PHYS 102 &amp; PHYS 104</td>
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<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
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Elective Requirements

Select a minimum of 3 courses from departmental (PHYS) course offerings at the 300-level or above.

Total Credit Hours

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Total Credit Hours</strong></td>
</tr>
</tbody>
</table>

Policies for the Minor in Physics

Program Restrictions and Exclusions
Students pursuing the minor in Physics should be aware of the following program restrictions:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.
- Students pursuing the major in Astronomy may not declare the minor in Physics.
- Students pursuing the major in Astrophysics may not declare the minor in Physics.

Transfer Credit

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Political Science

Contact Information
Political Science
https://politicalscience.rice.edu/
105 Herzstein Hall
713-348-4842

Brett Ashley Leeds
Department Chair
leeds@rice.edu

Leslie Schwindt-Bayer
Director of Undergraduate Studies
schwindt@rice.edu

Richard Stoll
Undergraduate Advisor
stoll@rice.edu

Students majoring in political science are encouraged to achieve both a broad understanding of the field and a specialized knowledge of one or more aspects of political science, including American politics, comparative politics, and politics and international relations. Graduate study is grounded in the areas of American politics, comparative politics, and international relations.

Bachelor's Program
• Bachelor of Arts (BA) Degree with a Major in Political Science (p. 669)

Master's Program
• Master of Arts (MA) Degree in the field of Political Science*

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Political Science (p. 674)
  * Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Chair
Brett Ashley Leeds

Professors
John R. Alford
Paul Brace
Gilbert Morris Cuthbertson
Keith Edward Hamm
William P. Hobby
Mark P. Jones
David W. Leebron
Brett Ashley Leeds
Melissa J. Marschall
T. Clifton Morgan
Lyn Ragsdale
Jerrold G. Rusk
Leslie A. Schwindt-Bayer
Robert M. Stein
Randolph T. Stevenson
Richard J. Stoll
Rick K. Wilson

Associate Professors
Justin Esarey
Songying Fang

Assistant Professors
Matthew Hayes
Sara Polo

Professors Emeriti
John S. Ambler
Earl Black
Chandler Davidson
Fred R. von der Mehden

Lecturers
C. M. Hudspeth

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: POLI

Department Description and Code
• Political Science: POLI

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in Political Science: POLI

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Political Science: POLI

Bachelor of Arts (BA) Degree with a Major in Political Science

Program Learning Outcomes for the BA Degree with a Major in Political Science
Upon completing the BA degree with a major in Political Science, students will be able to:
1. Demonstrate a basic understanding of American Politics including governing institutions and branches, political actors and organizations, political behavior and the operation of government at both the national and sub-national levels.

2. Understand government and politics in a comparative perspective.

3. Understand government and politics in a global context.

4. Develop a deeper understanding of specialized political science topics.

5. Use critical thinking skills to apply methodological, theoretical, and research knowledge to political science issues in order to begin producing independent research in the field, including completion of research projects, research papers, articles, and poster sessions.

Requirements for the BA Degree with a Major in Political Science

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Political Science must complete:

- A minimum of 12 courses (36 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 6 courses (18 credit hours) taken at the 300-level or above.
- A minimum of 2 courses (6 credit hours) at the 300-level or above from course offerings in any of the following six fields: ANTH, ECON, HIST, PHIL, PSYC, SOCI.
- A minimum of 1 course (3 credit hours) from each of the following fields: American Politics, Comparative Politics, and International Relations.
- A minimum of 1 Statistics course offered by the Department of Political Science. The undergraduate statistics course is POLI 395.
- A minimum of 2 seminars taught by different instructors. Note: seminars are courses numbered at the 400-level.
- The requirements for one area of specialization (see list below). The Political Science major offers the following areas of specialization:
  - American Politics (p. ), or
  - Comparative Politics (p. ), or
  - International Relations (p. )

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Political Science</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Political Science</td>
<td>120</td>
</tr>
</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
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</tr>
<tr>
<td></td>
<td>Introductory Courses 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select at least 2 from the following:</td>
<td>6</td>
</tr>
<tr>
<td>POLI 209</td>
<td>INTRODUCTION TO CONSTITUTIONALISM AND MODERN POLITICAL THOUGHT</td>
<td></td>
</tr>
<tr>
<td>POLI 210</td>
<td>AMERICAN GOVERNMENT AND POLITICS</td>
<td></td>
</tr>
<tr>
<td>POLI 211</td>
<td>INTRODUCTION TO INTERNATIONAL RELATIONS</td>
<td></td>
</tr>
<tr>
<td>POLI 212</td>
<td>INTRODUCTION TO COMPARATIVE POLITICS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Introduction to Statistics</td>
<td>3</td>
</tr>
<tr>
<td>POLI 395</td>
<td>INTRODUCTION TO STATISTICS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upper-Level Courses in Approved Fields Outside Political Science</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Select 2 from the following departmental course offerings at the 300-level or above:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anthropology (ANTH)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Economics (ECON)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>History (HIST)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Philosophy (PHIL)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Psychology (PSYC)</td>
<td></td>
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<tr>
<td></td>
<td>Sociology (SOCI)</td>
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</tr>
<tr>
<td></td>
<td>Area of Specialization 2</td>
<td>21</td>
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<tr>
<td></td>
<td>Select 1 from the following Areas of Specialization:</td>
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<tr>
<td></td>
<td>American Politics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Comparative Politics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>International Relations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Political Science</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Additional Credit Hours to Complete BA Degree Requirements</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>University Graduation Requirements (p. 25)</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>120</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Students must complete 1 of the 2 required introductory courses in the area of specialization they are pursuing. The required introductory course for each area of specialization is noted below for each course. The second introductory course completed can be included in the requirement for courses taken in the fields outside the area of specialization selected.

2 The credit hours for the Area of Specialization include one introductory course in the specialization and at least one seminar course.

Areas of Specialization

Students must complete the requirements as listed for one of the following areas of specialization as offered by the Political Science major. Note that courses taken as part of the Introductory Courses requirement and the Seminar Courses requirement can also be used to
satisfy the requirements listed below. All courses referenced in the Area of Specialization requirements can be found in the Field Courses lists below the specialization requirements.

**Area of Specialization: American Politics**
To fulfill the remaining Political Science major requirements, students pursuing the American Politics area of specialization must complete a total of 7 additional courses (21 credit hours).

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Introductory Course</strong></td>
<td></td>
</tr>
<tr>
<td>POLI 210</td>
<td>AMERICAN GOVERNMENT AND POLITICS</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Breadth</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select a minimum of 1 course from the following fields (see below for Field Courses lists): ¹</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Comparative Politics field</td>
<td></td>
</tr>
<tr>
<td></td>
<td>International Relations field</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Elective Requirements</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select a total of 2 courses from the American Politics field (see below for Field Courses lists).</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>Seminar</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select a total of 2 courses from Seminar courses (see below for Seminar courses). ²</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credit Hours</strong></td>
<td>21</td>
</tr>
</tbody>
</table>

**Footnotes and Additional Information**
¹ Note that Introductory Courses in these fields can be used to satisfy the Breadth requirement.
² At least 1 course (3 credit hours) must be an American Politics seminar course. Seminar courses are identified by any course at the 400-level or above in the Field Courses lists below. Both Seminar courses cannot be taught by the same instructor.

**Area of Specialization: International Relations**
To fulfill the remaining Political Science major requirements, students pursuing the International Relations area of specialization must complete a total of 7 additional courses (21 credit hours).

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Introductory Course</strong></td>
<td></td>
</tr>
<tr>
<td>POLI 211</td>
<td>INTRODUCTION TO INTERNATIONAL RELATIONS</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Breadth</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select a minimum of 1 course from the following fields (see below for Field Courses lists): ¹</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>American Politics field</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Comparative Politics field</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Elective Requirements</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select a total of 2 courses from the International Relations field (see below for Field Courses list).</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>Seminar</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select a total of 2 courses from Seminar courses (see below for Seminar courses). ²</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credit Hours</strong></td>
<td>21</td>
</tr>
</tbody>
</table>

**Footnotes and Additional Information**
¹ Note that Introductory Courses in these fields can be used to satisfy the Breadth requirement.
² At least 1 course (3 credit hours) must be an International Relations seminar course. Seminar courses are identified by any course at the 400-level or above in the Field Courses lists below. Both Seminar courses cannot be taught by the same instructor.

**Field Courses**
To satisfy the requirements listed above, students can find the Field Courses lists below.

**American Politics Field Courses**
American Politics Seminar courses can be selected from any course listed below the 400-level or above.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLI 210</td>
<td>AMERICAN GOVERNMENT AND POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 301</td>
<td>STATE POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 315</td>
<td>ELECTIONS AND VOTING BEHAVIOR</td>
<td>3</td>
</tr>
<tr>
<td>POLI 317</td>
<td>THE CONGRESS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 318</td>
<td>THE PRESIDENCY</td>
<td>3</td>
</tr>
<tr>
<td>POLI 320 / RELI 320</td>
<td>THE LEGAL FRAMEWORK OF RELIGIOUS TOLERANCE</td>
<td>2</td>
</tr>
<tr>
<td>POLI 321</td>
<td>AMERICAN CONSTITUTIONAL LAW</td>
<td>3</td>
</tr>
<tr>
<td>POLI 322</td>
<td>POLITICS OF INFLUENCE IN THE UNITED STATES</td>
<td>3</td>
</tr>
</tbody>
</table>
Bachelor of Arts (BA) Degree with a Major in Political Science

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>POLI 325</td>
<td>AFRICAN AMERICAN POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 328</td>
<td>LATINO POLITICS IN THE UNITED STATES</td>
<td>3</td>
</tr>
<tr>
<td>POLI 329</td>
<td>HEALTH POLICY</td>
<td>3</td>
</tr>
<tr>
<td>POLI 330</td>
<td>MINORITY POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 331</td>
<td>ENVIRONMENTAL POLITICS AND POLICY</td>
<td>3</td>
</tr>
<tr>
<td>POLI 332</td>
<td>URBAN POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 334</td>
<td>AMERICAN POLITICAL PARTIES</td>
<td>3</td>
</tr>
<tr>
<td>POLI 335</td>
<td>POLITICAL ENVIRONMENT OF BUSINESS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 336</td>
<td>POLITICS OF REGULATION</td>
<td>3</td>
</tr>
<tr>
<td>POLI 337</td>
<td>PUBLIC POLICY</td>
<td>3</td>
</tr>
<tr>
<td>POLI 338 / SOSC 301</td>
<td>POLICY ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 339</td>
<td>SOUTHERN POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 340</td>
<td>CONGRESS AND THE CONSTITUTION</td>
<td>3</td>
</tr>
<tr>
<td>POLI 341</td>
<td>POLITICAL PARTIES RESEARCH SEMINAR</td>
<td>3</td>
</tr>
<tr>
<td>POLI 342</td>
<td>POLITICS ON THE PRESIDENCY</td>
<td>3</td>
</tr>
<tr>
<td>POLI 343</td>
<td>POLITICAL PARTIES AND INTEREST GROUPS IN AMERICAN POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 344</td>
<td>PUBLIC POLICY AND METROPOLITAN AREA GOVERNANCE</td>
<td>3</td>
</tr>
<tr>
<td>POLI 345</td>
<td>SEMINAR ON MONEY AND POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 346</td>
<td>POLITICS OF REGULATION</td>
<td>3</td>
</tr>
<tr>
<td>POLI 347</td>
<td>EDUCATION POLICY</td>
<td>3</td>
</tr>
<tr>
<td>POLI 348</td>
<td>RACE AND PUBLIC POLICY</td>
<td>3</td>
</tr>
<tr>
<td>POLI 349</td>
<td>RESEARCH SEMINAR ON SOUTHERN POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 350</td>
<td>SUBNATIONAL POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 351</td>
<td>SEMINAR IN JUDICIAL PROCESS AND BEHAVIOR</td>
<td>3</td>
</tr>
<tr>
<td>POLI 352</td>
<td>SEMINAR IN POLITICAL BEHAVIOR</td>
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</table>

Comparative Politics Field Courses
Comparative Politics Seminar courses can be selected from any course listed below at the 400-level or above.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>POLI 212</td>
<td>INTRODUCTION TO COMPARATIVE POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 250 / ASIA 251 / SWGS 250</td>
<td>SEX, MONEY, AND POWER AROUND THE WORLD</td>
<td>3</td>
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</tbody>
</table>

International Relations Field Courses
International Relations Seminar courses can be selected from any course listed below at the 400-level or above.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLI 211</td>
<td>INTRODUCTION TO INTERNATIONAL RELATIONS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 371</td>
<td>CIVIL WARS</td>
<td>3</td>
</tr>
</tbody>
</table>
POLI 372 AMERICAN FOREIGN POLICY 3
POLI 373 WAR AND POLITICS 3
POLI 374 STRATEGIC INTERACTIONS IN INTERNATIONAL RELATIONS 3
POLI 375 INTERNATIONAL ORGANIZATION 3
POLI 378 POLITICS OF AMERICAN NATIONAL SECURITY 3
POLI 379 PROBLEMS IN INTERNATIONAL RELATIONS 3
POLI 469 CIVIL WAR AND TERRORISM 3
POLI 470 INTERNATIONAL RELATIONS 3
POLI 471 POLITICS OF THE UNITED NATIONS 3
POLI 472 AMERICAN FOREIGN POLICY 3
POLI 473 THE CRAFT OF INTELLIGENCE ANALYSIS, PREDICTION AND CONNECTING THE DOTS 3
POLI 474 INTERNATIONAL ORGANIZATIONS: THEORIES AND PRACTICE 3
POLI 475 INTERNATIONAL COOPERATION 3
POLI 476 INTERNATIONAL POLITICAL ECONOMY 3
POLI 478 US - CHINA: CONFLICT AND COOPERATION 3
POLI 479 SEMINAR IN QUANTITATIVE INTERNATIONAL RELATIONS 3
POLI 481 UNDERSTANDING WAR AND PEACE 3
POLI 482 THE CAUSES OF WAR AND THE WAR IN IRAQ 3

Theory and Methods Field Courses
Theory and Methods Seminar courses can be selected from any course listed below at the 400-level or above.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLI 209</td>
<td>INTRODUCTION TO CONSTITUTIONALISM AND MODERN POLITICAL THOUGHT</td>
<td>3</td>
</tr>
<tr>
<td>POLI 310</td>
<td>THE BIOLOGY OF POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 340</td>
<td>ANCIENT AND MEDIEVAL POLITICAL THEORY</td>
<td>3</td>
</tr>
<tr>
<td>POLI 395</td>
<td>INTRODUCTION TO STATISTICS ¹</td>
<td>3</td>
</tr>
<tr>
<td>POLI 429</td>
<td>BIOLOGICAL FOUNDATIONS OF POLITICS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 441 / ENST 441</td>
<td>GOVERNING THE ENVIRONMENTAL COMMONS</td>
<td>3</td>
</tr>
<tr>
<td>POLI 461</td>
<td>POLITICS, RISK, AND ENERGY</td>
<td>3</td>
</tr>
<tr>
<td>POLI 490</td>
<td>POLITICS AND THE ARTS</td>
<td>3</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information
¹ POLI 395 is a statistics course required of all majors. It fulfills the minimum requirement of one course from the Theory and Methods field.

Policies for the BA Degree with a Major in Political Science

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Political Science should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
- Transfer credit coursework from online-only courses cannot be used to count towards the major.

For additional information, please see the Political Science website: https://politicalscience.rice.edu/.

Opportunities for the BA Degree with a Major in Political Science

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honors Program
Admission to the honors program requires the approval of the department’s Director of Undergraduate Studies. The faculty member supervising the thesis must have a full-time appointment in the Department of Political Science. During the first semester of the two-semester program, students take one reading course that provides them with a basis for drawing up a thesis prospectus. During the second semester, students write their honors thesis. An electronic copy of the thesis must be sent to the Director of Undergraduate Studies. Students may not combine the two honors courses into one semester. Those who successfully complete the honors program may substitute it for one of the seminars required for the major. Failure to complete the second semester of the honors program will result in loss of credit for the first semester of the honors program.

Work for the Honors Program must be original. It cannot be taken from other courses at Rice or other institutions. This includes using the same work for another honors program (i.e. using the same work for honors in political science and another discipline). If a student has a question about what is permitted, the student should consult the Director of Undergraduate Studies. This consultation should take place early in the first semester of the honors program.

Alternatively, students may earn honors in political science by successfully completing the Rice University Honors Program (RUSP), HONS 470/HONS 471. In addition to successfully completing this program, the student must complete a research project in political science, and the student must be supervised by a full-time faculty member in the political science department. See also Honors Programs. (p. 46)

Directed Readings Courses
Directed readings courses are intended for students who have completed a substantial number of political science courses and who seek to explore a subject not covered in regular courses. They are available only if...
an appropriate faculty member agrees to supervise. The faculty member supervising a directed readings course must have a full-time appointment in the Department of Political Science. The student may not take more than one readings course from him or her. Students should submit a brief, one-page description of the work to be conducted in the readings course (including the name of the faculty supervisor) to the department's Director of Undergraduate Studies no later than two weeks into the semester in which they intend to take the course. Readings courses do not count toward the department's distribution requirement.

For additional information, please see the Political Science website at: https://politics.rice.edu/.

**Doctor of Philosophy (PhD) Degree in the field of Political Science**

**Program Learning Outcomes for the MA and PhD Degrees in the field of Political Science**

Upon completing the MA and PhD degrees in the field of Political Science, students will be able to:

1. Demonstrate advanced knowledge of theoretical and empirical research in two of the following three sub-fields of Political Science: American politics, comparative politics, and international relations.
2. Learn and apply social science research design and methodologies, including advanced statistical techniques.
3. Demonstrate the ability to communicate their research effectively through multiple mediums including scholarly writing, oral presentation, and poster sessions.
4. Demonstrate their competence as political scientists through research, teaching, and professional development activities.

**Requirements for the MA and PhD Degrees in the field of Political Science**

For general university requirements, please see Doctoral Degrees (p. 64).

**PhD Degree Program Requirements**

**Coursework**

A student must complete successfully 54 credit hours of advanced coursework. This must include the core courses in each of 3 fields, 3 courses beyond the core in the major field, 2 courses beyond the core in the minor field, POLI 500, POLI 501, and 3 additional courses that meet the advanced research tools requirement.

**Exams**

A student must pass three Preliminary Examinations (a general exam in the major field, a subfield exam in the major field, and a general exam in the minor field), a dissertation prospectus defense, and a dissertation defense.

**Maintenance of Good Academic Standing**

A student must remain in good academic standing with the university and with the department. Remaining in good academic standing with the department requires a GPA of at least 3.33, satisfactory evaluations for work as a research and/or teaching mentee, and satisfactory participation in professional development activities.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Political Science</td>
<td>90</td>
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<tr>
<td></td>
<td>MA Degree Program Requirements</td>
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</tr>
<tr>
<td></td>
<td>Policies for the PhD Degree in the field of Political Science</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Department of Political Science Graduate Program Handbook</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Opportunities for the PhD Degree in the field of Political Science</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Requirements for the Coordinated PhD/MA Degree Program in Political Science and Statistics</td>
<td></td>
</tr>
</tbody>
</table>

For general university requirements, please see Doctoral Degrees (p. 64). For additional information, please see the Political Science website: https://politics.rice.edu/.
• Obtain written approval from the head of the Methods field and the Director of Graduate Studies in the Political Science department.

• Have their plan of study for the MA in Statistics pre-approved by the Director of Graduate Studies in the Department of Statistics (or another person designated by the chairperson of the Statistics department). Note: A maximum of ten Political Science PhD students will be allowed to enroll in the MA in Statistics program at one time.

• Earn a grade of 'B+' or better in four courses in statistical methodology in the Political Science department, which must include POLI 504, POLI 505, POLI 506, and POLI 507.

• Earn a grade of 'B' or better in each of six courses from the Department of Statistics. Four of these courses must be STAT 605, STAT 518, STAT 519, and STAT 615. Other acceptable courses are STAT 616 and courses at the 500-level and above, subject to the approval by the Director of Graduate studies in the Department of Statistics (or another person designated by the chairperson of the Statistics department). Courses that are jointly listed between two departments (cross-listed) are counted as a course in the home department. Note: completion of POLI 504 and POLI 505 will be considered as meeting the prerequisite requirements for STAT 519.

• Complete a major project that has strong statistical content. The project may be directed by faculty in Political Science, but must be pre-approved by the Director of Graduate Studies in the Department of Statistics (or another person designated by the chairperson of the Statistics department). The doctoral proposal in Political Science may satisfy this requirement, but must be successfully defended.

For additional information, please see the Political Science website: https://politicalscience.rice.edu/

Politics, Law and Social Thought

Contact Information
Politics, Law and Social Thought
http://politics.rice.edu/
116 Humanities Building
713-348-4274

Christian J. Emden
Program Co-Director
emden@rice.edu

Aysha Pollnitz
Program Co-Director
aysha.pollnitz@rice.edu

Politics, Law and Social Thought (PLST) is an interdisciplinary minor open to all undergraduate students at Rice from all backgrounds. Its task is the study of political ideas in their philosophical and historical contexts as well as with regard to their effects on constitutional law and social and political practices.

The central focus of the minor is political theory, taken in a wide sense to mean the theory and philosophy of how polities form, function, and fail. The minor has a strong orientation toward works of political, legal, and social philosophy, understood in their historical context. Politics, Law and Social Thought is a program of study that enables Rice students to engage successfully with the “big” political questions relevant to contemporary society in a global setting: Why democracy? What are the foundations of law? What is political liberty? What is political citizenship? Are states necessary? How do normative political and social orders come into existence? Is there a philosophical justification for human rights?

Minor

• Minor in Politics, Law and Social Thought (p. 675)

Politics, Law and Social Thought does currently not offer an academic program at the graduate level.

Co-Directors
Christian J. Emden
Aysha Pollnitz

Professors
Dominic Boyer
Peter C. Caldwell
Steven G. Crowell
David Leebron
Melissa Marschall
Donald Morrison
George Sher
Lora Wildenthal
Harvey Yunis

Professor in the Practice
Steve W. Lewis

Associate Professors
Gwendolyn Bradford
Luis Duno-Gottberg
Julie Fette

Assistant Professor
Vida Yao

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: PLST

Program Description and Code
• Classical and European Studies: PLST

Undergraduate Minor Description and Code
• Minor in Politics, Law and Social Thought: PLST
Program Learning Outcomes for the Minor in Politics, Law and Social Thought

Upon completing the minor in Politics, Law and Social Thought, students will be able to:

1. Have an understanding of the main lines of political, legal, and social thought in their historical context through original sources.
2. Have skills in analyzing and evaluating complex texts in political, legal, and social thought through a close reading and critical interpretation of arguments, metaphors, images, and the emotions that drive political arguments.
3. Have developed the ability to compare different authors and texts and formulate complex arguments across different traditions in the history of political thought.
4. Develop and communicate their own arguments about politics, law and society in research papers, class presentations, and discussions.

Requirements for the Minor in Politics, Law and Social Thought

Students pursuing a minor in Politics, Law and Social Thought must complete:

• A minimum of 6 courses (18 credit hours) to satisfy the minor requirements.
• A minimum of 4 courses (12 credit hours) at the 300-level or above.
• A maximum of 2 courses (6 credit hours) from the same subject code (i.e., GERM, HIST, etc.) may be used to meet the Elective Requirements.
• A maximum of 2 courses (6 credit hours) from study abroad or transfer credits. For additional program guidelines regarding transfer credit, see the Policies tab.
• A minimum of 4 courses (12 credit hours) taken at Rice University.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

Total Credit Hours Required for the Minor in Politics, Law and Social Thought

18

Minors Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
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Core Requirement

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>PLST 301</td>
<td>MODERN POLITICAL THOUGHT: MACHIAVELLI TO RAWLS</td>
<td>3</td>
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<tr>
<td>PLST 302</td>
<td>CONTEMPORARY POLITICAL THEORY</td>
<td></td>
</tr>
<tr>
<td>PLST 303</td>
<td>HOW DEMOCRACY FAILS</td>
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<tr>
<td>PLST 316</td>
<td>DEMOCRACY AND POLITICAL THEORY IN ANCIENT GREECE</td>
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</table>

Elective Requirements

Select 5 courses from the following:

Anthropology

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 309</td>
<td>GLOBAL CULTURES</td>
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</tr>
<tr>
<td>ANTH 317</td>
<td>REVOLUTIONS AND UTOPIAS</td>
<td></td>
</tr>
<tr>
<td>ANTH 319</td>
<td>SYMBOLISM AND POWER</td>
<td></td>
</tr>
<tr>
<td>ANTH 322</td>
<td>CULTURES AND IDENTITIES: RACE, ETHNICITY, AND NATIONALISM</td>
<td></td>
</tr>
<tr>
<td>ANTH 326</td>
<td>LAW, POWER AND CULTURE</td>
<td></td>
</tr>
<tr>
<td>ANTH 340</td>
<td>NEOLIBERALISM AND GLOBALIZATION</td>
<td></td>
</tr>
<tr>
<td>ANTH 372</td>
<td>CULTURES OF CAPITALISM</td>
<td></td>
</tr>
<tr>
<td>ANTH 429</td>
<td>ACTIVISM AND SOCIAL MOVEMENTS</td>
<td></td>
</tr>
</tbody>
</table>

Asian Studies

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ASIA 489</td>
<td>CHINESE POLITICS IN COMPARATIVE PERSPECTIVE</td>
<td></td>
</tr>
<tr>
<td>POLI 489</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Classical and European Studies

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAS 201</td>
<td>HISTORY OF PHILOSOPHY I</td>
<td></td>
</tr>
<tr>
<td>PHIL 201</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDEM 201</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLAS 236</td>
<td>ART AND POLICS IN ANCIENT ROME</td>
<td></td>
</tr>
<tr>
<td>HART 214</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLAS 316</td>
<td>DEMOCRACY AND POLITICAL THEORY IN ANCIENT GREECE</td>
<td></td>
</tr>
<tr>
<td>PLST 316</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FREN 324</td>
<td>FROM DECOLONIZATION TO GLOBALIZATION</td>
<td></td>
</tr>
<tr>
<td>POLI 324</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RELI 476</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FREN 453</td>
<td>IMMIGRATION AND CITIZENSHIP IN CONTEMPORARY FRANCE</td>
<td></td>
</tr>
<tr>
<td>GERM 128</td>
<td>THE CULTURE OF WAR: VIOLENCE, CONFLICT AND REPRESENTATION</td>
<td></td>
</tr>
<tr>
<td>FSEM 128</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GERM 333</td>
<td>NIETZSCHE: PHILOSOPHY, POLITICS, HISTORY</td>
<td></td>
</tr>
<tr>
<td>GERM 334</td>
<td>NATIONALISM AND CITIZENSHIP</td>
<td></td>
</tr>
<tr>
<td>GERM 349</td>
<td>GERMAN POLITICAL THOUGHT</td>
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</tbody>
</table>

History

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>HIST 340</td>
<td>HISTORY OF FEMINISM</td>
<td></td>
</tr>
<tr>
<td>SWGS 345</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
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</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>HIST 359</td>
<td>THE UNITED STATES IN THE TWENTIETH CENTURY WORLD</td>
<td></td>
</tr>
<tr>
<td>HIST 373</td>
<td>SOCIAL AND POLITICAL THOUGHT IN 19TH CENTURY EUROPE</td>
<td></td>
</tr>
<tr>
<td>HIST 392</td>
<td>PRE-MODERN POLITICAL THOUGHT FROM CICERO TO LOCKE</td>
<td></td>
</tr>
<tr>
<td>HIST 398 / SWGS 398</td>
<td>THE TEN MOST IMPORTANT SUPREME COURT DECISIONS IN U.S. HISTORY</td>
<td></td>
</tr>
<tr>
<td>HIST 423</td>
<td>AMERICAN RADICALS AND REFORMERS</td>
<td></td>
</tr>
<tr>
<td>HIST 448</td>
<td>WESTERN EUROPEAN WELFARE STATE, 1880-1980: ORIGINS, CONSOLIDATIONS, CRISIS</td>
<td></td>
</tr>
<tr>
<td>HIST 455</td>
<td>HISTORY OF HUMAN RIGHTS</td>
<td></td>
</tr>
<tr>
<td>HIST 457</td>
<td>FOUR MODERN REVOLUTIONS: 1776, 1789, 1917, 1989</td>
<td></td>
</tr>
</tbody>
</table>

**Philosophy**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL 111 / SWGS 111</td>
<td>INTRODUCTION TO FEMINIST PHILOSOPHY</td>
</tr>
<tr>
<td>PHIL 116</td>
<td>INTRODUCTION TO THE PHILOSOPHY OF LAW</td>
</tr>
<tr>
<td>PHIL 201 / CLAS 201 / MDEM 201</td>
<td>HISTORY OF PHILOSOPHY I</td>
</tr>
<tr>
<td>PHIL 202</td>
<td>HISTORY OF PHILOSOPHY II</td>
</tr>
<tr>
<td>PHIL 307</td>
<td>SOCIAL AND POLITICAL PHILOSOPHY</td>
</tr>
<tr>
<td>PHIL 308</td>
<td>CONTINENTAL PHILOSOPHY</td>
</tr>
<tr>
<td>PHIL 316</td>
<td>PHILOSOPHY OF LAW</td>
</tr>
<tr>
<td>PHIL 319 / SWGS 319</td>
<td>FEMINIST PHILOSOPHY</td>
</tr>
<tr>
<td>PHIL 326</td>
<td>HISTORY OF ETHICS</td>
</tr>
<tr>
<td>PHIL 327</td>
<td>HISTORY OF SOCIAL AND POLITICAL PHILOSOPHY</td>
</tr>
</tbody>
</table>

**Political Science**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>POLI 209</td>
<td>INTRODUCTION TO CONSTITUTIONALISM AND MODERN POLITICAL THOUGHT</td>
</tr>
<tr>
<td>POLI 210</td>
<td>AMERICAN GOVERNMENT AND POLITICS</td>
</tr>
<tr>
<td>POLI 211</td>
<td>INTRODUCTION TO INTERNATIONAL RELATIONS</td>
</tr>
<tr>
<td>POLI 321</td>
<td>AMERICAN CONSTITUTIONAL LAW</td>
</tr>
<tr>
<td>POLI 333</td>
<td>COMPARATIVE LEGISLATURES</td>
</tr>
<tr>
<td>POLI 340</td>
<td>ANCIENT AND MEDIEVAL POLITICAL THEORY</td>
</tr>
<tr>
<td>POLI 357</td>
<td>DEMOCRACY AND DEMOCRATIZATION</td>
</tr>
<tr>
<td>POLI 371</td>
<td>CIVIL WARS</td>
</tr>
<tr>
<td>POLI 457</td>
<td>CONDITIONS OF DEMOCRACY</td>
</tr>
<tr>
<td>POLI 489 / ASIA 489</td>
<td>CHINESE POLITICS IN COMPARATIVE PERSPECTIVE</td>
</tr>
<tr>
<td>POLI 490</td>
<td>POLITICS AND THE ARTS</td>
</tr>
</tbody>
</table>

**Sociology**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCI 380</td>
<td>SOCIAL THEORY</td>
</tr>
<tr>
<td>SOCI 426</td>
<td>CONTEMPORARY THEORY</td>
</tr>
</tbody>
</table>

**Internships**

Students may count one internship with 3 credit hours toward the elective requirements for the minor, as long as the internship substantively reflects the thematic focus of the minor in PLST. As general guidance, acceptable internships are concerned with the public dimension of law or fall into the area of public policy. Proposed internships have to be approved by the director before the official start date of the internship. Internships must adhere to the requirements and policies governing internships as they have been established by the School of Humanities and/or the School of Social Sciences.

**Policies for the Minor in Politics, Law and Social Thought**

**Program Restrictions and Exclusions**

Students pursuing the minor in Politics, Law and Social Thought should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

**Transfer Credit**

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Program Transfer Credit Guidelines**

Students pursuing the minor in Politics, Law and Social Thought should be aware of the following program-specific transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
- Transfer credit coursework received via the articulation of AP, IB or A-level credit will not be considered towards minor requirements.
- Transfer credit from online-only courses may not be used to count towards the minor.

For additional information, please see the Politics, Law and Social Thought website: [http://politics.rice.edu/](http://politics.rice.edu/)

**Opportunities for the Minor in Politics, Law and Social Thought**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

See [https://humanities.rice.edu/student-life](https://humanities.rice.edu/student-life) for tables of fellowships, prizes, and internships/practica that may be relevant to this minor.
The Program in Poverty, Justice and Human Capabilities (PJHC), provides students with a multifaceted understanding of human well-being. A key goal of the minor is to enrich students’ understanding of poverty and inequality, so that, regardless of their choice of occupation, PJHC alumni will maintain a longstanding commitment to enhancing the well-being of all people. More generally, the program trains Rice students to be future leaders in solving global problems.

This interdisciplinary minor emphasizes a "capabilities approach," which considers what people are able to do and to be — for example, live to old age and engage in economic and political activities — rather than strictly what material goods they possess. The program also acknowledges the central importance of a variety of additional influences on well-being beyond income, such as gender, health status, racial and ethnic disparities, education, human rights, political freedoms, and material necessities, including food and shelter.

Although impediments to human well-being take many forms, barriers to the capabilities of women and girls persist across societies; women and girls are therefore disproportionately represented among the poor and those unable to attain their full capabilities. The academic component of the program, including the content of core and required courses, acknowledges gender inequality as a powerful influence on disparities in human well-being and recognizes gender as a central analytic category.

The PJHC minor combines high-caliber undergraduate courses with service learning experiences at agencies that help disadvantaged communities and people. Students are placed with organizations where they work directly with clients and gain experiential knowledge that broadens their perspectives on human lives and capabilities. Through these academic and experiential learning opportunities, students explore deeper understandings of the structural factors underlying poverty, and human well-being, and potential policy solutions. The program further aims to promote dialogue among all disciplines about how to address issues of poverty alleviation and human well-being with a sophisticated understanding of the challenges and sound strategies for moving forward.

**Minor**

- Minor in Poverty, Justice and Human Capabilities (p. 678)

Poverty, Justice and Human Capabilities does not currently offer an academic program at the graduate level.

**Program Learning Outcomes for the Minor in Poverty, Justice and Human Capabilities**

Upon completing the minor in Poverty, Justice and Human Capabilities, students will:

1. Understand theoretical approaches to poverty and justice that draw from the capabilities framework, economics, history, sociology, philosophy, and other fields. Students will have in-depth knowledge of approaches to enhancing human flourishing and will understand the social, institutional, and political contexts that underlie deprivations and inequities.
2. Demonstrate a sophisticated understanding of the multiple influences on well-being beyond income and material wealth, including gender, racial, and ethnic disparities, and the impact of colonialism on the Global South. Students will be able to provide examples from different geographic regions, not exclusively from one country or region, and be able to apply the capabilities approach when evaluating these disparities.
3. Gain, through direct service, experiential knowledge of the challenges faced in disadvantaged communities.
4. Achieve an interdisciplinary knowledge of approaches to enhancing human well-being and mitigating human deprivations. Students
will be able to apply this knowledge in evaluating potential policy solutions.

5. Demonstrate the oral, written, and visual communication skills essential for sophisticated and successful advocacy.

6. Become a global citizen by understanding the role that advocacy and service play in addressing poverty, strengthening justice, and improving well-being.

Requirements for the Minor in Poverty, Justice and Human Capabilities

Students pursuing the minor in Poverty, Justice and Human Capabilities must complete:

- A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
- A minimum of 3 PJHC Service Credits from the direct service learning experiences.

The courses used to meet the PJHC minor are open to all Rice students, including those not pursuing the minor; however, in some courses with limited space, preference will be given to declared minors.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
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<td>Total Credit Hours Required for the Interdisciplinary Minor in Poverty, Justice and Human Capabilities</td>
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Minor Requirements

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td></td>
</tr>
<tr>
<td>HUMA 371 / SOCI 371</td>
<td>POVERTY, JUSTICE, AND HUMAN CAPABILITIES ¹</td>
<td>3</td>
</tr>
<tr>
<td>SWGS 394 / SOCI 394</td>
<td>HUMAN DEVELOPMENT IN GLOBAL AND LOCAL COMMUNITIES</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective Requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 3 electives (see below)</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Capstone Requirement ²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 1 of the following options:</td>
<td>3-7</td>
</tr>
<tr>
<td>Capstone Course Option</td>
<td>HIST 421</td>
<td>RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH</td>
</tr>
<tr>
<td>SWGS 470</td>
<td>ADVANCED SEMINAR IN POVERTY, JUSTICE, AND CAPABILITIES</td>
<td></td>
</tr>
<tr>
<td>Capstone Course Sequences Option</td>
<td>SOCI 469</td>
<td>COMMUNITY BRIDGES TRAINING and INEQUALITY AND URBAN LIFE</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 Students must submit a brief questionnaire to the program director to be considered for admission to HUMA 371/SOCI 371. This questionnaire can be accessed at pjhc.rice.edu/enrollment-questionnaire/.

2 Students can use additional capstone courses to fulfill the General Elective requirement (SWGS 496, SWGS 497 or SWGS 470) or the Race and Ethnicity requirement (HIST 421 or SOCI 470). HIST 421 and SOCI 470 do not fulfill the Race and Ethnicity requirement unless a second capstone course is completed. Students who complete the entire Engaged Research course sequence may use SWGS 497 to fulfill the General Elective requirement.

Elective Requirements

Students must complete a total of 3 courses (minimum of 9 credit hours) as listed below to satisfy the Poverty, Justice and Human Capabilities minor’s Elective Requirements. An additional course from the Non-Western or Race and Ethnicity list can be used to fulfill the General Elective requirement. Students must select separate courses to fulfill the Non-Western and Race and Ethnicity requirements. Additionally, the 3 required elective courses must come from at least 2 different schools. As course offerings may vary from year to year, students are urged to consult with the undergraduate advisors (see http://pjhc.rice.edu/) at the beginning of each semester. Please note that not all courses listed below will be offered every academic year.

Non-Western Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 212 / ASIA 212</td>
<td>PERSPECTIVES ON MODERN ASIA</td>
<td>3-6</td>
</tr>
<tr>
<td>ANTH 340</td>
<td>NEOLIBERALISM AND GLOBALIZATION</td>
<td></td>
</tr>
<tr>
<td>ANTH 343 / RELI 342</td>
<td>NEW RELIGIOUS MOVEMENTS IN AFRICA</td>
<td></td>
</tr>
<tr>
<td>ASIA 222 / ENGL 222</td>
<td>THE WORLD AND SOUTH ASIA</td>
<td></td>
</tr>
<tr>
<td>ASIA 232 / RELI 232</td>
<td>RELIGIONS FROM INDIA</td>
<td></td>
</tr>
<tr>
<td>ASIA 251 / POLI 250 / SWGS 250</td>
<td>SEX, MONEY, AND POWER AROUND THE WORLD</td>
<td></td>
</tr>
<tr>
<td>ASIA 326</td>
<td>TEMPLATES, TECHNOLOGY, AND TRANSITION: INDIA IN THE 21ST CENTURY</td>
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<td>ASIA 328 / HIST 384 / SWGS 384</td>
<td>MODERN GIRL AND ASIA IN THE WORLD</td>
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<tr>
<td>ENGL 379</td>
<td>INTRODUCTION TO THIRD WORLD LITERATURE</td>
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<tr>
<td>ENGL 380</td>
<td>CONTEMPORARY ANGLOPHONE LITERATURES</td>
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<tr>
<td>HIST 212</td>
<td>CONTEMPORARY CHINA</td>
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<tr>
<td>HIST 215 / HIST 315</td>
<td>BLACKS IN THE AMERICAS</td>
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### Race and Ethnicity Courses

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<td>ANTH 443</td>
<td>ANTHROPOLOGY OF RACE, ETHNICITY AND HEALTH</td>
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<td>EDUC 304</td>
<td>RACE, CLASS, GENDER IN EDUCATION</td>
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<td>EDUC 335</td>
<td>URBAN EDUCATION: ISSUES, POLICY, AND PRACTICE</td>
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<tr>
<td>ENGL 369 / SWGS 329</td>
<td>THE AMERICAN WEST AND ITS OTHERS</td>
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<tr>
<td>ENGL 371 / SWGS 354</td>
<td>CHICANO/A LITERATURE</td>
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<td>ENGL 371 / SWGS 399</td>
<td>YOUTH STUDIES</td>
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<td>ENGL 399</td>
<td>THE BLACK IMAGINARY: 1775-PRESENT</td>
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<tr>
<td>ENGL 471 / SWPO 456</td>
<td>STUDIES IN CHICANO/A LITERATURE</td>
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<td>HIST 215 / HIST 315</td>
<td>BLACKS IN THE AMERICAS</td>
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<td>HIST 241 / SWGS 234</td>
<td>U.S. WOMEN'S HISTORY I: COLONIAL</td>
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<td>U.S. WOMEN'S HISTORY II: CIVIL WAR</td>
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<td>CONTINUITIES AND CHANGES IN BRAZILIAN HISTORY</td>
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<td>SLAVERY AND THE FOUNDING FATHERS</td>
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<td>HIST 295 / HIST 395</td>
<td>THE AMERICAN SOUTH</td>
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<td>CARIBBEAN HISTORY 1838 TO PRESENT</td>
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<td>HIST 338 / SWGS 338</td>
<td>19TH CENTURY WOMEN'S NARRATIVES</td>
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<td>HIST 374</td>
<td>JEWISH HISTORY, 1500-1948</td>
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<td>HIST 398 / SWGS 398</td>
<td>THE TEN MOST IMPORTANT SUPREME</td>
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<td>HIST 421</td>
<td>RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH</td>
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<td>HIST 428</td>
<td>MODERN SLAVERY AND HUMAN TRAFFICKING: GLOBAL AND LOCAL</td>
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<td>POLI 483</td>
<td>U.S.: MEXICO BORDER ISSUES IN COMPARATIVE PERSPECTIVE</td>
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<td>RELI 157 / RELI 311</td>
<td>RELIGION AND HIP HOP CULTURE IN AMERICA</td>
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<td>RELI 270</td>
<td>INTRODUCTION TO THE BLACK CHURCH IN THE UNITED STATES</td>
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<td>RELI 312</td>
<td>THE RELIGIOUS THOUGHT OF MARTIN L. KING, JR. AND MALCOLM X</td>
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<td>RELI 357</td>
<td>WHAT'S RELIGIOUS ABOUT BLACK RELIGION?</td>
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<td>SOCI 301</td>
<td>SOCIAL INEQUALITY</td>
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<td>SOCI 309</td>
<td>RACE AND ETHNIC RELATIONS</td>
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<td>SOCI 329</td>
<td>MULTIRACIAL AMERICA</td>
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<td>SOCI 363</td>
<td>AFRICAN AMERICAN-JEWISH RELATIONS: RACE, RELIGION, POLITICS, AND POPULAR CULTURE</td>
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<td>SOCI 437</td>
<td>SOCIOLOGY OF EDUCATION</td>
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<td>SOCI 451</td>
<td>IMMIGRATION IN A GLOBAL WORLD</td>
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<tr>
<td>SOCI 470</td>
<td>INEQUALITY AND URBAN LIFE</td>
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<tr>
<td>SWGS 308</td>
<td>THE FUTURE OF FOOD: FEMINIST, QUEER, AND CRITICAL APPROACHES</td>
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**General Elective Courses**

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<tr>
<td>SWGS 101</td>
<td>INTRODUCTION TO WOMEN &amp; GENDER</td>
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<tr>
<td>SWGS 201</td>
<td>INTRODUCTION TO LESBIAN, GAY, BISEXUAL, AND TRANSGENDER STUDIES</td>
</tr>
<tr>
<td>SWGS 385</td>
<td>SEXUAL DEBATES IN THE U.S.: SOCIAL AND CULTURAL CONTEXTS OF SUPREME COURTS DECISIONS</td>
</tr>
<tr>
<td>SWGS 470</td>
<td>ADVANCED SEMINAR IN POVERTY, JUSTICE, AND CAPABILITIES</td>
</tr>
<tr>
<td>SWGS 497</td>
<td>ENGAGED RESEARCH SEMINAR</td>
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</tbody>
</table>

**Direct Service Learning Experience**

As part of the Poverty, Justice and Human Capabilities (PJHC) requirements, students must participate in an approved PJHC direct service learning experience. Students must complete 3 PJHC service credits. Students can choose from an array of options, including internships, service trips, and coursework, to complete this requirement. Direct service learning experiences carry 1, 2, or 3 service credits. These options are described in detail at http://pjhc.rice.edu/service-learning-requirement/.

**Policies for the Minor in Poverty, Justice and Human Capabilities**

**Program Restrictions and Exclusions**

Students pursuing the minor in Poverty, Justice and Human Capabilities should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Program Transfer Credit Guidelines**

Students pursuing the minor in Poverty, Justice and Human Capabilities should be aware of the following program-specific transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Poverty, Justice and Human Capabilities website: http://pjhc.rice.edu/.
Opportunities for the Minor in Poverty, Justice and Human Capabilities

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Susan McAshan Summer Service Internship
Declared Poverty, Justice and Human Capabilities minors are eligible to apply for funding to support a summer service internship. Students must have completed HUMA 371/SOCI 371, SOCI 394/SWGS 394, and at least one approved elective by the end of the spring semester before their internships. Funding supports student interns’ direct service work with international or US-based community service organizations. Students receive 3 service credits upon the completion of their Susan McAshan Summer Service Internship. Additional details may be found at the PJHC website: http://pjhc.rice.edu/summer-service-internship-funding/.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this minor.

Program in Writing and Communication

The mission of the Program in Writing and Communication (PWC) is to integrate the practice of analytical writing and the techniques of both oral and visual communication into the Rice curriculum, with two goals in mind: To enable our students to articulate their ideas as we prepare them for academic and professional life; and to affirm the necessity of this ability and its fundamental value to every aspect of their education and across every University department and discipline.

The PWC provides oversight for the First-Year Writing-Intensive Seminars (FWIS). FWIS are content-based, 3 credit hour seminars in which writing and communication pedagogy plays a significant role in assignments and grading. The courses reflect a broad range of disciplines from across the university.

The PWC also includes the Center for Written, Oral, and Visual Communication. Housed in Fondren Library, the Center supports teaching and learning through workshops, consulting, and courses for undergraduate and graduate students and faculty. Headed by a team of communication professionals, the Center also includes a large staff of writing and communication consultants, both graduate and undergraduate, who are available for individual tutoring appointments. The Center includes facilities for one-on-one consultations and group work, as well as advanced technology for preparation of oral and visual presentations. Physically accessible whenever Fondren Library is open, the Center is virtually accessible around the clock through the Center’s website (https://cwovc.rice.edu).

For additional information regarding the Program in Writing and Communication, please see the program's website at: http://pwc.rice.edu/.

All first-year students must pass the Composition Examination and complete a content-based First-Year Writing Intensive Seminar (FWIS) course during their first year at Rice.

Students who receive an unsatisfactory score on the Composition Exam must successfully complete FWIS 100 during the fall of their first year and prior to enrolling in one of the required content-based FWIS courses.


The Program in Writing and Communication does not currently offer an academic program at the graduate level.

Program Director
Tracy Volz

Lecturers
Katerina Belik
Elizabeth Cummins-Muñoz
Lina Dib
Andrew Klein
David Messmer
Burke Nixon

Teaching Fellows
Lindsey Chappell
Joanna Fax
Sophia Hsu

Department and Code Legend
Note: Internally the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: FWIS

Psychology

Contact Information
Psychology
https://psychology.rice.edu/
464 Sewall Hall
713-348-4856
Eduardo Salas
Department Chair
eduardo.salas@rice.edu

Mike Byrne
Human Factors/Human-Computer Interaction Graduate Program
byrne@rice.edu

Randi Martin
Cognitive and Affective Neuroscience Graduate Program
rmartin@rice.edu

Fred Oswald
Industrial/Organizational Psychology Graduate Program
The Psychology Department’s undergraduate program offers the core preparation recommended by the nation’s leading graduate schools of psychology, with advanced courses and research opportunities to fit individual needs. Programs of study may be structured around prospective careers in several fields of psychology, as well as in medicine, law, business, or education.

Program emphasis in graduate study is on doctoral training. An important feature of our doctoral program is its strong research orientation. Students are expected to spend most of their time actively engaged in research and are expected to acquire a high level of research competence. Faculty research interests and areas of specialization for graduate students include: cognitive (understanding of such basic mental activities as perceiving, attending, remembering, learning, judging, verbalizing, and imagining) and affective neuroscience (investigating the relationship between the human brain and higher forms of behavior, including sensation, perception, attention, memory, language, social cognition, emotion, emotion regulation, and health), human factors/human-computer interaction (the scientific discipline concerned with the understanding of interactions among humans and other elements of a system and the application of theories, principles, data, and other methods of design in order to optimize human well-being and overall system performance), industrial/organizational psychology (human behavior in organizational and work situations), and psychometrics and quantitative psychology (understanding specialized skills related to the substantive development; statistical modeling and analysis; and resulting interpretation of psychological measures, experiments, and interventions).

**Bachelor's Program**
- Bachelor of Arts (BA) Degree with a Major in Psychology (p. 684)

**Master's Program**
- Master of Arts (MA) Degree in the field of Psychology*

**Doctoral Program**
- Doctor of Philosophy (PhD) Degree in the field of Psychology (p. 685)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

**Chair**
Eduardo Salas

**Professors**
Michael D. Byrne  
James L. Dannemiller  
Michelle "Mikki" R. Hebl  
Randi C. Martin  
Stephan J. Motowidlo  
Frederick L. Oswald  
James R. Pomerantz

**Associate Professors**
Margaret E. Beier  
Philip T. Kortum  
David M. Lane

**Assistant Professors**
Bryan T. Denny  
Christopher P. Fagundes  
Simon J. Fischer-Baum

**Professors Emeriti**
Kenneth R. Laughery  
David J. Schneider

**Associate Professor Emerita**
Sarah A. Burnett

**Lecturers**
Roberta M. Diddel  
Özge Gürcani  
Chase L. Lesane-Brown  
D. Colette Nicolaou  
Sandra V. Parsons  
Carissa A. Zimmerman Espinosa

**Professors, Joint Appointments**
Jennifer M. George  
H. Albert Napier  
Rick K. Wilson  
Jing Zhou

**Associate Professors, Joint Appointments**
Richard R. Batsell  
D. Brent Smith

**Adjunct Professors**
Dora E. Angelaki  
Michael S. Beauchamp  
John H. Byrne  
John M. Cornwell  
Robert M. Dantzer  
J. David Dickman  
P. Richard Jeanneret  
Harvey S. Levin  
Katherine A. Loveland  
Lynn M. Maher  
John E. Overall  
Deborah A. Pearson  
Anne Bibiana Sereno  
Melinda A. Stanley  
Angela L. Stotts  
Kevin C. Wooten  
Anthony A. Wright

**Adjunct Associate Professors**
Gerri R. Hanten
Bachelor of Arts (BA) Degree with a Major in Psychology

Program Learning Outcomes for the BA Degree with a Major in Psychology

Upon completing the BA degree with a major in Psychology, students will be able to:

1. Develop a broad knowledge base in psychology and its content domains. They will be able to describe key concepts, principles, and overarching themes in psychology.

2. Understand research methods, and develop and apply research skills. They will be able to explain different research methods used by psychologists and design and conduct scientific studies to address psychological questions using appropriate research methods. Students will follow the APA Ethics Code in the treatment of human and nonhuman participants in the design, data collection, interpretation, and reporting of psychological research. Students will be able to generalize research conclusions appropriately based on the parameters of particular research methods.

3. Understand the applications of psychology. They will describe major areas (e.g., clinical, cognitive, counseling, human factors, industrial/organizational, school) and emerging applied areas (e.g., health, forensics, media) of psychology. They will identify appropriate applications of psychology in solving problems, such as: the pursuit and effect of healthy lifestyles; the origin and treatment of abnormal behavior; psychological tests and measurement; psychology-based interventions in areas such as clinical, cognitive, counseling, educational, human factors, and industrial/organizational psychology; and the resolution of interpersonal and intercultural conflicts. Students will articulate how psychological principles can be used to explain social issues and inform public policy. Students will apply psychological concepts, theories, and research findings as these relate to everyday life.

Requirements for the BA Degree with a Major in Psychology

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Psychology must complete:

- A minimum of 15 courses (47 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 9 courses (29 credit hours) at the 300-level or above.

Once enrolled at Rice, students must obtain approval from the psychology department to transfer courses taken at any other college or university.

The 5 courses listed below (comprising 17 credit hours) must be completed to satisfy the core requirements for this major. Students are strongly encouraged to complete the Core Requirements before taking the upper-level courses that comprise their Elective Requirements.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

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<td>PSYC 202</td>
<td>INTRODUCTION TO SOCIAL PSYCHOLOGY</td>
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<td>PSYC 203</td>
<td>INTRODUCTION TO COGNITIVE PSYCHOLOGY</td>
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<td>PSYC 339</td>
<td>STATISTICAL METHODS-PSYCHOLOGY</td>
<td>4</td>
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<tr>
<td>PSYC 340</td>
<td>RESEARCH METHODS - PSYCHOLOGY</td>
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Elective Requirements
Select a total of 10 additional courses from departmental (PSYC) course offerings.  

| Total Credit Hours Required for the Major in Psychology | 47 |
| Additional Credit Hours to Complete BA Degree Requirements | 13 |
| University Graduation Requirements (p. 25) | 60 |

Total Credit Hours 120

Footnotes and Additional Information

1. Students are strongly encouraged to complete the Core Requirements before taking the upper-level courses that comprise the Elective Requirements.
2. No substitutions or transfer credits are allowed for PSYC 339 or PSYC 340. In addition, students should complete PSYC 339 and PSYC 340 preferably by the end of their sophomore year.
3. Students may take up to 12 credit hours (combined) of PSYC 485 and/or PSYC 488 to apply toward the major, but only 3 of the 12 credit hours may be from PSYC 488.

Departmental Honors Program
Qualified students may apply to the honors program during preregistration in the spring semester of their junior year. A written proposal for the project must be submitted by the end of the second week of classes in the fall of their senior year, and the faculty will decide on final admission to the honors program by the end of the fourth week of classes. Admission to the honors program requires a psychology major GPA of 3.7 and a cumulative GPA of 3.5, completion of PSYC 339, and completion of or concurrent enrollment in PSYC 340. To graduate with departmental honors, students must complete the requirements for the psychology major, a written honors thesis approved by a faculty committee, and other requirements as determined by their honors committee. Detailed information about the honors program is available from the instructor of the course or the department website (http://psychology.rice.edu/Content.aspx?id=67).

For additional information, please see the Psychology website: https://psychology.rice.edu/

Doctor of Philosophy (PhD) Degree in the field of Psychology

Program Learning Outcomes for the MA and PhD Degrees in the field of Psychology

Upon completing the MA and PhD degrees in the field of Psychology, students will be able to:

1. Describe key concepts, principles, and overarching themes in psychology and develop a comprehensive knowledge of scientific theories and empirical findings in a specialty area.
2. Explain different research methods used by psychologists, and design and conduct studies to address psychological questions using appropriate research methods. They will analyze data from any of a wide variety of research designs using appropriate univariate, multivariate, and/or graphical methods. Students will demonstrate that they follow the APA Ethics Code in the treatment of human and nonhuman participants in the design, data collection, interpretation, and reporting of psychological research.
3. Apply scientific reasoning to interpret psychological phenomena. They will be able to identify methodological and statistical problems in published research and evaluate the appropriateness of conclusions derived from psychological research.
4. Write a paper that clearly summarizes previous research, details methods used in the research, presents statistical analyses, and relates the findings to previous research and theory. They will communicate results through writing, tables, and graphs—that clearly and accurately reflect research findings. Students will present their research and answer questions in a formal setting.

Requirements for the MA and PhD Degrees in the field of Psychology

The MA degree is a thesis master's degree. For general university requirements, please see Thesis Master’s Degrees (p. 67). For general university requirements for PhD degrees, please see Doctoral Degrees (p. 64). For both MA and PhD degrees, students must complete a research thesis, including a public oral defense. Required coursework is determined by the student’s Research Interest Group (cognitive and
Students must complete an admission-to-candidacy procedure to establish their expertise in their chosen specialty. Competence in a foreign language is not required. For additional information on each Research Interest Group (RIG), please see the Department of Psychology Graduate Program [https://psychology.rice.edu/graduate](https://psychology.rice.edu/graduate).

**Research Interest Groups (RIGs)**

- **Cognitive and Affective Neuroscience**: The Cognitive RIG seeks an understanding of such basic mental activities as perceiving, attending, remembering, learning, judging, verbalizing, and imagining. The Affective Neuroscience RIG investigates the relationship between the human brain and higher forms of behavior, including sensation, perception, attention, memory, language, social cognition, emotion, emotion regulation, and health.
- **Human Factors/Human-Computer Interaction**: The Human Factors/Human-Computer Interaction RIG investigates interactions among humans and other elements of a system. We are especially concerned with the interaction of humans with computer systems.
- **Industrial/Organizational Psychology**: The Industrial and Organizational (I/O) RIG studies human behavior in organizational and work situations. Topics include motivation at work, the aging workforce, discrimination in the workplace, job performance, and team training.
- **Psychometrics and Quantitative Psychology**: Psychological science critically depends on data that are reliable, accurate, valid, and fair. Serving this purpose, PhD students in the Psychometrics and Quantitative Psychology RIG obtain specialized skills related to the substantive development; statistical modeling and analysis; and resulting interpretation of psychological measures, experiments, and interventions.

The program has a strong research orientation, and whether or not students plan to pursue a research career, they are expected to spend a large portion of their graduate years actively engaged in research.

**Summary**

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</table>

**Religion**

**Contact Information**

Religion  
[https://reli.rice.edu/](https://reli.rice.edu/)  
225 Humanities Building  
713-348-5201  
April DeConick  
Department Chair  
adeconic@rice.edu

The Religion department's undergraduate major is built to be as flexible as possible so that students may pursue individual interests and interdisciplinary goals. The major provides students with the opportunity to explore mainline religious traditions and marginal/repressed religious currents within multicultural and transnational contexts. Students will gain religious literacy while studying the historical, social, cultural, psychological, philosophical, and cognitive dynamics of religion and religious experience.

**Bachelor's Program**

- Bachelor of Arts (BA) Degree with a Major in Religion (p. 687)

**Master's Program**

- Master of Arts (MA) Degree in the field of Religion (p. 691) *(thesis terminal masters degree)*
- Master of Arts (MA) Degree in the field of Religion*

**Doctoral Program**

- Doctor of Philosophy (PhD) Degree in the field of Religion (p. 690)

**Certificate**

- Certificate in Gnosticism, Esotericism and Mysticism (p. 421)
- Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

**Chair**  
April D. DeConick

**Directors of Undergraduate Studies**  
Niki Clements  
Jeffrey J. Kripal

**Director of Graduate Studies**  
Anthony B. Pinn

**Professors**  
Elias K. Bongmba  
Marcia Brennan  
Matthias Henze  
Anne C. Klein  
Jeffrey J. Kripal  
William B. Parsons

For additional information, please see the Psychology website: [https://psychology.rice.edu/](https://psychology.rice.edu/)
Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
  • Course offerings/subject code: RELI

Department Description and Code
  • Religion: RELI

Undergraduate Degree Description and Code
  • Bachelor of Arts degree: BA

Undergraduate Major Description and Code
  • Major in Religion: RELI

Graduate Degree Descriptions and Codes
  • Master of Arts degree: MA
  • Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
  • Degree Program in Religion: RELI

Graduate Certificate Description and Code
  • Certificate in Gnosticism, Esotericism and Mysticism: GEM

Bachelor of Arts (BA) Degree with a Major in Religion

Program Learning Outcomes for the BA Degree with a Major in Religion

Upon completing the BA degree with a major in Religion, students will be able to:

1. Develop and apply critical toolkit to the study of religion and religious traditions including (inter)disciplinary methodologies and theories at a proficient level.
   (Critical Skills for the Study of Religion: Theory, Method, and (Inter)Disciplinarity)

2. Understand and interpret religious traditions by examining religion(s) as historical, social, and cultural phenomena. When appropriate, attention is given to the impact of globalism, immigration, colonialism, and other forms of transnational and multi-cultural (non)religious exchange at a proficient level.
   (Historical, Social, (Multi-)Cultural Dimensions of Religion)

3. Understand and interpret the subjective dimensions of religion(s) through analyses that explore the psychological, philosophical, and cognitive dynamics of religion and religious experience at a proficient level.
   (Psychological, Philosophical, and Cognitive Dimensions of Religion)

4. Understand and interpret religious traditions by examining the plurality of religious voices and expressions, including currents that have been marginalized, neglected, repressed, and censored in a variety of sociological, psychological, philosophical, and political ways at a proficient level.
   (Religious Plurality and Marginal Currents)

5. Develop the ability to read religious texts in their original languages and perform translations of texts when appropriate to the student’s course of study at a proficient level.
   (Foreign Language Skills)

Requirements for the BA Degree with a Major in Religion

For general university requirements, see Graduation Requirements (p. 25).

Students pursuing the BA degree with a major in Religion must complete:

• A minimum of 10 courses (30 credit hours) to satisfy major requirements.
• A minimum of 120 courses to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A maximum of 2 courses (6 credit hours) from study abroad or other transfer credits. For additional department guidelines regarding transfer credit, see the Policies tab.

Students who are pursuing two majors (i.e., are double majors) and have declared the Religion major must complete:

• A minimum of 8 courses (24 credit hours) to satisfy major requirements.
• A minimum of 6 courses (18 credit hours) at the 300-level or above.
• A maximum of 2 courses (6 credit hours) from study abroad or other transfer credits. For additional department guidelines regarding transfer credit, see the Policies tab.

Double majors who drop the other major are required to meet the requirements listed for single majors.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Religion (for single majors)</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Religion (for double majors)</td>
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2017-2018 General Announcements
Bachelor of Arts (BA) Degree with a Major in Religion

Total Credit Hours Required for the BA Degree with a Major in Religion 120

Degree Requirements

<table>
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<tbody>
<tr>
<td>RELI 101</td>
<td>INTRODUCTION TO THE STUDY OF RELIGION</td>
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</table>

Core Requirements

Core Course

Select 1 course from each of the following 2 categories for a total of 2 courses (see below for course lists):

- Judaism/Christianity/Islam/African-American Religions
- Indigenous African Religions/African-American Religions/Buddhism/Hinduism

Elective Requirements 2

Select 6 departmental (RELI) course offerings: 3 18

Senior Project

Select 1 course from the following: 4 3

- RELI 400 SENIOR THESIS
- RELI 401 INDEPENDENT STUDY
- RELI 402 INDEPENDENT STUDY
- RELI 405 RELIGION AND THE NATURAL SCIENCES
- RELI 406 CHRISTIANITY AND LATE ANTIQUITY
- RELI 415 SECRET RELIGION
- RELI 416 BEGINNINGS OF CHRISTIANITY
- RELI 421 FOUCALUT & THE HERMENUTICS OF SELF
- RELI 424 RELIGION AND POLITICS IN AFRICA
- RELI 427 HISTORY AND METHODS: NINETEENTH CENTURY
- RELI 428 HISTORY AND METHODS: TWENTIETH CENTURY
- RELI 430 RELIGION, PSYCHOLOGY & CULTURE
- RELI 431 RELIGION AND COGNITIVE SCIENCE
- RELI 433 TIBETAN LANGUAGE AND CULTURE
- RELI 440 ISLAM'S MYSTICAL AND ESOTERIC TRADITION
- RELI 441 / ASIA 441 MAGIC AND POPULAR RELIGION
- RELI 443 MAIMONDES "GUIDE FOR THE PERPLEXED"
- RELI 449 EARLY CHRISTIAN CONTROVERSIES
- RELI 456 HISTORY OF WESTERN CHRISTIANITY: REFORMATION TO THE PRESENT
- RELI 458 MYSTICISM: THEORIES AND METHODS
- RELI 462 / MDEM 462 ENGLISH SPIRITUALITY AFTER HENRY VIII: PROTESTANT, CATHOLIC, OR ANGLICAN?
- RELI 470 BUDDHIST WISDOM TEXTS
- RELI 472 KABBALAH SEMINAR
- RELI 476 / FREN 324 / POLI 324 FROM DECOLONIZATION TO GLOBALIZATION
- RELI 481 GNOSTICISM SEMINAR
- RELI 488 THE HISTORY OF RELIGIONS SCHOOLS
- RELI 490 AFRICAN AMERICAN LITERATURE AND RELIGION
- RELI 497 SENIOR FORUM
- RELI 499 INTERNSHIP IN RELIGION

Total Credit Hours Required for the Major in Religion (for single majors) 30

Total Credit Hours Required for the Major in Religion (for double majors) 24

Additional Credit Hours to Complete BA Degree Requirements 30-36

University Graduation Requirements (p. 25) * 60

Total Credit Hours 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Double majors who drop the other major are required to meet the requirements listed for single majors.

2 Selection of courses should be worked out programmatically with a faculty member advisor so that at least 3 courses form a concentrated area of study.

3 Double majors must complete a total of 4 additional courses (12 credit hours) to satisfy the Elective Requirements. Selection of courses should be worked out programmatically with a faculty member advisor so that at least 3 courses form a concentrated area of study.

4 The course is either a Seminar or Independent Study with a required research paper selected with advisor approval. See advisor for more information.

Judaism/Christianity/Islam/African-American Religions

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<td>RELI 105 / MDEM 105</td>
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<td>INTRODUCTION TO JUDAISM</td>
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<td>COMPARING CHRISTIANITIES</td>
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<td>RELI 113</td>
<td>INTRODUCTION TO CHRISTIANITY IN AFRICA</td>
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<td>RELI 116 / MDEM 116</td>
<td>MYSTICISM THROUGHOUT THE AGES</td>
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<td>RELIGION, MORALITY, AND THE LAW</td>
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<td>RELI 124</td>
<td>RELIGION AND THE ART OF HAPPINESS</td>
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<td>RELI 126 / HEBR 126</td>
<td>INTRODUCTION TO BIBLICAL HEBREW II</td>
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<td>INTERMEDIATE BIBLICAL HEBREW III</td>
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<td>INTERMEDIATE BIBLICAL HEBREW IV</td>
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2017-2018 General Announcements
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<tr>
<td>RELI 157</td>
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<td>RELI 158</td>
<td>LIBERATION THEOLOGIES</td>
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<td>RELI 171 / FSEM 171 / MDEM 171</td>
<td>THE BODY AND THE COSMOS IN THE MIDDLE AGES</td>
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<td>RELI 203 / HIST 201</td>
<td>JUDAISM OF JESUS AND HILLEL</td>
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<td>RELI 213</td>
<td>THE PROPHET JEREMIAH: THE BIBLICAL BOOK AND ITS RECEPTION IN JUDAISM AND CHRISTIANITY</td>
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<td>RELI 215 / FILM 215</td>
<td>MYSTIC CINEMA: KABBALAH IN FILM</td>
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<td>RELI 217</td>
<td>SHI'TISM: ASSASSINS AND AYATULLAH</td>
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<td>RELI 221 / ASIA 221</td>
<td>THE LIFE OF THE PROPHET MUHAMMAD</td>
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<td>RELI 223</td>
<td>QUR'AN AND COMMENTARY</td>
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<td>RELI 243</td>
<td>THE BOOK OF GENESIS</td>
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<td>RELI 270</td>
<td>INTRODUCTION TO THE BLACK CHURCH IN THE UNITED STATES</td>
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<td>RELI 271 / MDEM 271</td>
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<td>RELI 282</td>
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<td>RELI 294</td>
<td>RELIGION IN FICTION AND FILM</td>
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<td>RELI 301</td>
<td>NIETZSCHE AND RELIGIOUS THOUGHT</td>
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<td>RELI 304</td>
<td>JESUS AND THE GOSPELS</td>
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<td>RELI 305 / MDEM 305</td>
<td>PAIN, ECSTASY AND EMBODIMENT IN RELIGIOUS EXPERIENCE</td>
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<td>RELI 343 / HART 347</td>
<td>SEMINAR ON LOVE</td>
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<td>RELI 348</td>
<td>CHRISTIANITY AND ISLAM IN AFRICA</td>
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<td>RELI 350 / MDEM 350</td>
<td>DEMONS, MENTAL ILLNESS AND MEDICINE</td>
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<td>RELI 356</td>
<td>MAJOR ISSUES IN CONTEMPORARY ISLAM</td>
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<td>RELI 357</td>
<td>WHAT'S RELIGIOUS ABOUT BLACK RELIGION?</td>
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<td>PAUL AND THE NEW TESTAMENT</td>
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<td>THE MESSIAH</td>
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<td>RELI 382</td>
<td>LOST JUDAISMS: THE APOCRYPHAL WRITINGS</td>
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<td>RELI 383</td>
<td>THE DEAD SEA SCROLLS</td>
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<td>RELI 384</td>
<td>PILGRIMAGE AND CRUSADE</td>
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<td>RELI 385 / HIST 381</td>
<td>GOD, TIME AND HISTORY</td>
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<td>RELI 387</td>
<td>WESTERN ESOTERICISM: METHOD AND THEORY</td>
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<td>RELI 388</td>
<td>THE PSALMS AND THEIR POETIC AFTERLIFE</td>
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<td>RELI 390</td>
<td>SEARCH FOR GOD IN THE POSTMODERN WORLD</td>
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<td>RELI 391 / MDEM 391</td>
<td>THE REFORMATION &amp; ITS RESULTS</td>
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<td>RELI 392</td>
<td>JERUSALEM: HOLY CITY IN TIME AND IMAGINATION</td>
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<td>LOSING YOUR RELIGION IN FILM &amp; FICTION &amp; MUSIC</td>
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<td>RELI 443</td>
<td>MAIMONIDES &quot;GUIDE FOR THE PERPLEXED&quot;</td>
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<td>RELI 458</td>
<td>MYSTICISM: THEORIES AND METHODS</td>
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<td>RELI 462 / MDEM 462</td>
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<td>KABBALAH SEMINAR</td>
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<td>RELI 476 / FREN 324 / POLI 324</td>
<td>FROM DECOLONIZATION TO GLOBALIZATION</td>
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<td>RELI 481</td>
<td>Gnosticism Seminar</td>
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**Indigenous African Religions/American Religions/Buddhism/Hinduism**

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<td>BUDHISM MEDITATION, ART AND US</td>
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<td>RELI 254</td>
<td>MYSTICISM: THEORIES AND METHODS</td>
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Select 1 from the following: 3
RELI 234 / TIBT 234  TIBETAN LANGUAGE, LITERATURE AND CULTURE II
RELI 270  INTRODUCTION TO THE BLACK CHURCH IN THE UNITED STATES
RELI 285 / ASIA 240 / SWGS 240  GENDER AND POLITICIZED RELIGION
RELI 311  RELIGION AND HIP HOP CULTURE IN AMERICA
RELI 320 / POLI 320  THE LEGAL FRAMEWORK OF RELIGIOUS TOLERANCE
RELI 322 / ASIA 322  INTRODUCTION TO BUDDHISM
RELI 332 / TIBT 332  ADVANCED TIBETAN LANGUAGE & CULTURE
RELI 333  KNOWING BODY/GLOWING MIND: BUDDHIST ARTS OF CONTEMPLATION AND ANALYSIS
RELI 337  SHAMANS, SAINTS, & SAGES
RELI 340  THEOLOGY IN AFRICA
RELI 342 / ANTH 343  NEW RELIGIOUS MOVEMENTS IN AFRICA
RELI 357  WHAT'S RELIGIOUS ABOUT BLACK RELIGION?
RELI 359  RELIGIOUS TOLERANCE IN THE CRUCIBLE OF GLOBALIZATION
RELI 369  READING WRIGHT: THEISM AND ATHEISM IN THE WRITINGS OF RICHARD WRIGHT
RELI 378  MIND AND ART, FILM AND LITERATURE IN BUDDHISM
RELI 393  MUTANTS AND MYSTICS: THE PARANORMAL AND POPULAR CULTURE
RELI 399  CONTEMPLATIVE PRACTICUM
RELI 423 / ANTH 423  AFRICAN MYTHS AND RITUALS
RELI 424  RELIGION AND POLITICS IN AFRICA
RELI 426  RELIGION AND LITERATURE IN AFRICA
RELI 433  TIBETAN LANGUAGE AND CULTURE
RELI 458  MYSTICISM: THEORIES AND METHODS
RELI 470  BUDDHIST WISDOM TEXTS

• No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
• Requests for transfer credit will be considered by the departmental Director of Undergraduate Studies (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Religion website: http://reli.rice.edu/

Opportunities for the BA Degree with a Major in Religion

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honors Program
Qualified undergraduates may choose the option of writing a senior thesis and submitting it to the department for consideration to receive Distinction in Research and Creative Works. For details about the submission process and this honors award, visit the department’s website. To complete the thesis, the student elects RELI 400 "Senior Thesis." Students must have a minimum 3.2 GPA in Religion courses prior to enrolling in RELI 400, a Religion faculty supervisor, and the permission of the Undergraduate Director. Further details are available upon consultation with the department's Director of Undergraduate Studies.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Doctor of Philosophy (PhD) Degree in the field of Religion

Program Learning Outcomes for the PhD in the field of Religion
Upon completing the PhD Degree in the field of Religion, students will be able to:

1. Develop and apply critical toolkit to the study of religion and religious traditions, including (inter)disciplinary methodologies and theories at a professional level.
   (Critical Skills for the Study of Religion: Theory, Method and (Inter)Disciplinarity)
2. Understand and interpret religious traditions by examining religion(s) as historical, social, and cultural phenomena. When appropriate, attention is given to the impact of globalization, immigration, colonialism, and other forms of transnational and multi-cultural (non)religious exchanges at a professional level.
   (Historical, Social, (Multi-)Cultural Dimensions of Religion)
3. Understand and interpret the subjective dimensions of religion(s) through analyses that explore the psychological, philosophical, and cognitive dynamics of religion and religious experience at a professional level.

Policies for the BA Degree with a Major in Religion

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Religion should be aware of the following departmental transfer credit guidelines:
Requirements for the MA and PhD Degrees in the field of Religion

For general university requirements, please see Doctoral Degrees (p. 64). The graduate program accepts a limited number of qualified students. A distinguished undergraduate record and high scores on the Graduate Record Examination (GRE) are essential, and an advanced degree in the humanities is desirable. Students admitted into the program normally will receive financial assistance in the form of a tuition waiver and a stipend. As part of their training and in return for their stipends, students are expected to perform a minimum amount of services in return for their stipend by assisting the department as needed.

MA Degree Program

The MA degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (p. 66). Although students are not normally admitted to study for an MA, graduate students may earn the MA after obtaining approval of their candidacy for the PhD.

PhD Degree Program

Students pursuing the PhD degree in the field of Religion must complete the following:

- 18 courses (54 credit hours).
- 2 department seminars to be taken in each of the first 2 years.
- Successful completion of the second-year review.
- Passing grades on reading examinations in two secondary research languages approved by the faculty before taking qualifying exams.
- Passing grades in 4 qualifying examinations.
- Approved dissertation proposal.
- Satisfactory completion of dissertation and oral defense.

Summary

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<tbody>
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Reading Lists

Reading lists are available for all Qualifying Exams. Students are expected to familiarize themselves with this material enough that they draw on it on their exams and the dissertation itself. The graduate seminar is, in part, an introduction to areas of the reading list and to the techniques for engaging in deep, independent reading.

Policies for the PhD Degree in the field of Religion

Department of Religion Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Department of Religion publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Religious_Studies_Graduate_Handbook.pdf.

For additional information, please see the Religion website: http://reli.rice.edu/

Opportunities for the PhD Degree in the field of Religion

Professional Development

Opportunities are available to teach undergraduate courses in the department. Students are encouraged to pursue teaching opportunities at colleges and universities. Limited funds also are available for students to attend conferences to present their research. The department encourages these and other efforts to prepare students for academic careers.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this degree.

Master of Arts (MA) Degree in the field of Religion

Program Learning Outcomes for the MA Degree in the field of Religion

Upon completing the MA degree in the field of Religion, students will be able to:

1. Develop and apply critical toolkit to the study of religion and religious traditions, including (inter)disciplinary methodologies and theories at a level of mastery.
   (Critical Skills for the Study of Religion: Theory, Method and (Inter)Disciplinarity)
2. Understand and interpret religious traditions by examining religion(s) as historical, social, and cultural phenomena. When appropriate, attention is given to the impact of globalization, immigration, colonialism, and other forms of transnational and multi-cultural (non)religious exchange at a level of mastery.
   (Historical, Social, (Multi-)Cultural Dimensions of Religion)

2017-2018 General Announcements
3. Understand and interpret the subjective dimensions of religion(s) through analyses that explore the psychological, philosophical, and cognitive dynamics of religion and religious experience at a level of mastery.  
(Psychological, Philosophical, and Cognitive Dimensions of Religion)

4. Understand and interpret religious traditions by examining the plurality of religious voices and expressions, including currents that have been marginalized, neglected, repressed, and censored in a variety of sociological, psychological, philosophical, and political ways at a level of mastery.  
(Religious Plurality and Marginal Currents)

5. Develop ability to read and understand relevant scholarly research/literature that has been published in foreign languages. Develop ability to read religious texts in their original languages and perform translations of texts when appropriate to the student's course of study at a level of mastery.  
(Foreign Language Skills)

Requirements for the MA Degree in the field of Religion

The MA degree is a thesis master's degree. For general university requirements, please see Thesis Master's Degrees (p. 67). Students pursuing the MA degree in the field of Religion (RELI) must:

- Complete all university graduation requirements
- Complete Graduate Methods Seminar requirement (2 courses): RELI 527 (History and Methods: 19th Century) and RELI 559 (History and Methods: 20th Century)
- Complete at least 30 hours of courses approved for graduate credit at Rice University
- Complete at least 24 hours of graduate-level coursework in departmental (RELI) course offerings with a B- or better
- At least 12 hours of the RELI coursework must be seminars at the 500 or 600 level, where research papers are required
- Accumulate an overall GPA of at least 3.0
- Pass 1 secondary language reading exam (French or German)
- Comprehensive exam on Method and Theory in the study of religion
- Master's thesis developed from a paper in a course that represents the student's interests in the study of religion
- Oral defense of thesis with student and three faculty members who have worked with the student in the Department of Religion

Candidacy, defense, and thesis submission will follow the guidelines described here (p. 67).

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>RELI 527</td>
<td>HISTORY AND METHODS: 19TH CENTURY</td>
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</tr>
<tr>
<td>RELI 559</td>
<td>HISTORY AND METHODS: TWENTIETH CENTURY</td>
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</table>

Total Credit Hours Required for the MA degree in the field of Religion 30

Degree Requirements

<table>
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<tr>
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</tr>
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<tbody>
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</tr>
<tr>
<td>RELI 559</td>
<td>HISTORY AND METHODS: TWENTIETH CENTURY</td>
<td>3</td>
</tr>
</tbody>
</table>

Policies for the MA Degree in the field of Religion

Department of Religion Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Department of Religion publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Religious_Studies_Graduate_Handbook.pdf.

Admission

Students will apply for admittance to the MA program via the Rice Grad Apps webpage. Each January, the faculty in the Religion Department will evaluate the applications and select the MA students for the next academic year.

Application for Degree

The student must file a petition to receive the MA. This petition can be obtained from the Graduate Administrator and must be approved and signed by the Chair of the Department and submitted to the Office of Graduate Studies. In exceptional cases, when a student who has completed the terminal MA, applies to the PhD program, and is admitted, the coursework already completed by the student may be applied toward the PhD requirements.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

For additional information, please see the Religion website: http://reli.rice.edu/

Opportunities for the MA Degree in the field of Religion

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this degree.

Science Teaching

Contact Information

Science Teaching  
http://space.rice.edu/MST/  
204 Herman Brown Hall  
713-348-4939  
Patricia Reiff  
Program Director  
reiff@rice.edu

The Master of Science Teaching (MST) degree is a content-based, non-thesis, advanced degree primarily directed towards inservice middle school, IPC (Integrated Physics and Chemistry), Physics, or Astronomy high school teachers and other Education and Public Outreach (EPO)
professionals. The goal of the program is to provide content and skills to inservice and preservice K-12 and informal educators, so that they will become proficient in, and able to teach, all the planetary, astronomy, and space science topics included in the Next Generation Science Standards and the State of Texas science standards.

The teachers who finish the program are encouraged to become master teachers in their school district, multiplying the impact of the program manifold by giving workshops and other inservice programs to other teachers both in-state, and across the country.

Science teaching does not currently offer an academic program at the undergraduate level.

Master's Program

• Master of Science Teaching (MST) Degree (p. 693)

Director

Patricia Reiff

Application Review Committee

David Alexander
Marjorie Corcoran
Patricia Reiff

Advisory Council

David Alexander
Marjorie Corcoran
Robert Curl (emeritus)
Carolyn Nichol
Neal Lane (emeritus)
Anne Papakonstantinou
Patricia Reiff
Ron Sass (emeritus)
Carolyn Sumners

Educational Professionals

Carolyn Nichol
Anne Papakonstantinou
Patricia Reiff
Carolyn Sumners
James Young

Description and Code Legend

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule

Course offerings/subject codes: Courses from various subjects may apply toward the graduate degree.

Department Description and Code

Physics and Astronomy: PHYS

Graduate Degree Description and Code

Master of Science Teaching degree: MST

Graduate Degree Program Description and Code

Degree Program in Science Teaching: STEA

Master of Science Teaching (MST) Degree

Program Learning Outcomes for the MST Degree

Upon completing the MST degree, students will be able to:

1. Solve problems based on Kepler’s Laws and Newton’s Laws using non-calculus mathematical techniques.
2. Demonstrate best practices for teaching scientific content.
3. Present an oral report on a scientific topic using presentation software such as Powerpoint.
4. Learn how to use scientific and astronomical equipment such as telescopes, digital cameras, GPS, and electronic devices, including multimeters, and/or portable planetariums.
5. Prepare a final project, which will include scientific research, educational research, and/or curriculum creation or analysis.

Requirements for the MST Degree

The MST degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MST degree must complete:

• A minimum of 30 credit hours at the 500-level or above to satisfy degree requirements, including a minimum of 15 credit hours from content or content/skills courses.
• A final project. Students will prepare a final project which will include scientific research, educational research, and/or curriculum creation or analysis.

Each candidate for the Master of Science Teaching degree will specify an area of specialization. Examples of the areas of specialization are listed below:

• Astronomy
• Computer Science
• Earth Science
• Engineering
• Informal Science
• Integrated Physics and Chemistry (IPC)
• Mathematics
• Middle School Science
• Physics

Each student will have a 3-person committee, with at least 2 members from the tenure-track faculty, to approve the student’s proposed program, advise on which specific courses will best suit the student’s needs, and approve their final project. At least 1 of the members of the committee will be an experienced Education Professional, who will ensure the appropriateness of the courses to the educator’s program. At least 1 person of the committee will be an expert in the content area that is the student’s primary teaching interest.
Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
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<td>Total Credit Hours Required for the MST Degree</td>
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Degree Requirements

<table>
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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Content or Content/Skills Courses</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Select a minimum of 5 Content or Content/Skills courses at the 500-level or above.</td>
<td>15</td>
</tr>
<tr>
<td>ASTR</td>
<td>Teaching Earth and Space Science</td>
<td></td>
</tr>
<tr>
<td>ASTR</td>
<td>Astronomy for Teachers</td>
<td></td>
</tr>
<tr>
<td>ASTR</td>
<td>Teaching Astronomy Laboratory</td>
<td></td>
</tr>
<tr>
<td>ESCI</td>
<td>Putting Earth Science Into Action</td>
<td></td>
</tr>
<tr>
<td>PHYS</td>
<td>Physics of the Radio</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Additional Content/Skills Or Education Courses</td>
<td>3</td>
</tr>
<tr>
<td>EDUC</td>
<td>Teaching and Learning with Inquiry</td>
<td></td>
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<tr>
<td>EDUC</td>
<td>Teaching Diverse Learners</td>
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</tr>
<tr>
<td>EDUC</td>
<td>Theory and Methods: Mathematics</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Research or Practicum</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select at least 3 and no more than 12 credit hours of research (educational or scientific) or practicum teaching.</td>
<td>12</td>
</tr>
<tr>
<td>ESCI 515</td>
<td>Geophysical Field Work for Educators</td>
</tr>
<tr>
<td>PHYS 800</td>
<td>Graduate Research</td>
</tr>
</tbody>
</table>

Total Credit Hours Required for the MST Degree

| Total Credit Hours | 30 |

Footnotes and Additional Information

1. At least 9 credit hours should be directly related to the student’s major area of specialization. There may be some courses at the 400-level that satisfy this requirement, but students should be aware that if they take courses at the 400-level, they may need to take additional courses at the 500-level or above to satisfy overall degree requirements. Students may also satisfy the requirement, upon approval of their graduate committee, by completing courses from departmental (ASTR, BIOC, CHEM, EBIO, EDUC, ENGI, ESCI, MATH, NSCI, or PHYS) course offerings at the 500-level or above.

2. Students may also satisfy the requirement, upon approval of their graduate committee, by completing courses from departmental (ASTR, BIOC, CHEM, EBIO, EDUC, ENGI, ESCI, MATH, NSCI, or PHYS) course offerings.

3. Students must complete, at a minimum, 3 credit hours from graduate research or teaching practicum (ESCI 515 or PHYS 800), developing a research project in conjunction with a science or educational advisor.

Policies for the MST Degree

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

For additional information, please see the Science Teaching website: [http://space.rice.edu/MST/](http://space.rice.edu/MST/).

Opportunities for the MST Degree

For additional information, please see the Science Teaching website: [http://space.rice.edu/MST/](http://space.rice.edu/MST/).

Social Policy Analysis

Contact Information

Social Policy Analysis
https://socialpolicy.rice.edu/
102 Herzstein Hall
713-348-2694
Melissa Marshall
Program Director
marschal@rice.edu

The central focus of Rice University’s Social Policy Analysis program is policy design, analysis, and communication. Interdisciplinary in nature, the curriculum’s emphasis is on integrating rigorous instruction in theory and method with hands-on, skills-based instruction by social science faculty. The primary goal of the program is to train Rice students to obtain the specialized knowledge, skill and experience to be leaders in the field of social policy analysis.

The Social Policy Analysis program focuses on the evaluation of alternative interventions that proposed to improve human well-being. Graduates will be able to answer questions like: Which early interventions lead to greater educational attainment for low-income children? Which juvenile rehabilitation programs are more likely to reduce the recurrence of criminal behavior? How does healthcare policy influence our daily health behaviors? Without evidence-based research and rigorous evaluations to test these ideas, there is no way to know which solutions work and for whom. In a time of limited resources and rising demands, our leaders need the analytical expertise to make a demonstrable, sustained impact on the most pressing issues facing our cities and nation. The Social Policy Analysis program will train Rice students to meet these needs.

Bachelor’s Program

- Bachelor of Arts (BA) degree with a major in Social Policy Analysis (p. 695)

Social Policy Analysis does not currently offer an academic program at the graduate level.

Director and Undergraduate Advisor

Melissa Marshall, Political Science

Advisory Board

Flavio Cunha, Economics
Ruth Lopez Turley, Sociology
Robert Stein, Political Science
Description and Code Legend

*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**
- Course offerings/subject code: SOPA

**Program Description and Code**
- Social Policy Analysis: SOPA

**Undergraduate Degree Description and Code**
- Bachelor of Arts degree: BA

**Undergraduate Major Description and Code**
- Major in Social Policy Analysis: SOPA

**Bachelor of Arts (BA) Degree with a Major in Social Policy Analysis**

**Program Learning Outcomes for the Bachelor of Arts (BA) Degree with a Major in Social Policy Analysis**

Upon completing the BA degree with a major in Social Policy Analysis, students will be able to:

1. Understand social policy as an interdisciplinary field and demonstrate the ability to synthesize key knowledge, theories, and research across different disciplines in the social sciences.

2. Develop critical analysis, problem-solving, and research skills in order to design and evaluate evidence-based interventions for social problems.

3. Demonstrate the ability to communicate policy research and findings in written and oral formats.

**Requirements for the BA Degree with a Major in Social Policy Analysis**

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Social Policy Analysis must complete:

- A minimum of 14 courses (42-43 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours required to satisfy degree requirements.
- A minimum of 60 credit hours outside the major.
- A minimum of 9 courses (18 credit hours) taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

| Code     | Title                                                          | Credit Hours |
|----------|                                                               |              |
|          | Total Credit Hours Required for the Major in Social Policy     | 42-43        |
|          | Analysis                                                      |              |
|          | Total Credit Hours Required for the BA Degree with a Major in  | 120          |
|          | Social Policy Analysis                                        |              |

**Degree Requirements**

| Code     | Title                                                          | Credit Hours |
|----------|                                                               |              |
|          | **Prerequisites**                                              |              |
| MATH 101 | SINGLE VARIABLE CALCULUS I                                     | 3            |
| MATH 102 | SINGLE VARIABLE CALCULUS II                                    | 3            |
|          | **Core Requirements**                                          |              |
| ECON 100 | PRINCIPLES OF ECONOMICS                                        | 3            |
| POLI 210 | AMERICAN GOVERNMENT AND POLITICS                                | 3            |
| POLI 338  | POLICY ANALYSIS                                               | 3            |
| SOSC 301  |                                                                |              |
| SOPA 200 | APPROACHES TO SOCIAL POLICY                                    | 3            |
|          | Select 1 from the following:                                   | 3-4          |
| ECON 307  | PROBABILITY AND STATISTICS                                     |              |
| STAT 310  |                                                                |              |
| POLI 395 | INTRODUCTION TO STATISTICS                                     |              |
| PSYC 339 | STATISTICAL METHODS-PSYCHOLOGY                                  |              |
| SOCI 382 | SOCIAL STATISTICS                                              |              |
|          | **Advanced Coursework**                                        |              |
| SOPA 400 |                                                                | 3            |
| SOPA 401 |                                                                | 3            |
Elective Requirements

Students must complete a total of 5 courses from the Areas of Specialization listed below. At least 1 course must be taken from each of the 3 Areas of Specialization (see below for course lists for each Area):

### Groups and Identities

**ANTH 354 / SWGS 353**
ILLNESS, DISABILITY, AND THE GENDERED BODY

**LING 205 / SWGS 205**
LANGUAGE AND SOCIETY

**LING 303**
LANGUAGE AND GENDER

**LING 322**
LANGUAGE AND ETHNICITY

**POLI 330**
MINORITY POLITICS

**PSYC 331 / SWGS 331**
PSYCHOLOGY OF GENDER

**PSYC 475**
STEREOTYPING AND PREJUDICE

**SOCI 301**
SOCIAL INEQUALITY

**SOCI 309**
RACE AND ETHNIC RELATIONS

**SOCI 313**
DEMOGRAPHY

**SOCI 329**
MULTIRACIAL AMERICA

### Institutions

**ANTH 326 / HURC 341**
LAW, POWER AND CULTURE

**ANTH 341**
MUSEUMS AND HERITAGE: EXHIBITING ART, EXHIBITING CULTURE

**ANTH 345**
THE POLITICS OF THE PAST: ARCHAEOLOGY IN SOCIAL CONTEXT

**ECON 210**
BEHAVIORAL ECONOMICS

### Policies, Processes, and Outcomes

**ECON 218**
ECONOMIC FORECASTING

**ECON 432**
POLITICAL ECONOMY

**ECON 437**
ENERGY ECONOMICS

**ECON 450**
ECONOMIC DEVELOPMENT

**ECON 462**
ECONOMICS OF HUMAN CAPITAL

**ECON 470**
MARKET DESIGN

**ECON 479**
ECONOMIC MODELING AND PUBLIC POLICY

**ECON 480 / ENST 480**
ENVIRONMENTAL ECONOMICS

**ECON 481**
HEALTH ECONOMICS

**ECON 483**
PUBLIC FINANCE

**ECON 484**
PUBLIC ECONOMICS

**POLI 356**
REPRESENTATION AND POLICY MAKING

**POLI 435**
SEMINAR ON MONEY AND POLITICS

**POLI 438**
RACE AND PUBLIC POLICY

**PSYC 345**
HEALTH PSYCHOLOGY

**PSYC 346**
STRESS AND HEALTH ACROSS THE LIFESPAN

Additional Credit Hours to Complete BA Degree Requirements

17-18

University Requirements

60

Total Credit Hours

120

Footnotes and Additional Information

*Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

Elective Requirements

Students must complete a total of 5 courses (15 credit hours) from the Areas of Specialization listed below as electives. At least 1 course (3 credit hours) must be taken from each of the 3 Areas of Specialization. The remaining 2 courses (6 credit hours) may be taken from any of the Areas of Specialization.

### Area of Specialization: Groups and Identities

<table>
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### Area of Specialization: Institutions

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### Area of Specialization: Policies, Processes, and Outcomes

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<tr>
<td>PSYC 346</td>
<td>STRESS AND HEALTH ACROSS THE LIFESPAN</td>
<td></td>
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</tbody>
</table>
### Sociology

#### Contact Information

Sociology  
[https://sociology.rice.edu/](https://sociology.rice.edu/)  
592 Sewall Hall  
713-348-4831  

Bridget Gorman  
Department Chair  
bkgorman@rice.edu

Jenifer Bratter  
Graduate Program Director  
jenifer.l.bratter@rice.edu

Sociology is a branch of the social sciences that evolved in response to the revolutionary social changes of the 19th century, such as industrialization and urbanization, that ushered in the modern era. Sociology’s founding fathers include Emile Durkheim, Max Weber, Karl Marx, Herbert Spencer, and George Herbert Mead. They explored how social relationships and interactions affect individuals and large-scale social institutions, including religion, government, and education.

Today, sociologists use qualitative techniques, including ethnography; participant observation; and case studies of a variety of social phenomena, processes, and problems as methods for exploring the meaning of social life and culture to those who live it, and in building inductive theory. Quantitative techniques engage in hypothesis testing of established theories and concepts, using techniques that include experimental designs, survey questionnaires, and network analysis.

Sociology as a discipline includes “ways of knowing” that link it closely to methods of the natural sciences, and more interpretive and critical perspectives that are closer to scholarship in the humanities.

The Sociology department does not have a terminal MA program. Students seeking only a master’s degree are not admitted. However, the Master of Arts degree is earned as a student progresses toward the PhD.

#### Bachelor’s Program

- Bachelor of Arts (BA) Degree with a Major in Sociology  

#### Minor

- Minor in Sociology  

#### Master’s Program

- Master of Arts (MA) Degree in the field of Sociology*

#### Doctoral Program

- Doctor of Philosophy (PhD) Degree in the field of Sociology  

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA degree as they work towards the PhD.

### Sociology

#### Policies for the BA Degree with a Major in Social Policy Analysis

##### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

##### Program Transfer Credit Guidelines

Students pursuing the major in Social Policy Analysis should be aware of the following program-specific transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing may apply towards the major.

- Request for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Social Policy Analysis website: [https://socialpolicy.rice.edu/](https://socialpolicy.rice.edu/)

##### Opportunities for the BA Degree with a Major in Social Policy Analysis

#### Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Social Policy Analysis website: [https://socialpolicy.rice.edu/](https://socialpolicy.rice.edu/)
Professors
Tony N. Brown
Elaine Howard Ecklund
James Elliott
Rachel Tolbert Kimbro
Stephen L. Klineberg
Ruth Lopez-Turley
Steve H. Murdock

Associate Professors
Jenifer L. Bratter
Justin Denney

Assistant Professors
Sergio Chavez

Professors Emeriti
Chandler Davidson
Elizabeth Long
William Martin

Professor in the Practice
Richard Johnson

Lecturers
Craig Considine
Robert Werth

Adjunct Professors
David S. Buck
Keila Natilde Lopez
Roland B. Smith, Jr.

Adjunct Associate Professor
Robin Paige

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: SOCI

Department Description and Code
• Sociology: SOCI

Undergraduate Degree Description and Code
• Bachelor of Arts degree: BA

Undergraduate Major Description and Code
• Major in Sociology: SOCI

Undergraduate Minor Description and Code
• Minor in Sociology: SOCY

Graduate Degree Descriptions and Codes
• Master of Arts degree: MA
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Sociology: SOCI

Bachelor of Arts (BA) Degree with a Major in Sociology

Program Learning Outcomes for the BA Degree with a Major in Sociology

Upon completing the BA degree with a major in Sociology, students will be able to:

1. Understand the functions of theory and its use in the social sciences. Students will be familiar with key social theorists in the field. Students will understand key theoretical concepts and be comfortable using them beyond the classroom.

2. Gain a richer understanding of the social world, including class, race, gender, ethnicity, education, family, occupation, deviancy, health, and global citizenship as well as how the human social world impacts its environment.

3. Apply sociological knowledge and training to understand theory and policy oriented around issues of human well-being in the US and globally, including how to understand the relationship between inequality and factors like race, class, gender, and education.

4. Apply methodological, theoretical, and research skills to carry out empirical research projects.

Requirements for the BA Degree with a Major in Sociology

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Sociology must complete:

• A minimum of 11 courses (33 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 10 courses (30 credit hours) at the 300-level or above.
• A maximum of 5 courses (15 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.
Opportunities for the BA Degree with a Major in Sociology

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honors Program
The Sociology Department Honors Program is designed to provide sociology majors with the opportunity to sharpen their research skills and deepen their understanding of the discipline through a 2-to-3 semester program of directed independent research and writing. The program also offers the opportunity for formal recognition, through Departmental Honors, of those undergraduates who have demonstrated unusual competence in sociology by successfully completing a sustained independent research project. Small grants for honors thesis research are generously supported by the Chandler and Ian Davidson Scholars Fund as well as the Walter Hall Scholars program.

Eligibility
To be eligible for the Departmental Honors Program, students must have:

- Taken at least 4 sociology courses beyond SOCI 101 Introduction to Sociology, including SOCI 381 Research Methods. If their project requires statistical analysis, students should also complete SOCI 382 Social Statistics before beginning their research.
- An A- (3.67) GPA in all sociology courses taken.

Application Process
1. During the fall and early spring semester of their junior year, students are invited to consult with tenured and tenure-track members of the faculty about a potential thesis topic. All students must have at least 1 tenured or tenure-track faculty member in the sociology department as their thesis chair. The student must submit a written description of their proposed research project to the chosen faculty member for approval of their topic and review of their proposal, as well as secure agreement of the chosen faculty member(s) to serve as their thesis committee chair.

2. Once a thesis supervisor has been identified, the student must submit a written description of their proposed research project to the departmental undergraduate advisor. The proposal should be 2-3 pages in length, double-spaced, and is due by April 1st of their junior year. It should include a signed statement from the chosen faculty member agreeing to serve as their chair advisor.

3. The sociology faculty will vote on the merits of the proposed thesis project at their monthly faculty meeting in mid-April. If approved, the student may begin work on their thesis immediately, or at a start time agreed upon with their thesis supervisor (including summer semester, if desired).

Program
Students in the Honors Program register for 2 successive semesters in Directed Honors Research (SOCL 492 and SOCL 493). An honors thesis typically involves much discussion over both semesters between the student and their tenure or tenure-track advisor. Students should meet early in the process to agree on ground rules for the project, to choose the other members of the thesis committee (made up of one additional
faculty member, who serves as a reader and ad-hoc advisor), and to set up a schedule for discussions and submission of written work. It is the department’s experience that students who work alone without much consultation with faculty are less likely to succeed in their project than students who maintain close contact with their advisor and the department. Students are also encouraged to include other members of the committee in discussion of the thesis, especially as the project nears completion, so that their feedback can be incorporated before the final draft of the project is submitted.

Students normally begin by conducting a thorough review of the relevant literature, formulating hypotheses that grow out of the literature review, and proposing a research design that clearly describes how the data for the project are to be collected and analyzed. The research itself is usually carried out in the fall semester of the senior year (and sometimes in the summer following the junior year), and is analyzed, written up, and defended as a completed Honor’s Thesis during the spring semester of the senior year. (Students are encouraged to examine several previously written theses, which are available in the sociology department.)

In addition to the student’s primary advisor, the thesis is read and evaluated by the faculty members, sometimes from other departments, who make up the student’s thesis committee.

Program Timeline
- A first draft of the final thesis must be turned in to the committee members no later than February 1st of the student’s senior year.
- After receiving feedback on the project, the student will have until the last Monday in March to submit a final draft of the senior thesis to their committee.
- A short presentation (10-15 minutes) of the final thesis project must be given to the full sociology faculty by mid-April. Faculty will vote on whether to grant Departmental Honors to the student at the conclusion of their presentation.

For additional information, please see the Sociology website: [http://sociology.rice.edu/](http://sociology.rice.edu/).

**Doctor of Philosophy (PhD) Degree in the field of Sociology**

**Program Learning Outcomes for the MA and PhD Degrees in the field of Sociology**

Upon completing the MA and PhD degrees in the field of Sociology, students will be able to:

1. Understand and apply the role of theory in sociology.
2. Demonstrate understanding and application of both qualitative and quantitative sociological methods.
3. Demonstrate expertise in at least two specialty areas within sociology.

**Requirements for the MA and PhD Degrees in the field of Sociology**

For general university requirements, please see Doctoral Degrees (p. 64). Students pursuing the MA and PhD degrees in the field of Sociology must complete:

- A minimum of 90 credit hours to satisfy degree requirements.

The PhD program is a five-year degree program. The Sociology department does not admit students seeking only a master’s degree. The MA degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 67). Students will normally obtain a master’s degree after two years of study and research as a student progresses toward the PhD, and will usually need an additional three years to complete the requirements for a PhD. The coursework is sequenced and will typically be completed in two and a half years. By this point, students will be required to have written their Master’s thesis and completed their Master’s degree. This leaves one semester to take the comprehensive exams and two years to complete the dissertation. Each student will attend a monthly Teaching and Professionalization Workshop that the department will hold throughout the academic school year.

**Summary**

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**Degree Requirements**

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<td>SOCI 700</td>
<td>DISSERTATION RESEARCH</td>
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or UNIV 501 RESEARCH ON TEACHING AND LEARNING

**Elective Requirements, Comprehensive Exams, and Dissertation**

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**Footnotes and Additional Information**

1 It is recommended that the required coursework be taken in the sequence prescribed by the department of Sociology (see below). Note that semesters 5-10 will consist of Electives, Comprehensive Exams, and Dissertation as determined by the department until degree completion.

**Recommended Sequence of Required Coursework**

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Policies for the MA and PhD Degrees in the field of Sociology

Department of Sociology Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Sociology publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Sociology_Graduate_Handbook.pdf

Admission

Students are admitted on a competitive basis. Admitted students must have a Baccalaureate degree (BA or BS) or equivalent, a minimum 3.0 (B) GPA in undergraduate work, and the intent to complete a PhD in sociology. We consider GRE scores, undergraduate GPA, letters of recommendation, writing samples, a personal essay, and professional experience when making admission decisions for the PhD program. We strongly encourage applications from women and minority groups.

The Sociology department does not admit students seeking only a masters degree. The Master of Arts degree is earned as a student progresses toward the PhD. Students who currently hold a Master’s Degree are welcome to apply. However, PhD students must complete four semesters of residency and coursework at Rice University. At the department’s discretion, some credits may transfer from other graduate programs.

For additional information, please see the Sociology website: http://sociology.rice.edu/

Opportunities for the MA and PhD Degrees in the field of Sociology

For additional information, please see the Sociology website: http://sociology.rice.edu/

Minor in Sociology

Program Learning Outcomes for the Minor in Sociology

Upon completing the minor in Sociology, students will be able to:

• Gain a richer understanding of the social world, including class, race, gender, ethnicity, education, family, occupation, deviancy, health and global citizenship as well as how the human social world impacts its environment.

• Apply sociological knowledge and training to understand theory and policy oriented around issues of human well-being in the US and globally, including how to understand the relationship between inequality and factors like race, class, gender and education.

• Students will gain an in-depth understanding of the role of theory OR research methods, depending on their preference. This means they will be able to apply sociological knowledge and training to understand theory and policy oriented around issues of human well-being in the US and globally, including how to understand the relationship between inequality and factors like race, class, gender and education. Alternatively, students will be able to apply methodological, theoretical, and research skills to carry out empirical research projects.

Requirements for the Minor in Sociology

Students pursuing the minor in Sociology must complete:

• A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
• A minimum of 5 courses (15 credit hours) at the 300-level or above.
• A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

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Core Requirements

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<tr>
<td>or</td>
<td>RESEARCH METHODS</td>
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Elective Requirements

Select 3 courses from the Sociology (SOCI) course offerings at the 200-level or above. 9 credit hours

Select 1 course from the Sociology (SOCI) course offerings at the 400-level. 3 credit hours

Total Credit Hours 18 credit hours

Policies for the Minor in Sociology

Program Restrictions and Exclusions

Students pursuing the minor in Sociology should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the minor in Sociology should be aware of the following departmental transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.
- Transfer credit coursework from online-only courses cannot be used to count towards the minor.

For additional information, please see the Sociology website: [http://sociology.rice.edu/](http://sociology.rice.edu/).

Opportunities for the Minor in Sociology

Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Sociology website: [http://sociology.rice.edu/](http://sociology.rice.edu/).

Space Studies

Contact Information

Space Studies
[https://profms.rice.edu/space-studies/overview](https://profms.rice.edu/space-studies/overview)
713-348-3188

Dagmar Beck
Program Director
dkbeck@rice.edu

David Alexander
Faculty Co-Director
dalex@rice.edu

Andrew Meade
Faculty Co-Director
meade@rice.edu

The professional master’s degree in Space Studies is a collaboration between the Wiess School of Natural Sciences and the George R. Brown School of Engineering, and is geared to help individuals increase their knowledge of space engineering and related science, program management, and policy. The program includes advanced engineering, biological, and physical science classes and introduces students to economics, public policy, and management disciplines, which impact space commercialization and national policy. It focuses on training engineers and scientists interested in program management, providing them with the tools to face the complex challenges inherent in US space policy, human and robotic space exploration, science in space exploration, and technology development.

The degree in Space Studies is 1 of 5 degrees in the professional science master’s (PSM) program at Rice University housed in the Wiess School of Natural Sciences. It focuses on training students in Space Engineering and Science with the intent of creating new opportunities for those students interested in working in the space technology industry or related government entities, e.g. NASA, as well as governmental relations positions in non-profit organizations, industry and academic institutions. These master’s degrees are designed for students seeking to gain further technical core expertise coupled with enhanced management, communication, and leadership skills, instilling a level of scholastic proficiency that exceeds that of the bachelor’s level, and creating the cross-functional aptitudes needed in modern industry and government.

In addition, a coordinated MBA/MSSpS degree is offered in conjunction with the Jesse H. Jones Graduate School of Business.

Space Studies does not currently offer an academic program at the undergraduate level.

Master’s Program

- Master of Science in Space Studies (MSSpS) Degree (p. 703)

Coordinated Program

- Master of Business Administration (MBA) Degree / Master of Science in Space Studies (MSSpS) Degree (p. 703)

Directors

David Alexander

2017-2018 General Announcements
Professors
Christopher M. Johns-Krull
Adrian Lenardic
Erzsebet Merenyi
Marcia O’Malley
Tayfun Tezduyar
Frank Toffoletto

Associate Professors
Ramon Gonzalez

Assistant Professors
Stephen Bradshaw
Hadley Wickham

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject codes: Courses from various subjects may apply toward the graduate degree.

Department Description and Code
- Physics and Astronomy: PHYS

Graduate Degree Description and Code
- Master of Science in Space Studies degree: MSSpS

Graduate Degree Program Description and Code
- Degree Program in Space Studies: SPST

Requirements for the MBA/MSSpS Coordinated Degree Program
Students may earn a Master of Science degree from the Weiss School of Natural Sciences Professional Science Master’s (PSM) program in the following fields:
- Bioscience and Health Policy
- Environmental Analysis and Decision Making
- Nanoscale Science
- Space Studies
- Subsurface Geoscience

For the coordinated MBA/Master of Science degree from the professional master's program, students must complete:
- a minimum of 75 credit hours of coursework, including:
  - a minimum of 30 credit hours in a science discipline
  - a minimum of 45 credit hours of business course work
- Satisfy all MBA core curriculum requirements
- Satisfy all PSM track-specific requirements
- Complete a summer internship

Students plan their course schedules in consultation with the Weiss School of Natural Sciences PSM program director and with the Jones Graduate School of Business Registrar Department. Coordinated degree candidates can fulfill requirements for both degrees within 3 academic years.

Policies for the MBA/MSSpS Coordinated Degree Program
For additional information on these two degrees:
1. Please see the Business website: https://business.rice.edu/
2. Please see the Space Studies website: https://profms.rice.edu/

Opportunities for the MBA/MSSpS Coordinated Degree Program
For additional information on these two degrees:
1. Please see the Business website: https://business.rice.edu/
2. Please see the Space Studies website: https://profms.rice.edu/

Master of Science in Space Studies (MSSpS) Degree
Program Learning Outcomes for the MSSpS Degree
Upon completing the MSSpS Degree, students will:
1. Achieve advanced science, engineering, and computational skills and a broad understanding of the methodologies applied in the space industry.
2. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
3. Develop, evaluate, and implement business strategies and operational solutions holistically, effectively integrating principles across the functional areas both as a leader and a contributor.
3. Develop business and communication skills to bridge the gap between science and business.

**Requirements for the MSSpS Degree**

The MSSpS degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MSSpS degree must complete:

- A minimum of 39 credit hours to satisfy degree requirements.
- An internship of 3-6 months. Students must present a summary of their internship project in both oral and written form as part of the professional master’s seminar.
- A minimum of 30 credit hours at the 500-level or above.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the PSM (Professional Science Masters) program director and the MSSpS advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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### Degree Requirements

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<td>SCIENCE POLICY, AND ETHICS</td>
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<td>BIOL 540 / CHBE 640</td>
<td>METABOLIC ENGINEERING</td>
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<td>ESCI 540</td>
<td>EARTH’S ATMOSPHERE</td>
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<td>ESCI 660</td>
<td>GEOLOGICAL AND GEOPHYSICAL FLUID DYNAMICS</td>
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<td>COMPUTATIONAL FLUID MECHANICS</td>
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<td>MECH 592</td>
<td>DESIGN FOR AEROSPACE ENVIRONMENTS</td>
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<td>STAT 541</td>
<td>MULTIVARIATE ANALYSIS</td>
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</tr>
<tr>
<td>STAT 615</td>
<td>REGRESSION AND LINEAR MODELS</td>
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</tr>
</tbody>
</table>

### An Internship (of 3 to 6 Months)

Practical experience is offered via a 3 to 6 month work immersion.

### Elective Requirements

Select a minimum of 9 credit hours from 1 of the following areas, depending on the student’s individual interests and career goals:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Engineering</strong></td>
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<tr>
<td>CEVE 504</td>
<td>ATMOSPHERIC PARTICULATE MATTER</td>
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<tr>
<td>CEVE 505 / ENGI 505</td>
<td>ENGINEERING PROJECT MANAGEMENT</td>
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<td>CEVE 511</td>
<td>ATMOSPHERIC PROCESSES</td>
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<td>CEVE 576</td>
<td>STRUCTURAL DYNAMIC SYSTEMS</td>
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<tr>
<td>MECH 576</td>
<td></td>
<td></td>
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<tr>
<td>COMP 498 / ELEC 498 / MECH 498</td>
<td>INTRODUCTION TO ROBOTICS</td>
<td></td>
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<tr>
<td>ENGI 515</td>
<td>LEADING TEAMS AND INNOVATION</td>
<td></td>
</tr>
<tr>
<td>ENGI 614</td>
<td>LEARNING HOW TO INNOVATE?</td>
<td></td>
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<tr>
<td>MECH 454 / BIOE 454 / CEVE 454</td>
<td>COMPUTATIONAL FLUID MECHANICS</td>
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<tr>
<td>MECH 572</td>
<td>AEROSPACE SYSTEMS ENGINEERING</td>
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<td>MECH 591</td>
<td>GAS DYNAMICS</td>
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<td>MECH 592</td>
<td>DESIGN FOR AEROSPACE ENVIRONMENTS</td>
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<td>MECH 594</td>
<td>INTRODUCTION TO AERONAUTICS</td>
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<td>MECH 596</td>
<td>INTRODUCTION TO FLIGHT MECHANICS</td>
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<td>MECH 691</td>
<td>INTRODUCTION TO HYPersonic AERODYNAMICS</td>
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<td></td>
<td><strong>Sciences (Astro Science/Earth Science/Life Sciences)</strong></td>
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<tr>
<td>ASTR 542</td>
<td>NEBULAR ASTROPHYSICS</td>
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<td>ASTR 554</td>
<td>ASTROPHYSICS OF THE SUN</td>
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<td>ASTR 555</td>
<td>PROTOSTARS AND PLANETS</td>
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<tr>
<td>ASTR 565</td>
<td>COMPACT OBJECTS</td>
<td></td>
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<tr>
<td>BIOL 524</td>
<td>MICROBIOLOGY &amp; BIOTECHNOLOGY</td>
<td></td>
</tr>
<tr>
<td>BIOL 540 / CHBE 640</td>
<td>METABOLIC ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>BIOL 544</td>
<td>ADVANCED CONCEPTS AND CRITICAL ANALYSIS IN MODERN DEVELOPMENTAL BIOLOGY</td>
<td></td>
</tr>
</tbody>
</table>
BIOC 545 ADVANCED MOLECULAR BIOLOGY AND GENETICS  
BIOC 570 COMPUTATION WITH BIOLOGICAL DATA  
BIOC 580 / BIOE 580 / CHBE 580 PROTEIN ENGINEERING  
ESCI 540 EARTH'S ATMOSPHERE  
ESCI 581 TOPICS IN PLANETARY DYNAMICS AND MAGMATIC PROCESSES  
ESCI 667 GEOMECHANICS  
ESCI 672 EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS  
MGMT 633 LIFE SCIENCE ENTREPRENEURSHIP & ROLES OF FOUNDERS & VENTURE CAPITAL IN HIGH-TECH STARTUPS  
MGMT 634 CORPORATE GOVERNANCE  
MGMT 629 BUSINESS PLAN DEVELOPMENT  
MGMT 633 LIFE SCIENCE ENTREPRENEURSHIP & ROLES OF FOUNDERS & VENTURE CAPITAL IN HIGH-TECH STARTUPS  
MGMT 658 APPLIED RISK MANAGEMENT  
MGMT 734 TECHNOLOGY ENTREPRENEURSHIP  

Management and Entrepreneurship  
ENGI 515 LEADING TEAMS AND INNOVATION  
ENGI 614 LEARNING HOW TO INNOVATE?  
MGMT 601 FINANCIAL STATEMENT ANALYSIS  
MGMT 618 COMPLEXITIES OF PEOPLE AND ORGANIZATIONS  
MGMT 619 CORPORATE GOVERNANCE  
MGMT 629 BUSINESS PLAN DEVELOPMENT  
MGMT 633 LIFE SCIENCE ENTREPRENEURSHIP & ROLES OF FOUNDERS & VENTURE CAPITAL IN HIGH-TECH STARTUPS  
MGMT 658 APPLIED RISK MANAGEMENT  
MGMT 734 TECHNOLOGY ENTREPRENEURSHIP  

Total Credit Hours 39  

Footnotes and Additional Information  
1 Depending on the background, other courses can be chosen with permission of advisor.  
2 Practical experience may be conducted under the guidance of a host company, government agency, or national laboratory. A summary of the internship is required in both oral and written form as part of NSCI 512 Professional Master's Project Cohort Course.  
3 Courses vary. Some listed courses may not be offered every year, and others may be offered that satisfy the requirements with pre-approval. Students should consult with their academic advisors before enrolling.  

Policies for the MSSps Degree  
Space Studies Graduate Program Handbook  
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Space Studies publishes a graduate program handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Professional_Science_Masters_Handbook.pdf  

Admission  
Admission to graduate study in Space Studies is open to qualified students holding a bachelor’s degree in a related science or engineering program that included course work in general physics, chemistry, calculus, linear algebra, and differential equations. Good scores from the general Graduate Record Examination (GRE), good critical thinking and communication skills, and strong quantitative abilities. Statistics, introductory economics, and computer skills preferred. Department faculty evaluate the previous academic record and credentials of each applicant individually and make admission decisions.  

Transfer Credit  
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.  

For additional information, please see the Space Studies website: https://profms.rice.edu/  

Opportunities for the MSSps Degree  
Fifth-Year MSSps Degree Option for Rice Undergraduate Students  
Rice undergraduate students have an option to pursue the MSSps degree by adding an additional fifth year to their four undergraduate years of science studies. Advanced Rice undergraduate students in good academic standing may apply to the graduate program during their junior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking required core courses of the Space Studies program during their senior year. A plan of study based on their particular focus area will need to be approved by the PSM (Professional Science Masters) program director and the MSSps advisor.  

As part of this option and opportunity, Rice undergraduate students:  
• must complete the requirements for their bachelor’s degree and the MSSps degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).  
• should be aware that there could be financial aid implications, if the conversion of undergraduate coursework to that of graduate-level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).  

For additional information, please see the Space Studies website: https://profms.rice.edu/  

Spanish, Portuguese and Latin American Studies  
Contact Information  
Spanish, Portuguese and Latin American Studies  
http://spanishandportuguese.rice.edu/  
307 Rayzor Hall  
713-348-5451  
Luis Duno-Gottberg  
Department Chair  
ld4@rice.edu  

The Spanish, Portuguese and Latin American Studies department offers courses on the literatures and cultures of the Portuguese and Spanish-speaking nations of the world and on Spanish and Portuguese linguistics. The department stresses linguistic competence, interdisciplinary study, and a transnational perspective on Spanish, Latin America, and Brazilian literature and culture. In addition to courses on the novel, poetry, and the essay, the department also offers the opportunity to study film, art,
cultural theory, translation, and gender. Qualified students may undertake independent work.

Latin American Studies is an interdisciplinary major designed to further understanding of the cultures, histories, and politics of Latin America as viewed from regional and global perspectives. For more information, see Latin American Studies (p. 446).

**Bachelor's Programs**
- Bachelor of Arts (BA) Degree with a Major in Latin American Studies (p. 447)
- Bachelor of Arts (BA) Degree with a Major in Spanish and Portuguese (p. 706)

Spanish, Portuguese and Latin American Studies does not currently offer an academic program at the graduate level.

**Chair**
Luis Duno-Gottberg

**Professors**
Beatriz González-Stephan
M. Rafael Salaberry
Nicolas Shumway

**Associate Professors**
José F. Aranda, Jr.
Luis Duno-Gottberg
Gisela Heffes

**Assistant Professors**
Esther Fernández
Manuel Gutiérrez

**Description and Code Legend**
*Note:* Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**
- Course offerings/subject code for Latin American Studies: LASR
- Course offerings/subject code for Portuguese: PORT
- Course offerings/subject code for Spanish: SPAN
- Course offerings/subject code for Spanish and Portuguese: SPPO

**Department Description and Code**
- Spanish, Portuguese and Latin American Studies: SPLA

**Undergraduate Degree Description and Code**
- Bachelor of Arts degree: BA

**Undergraduate Major Descriptions and Codes**
- Major in Latin American Studies: LASR
- Major in Spanish and Portuguese: SPPO

**Bachelor of Arts (BA) Degree with a Major in Spanish and Portuguese**

**Program Learning Outcomes for the BA Degree with a Major in Spanish and Portuguese**

Upon completing the BA degree with a major in Spanish and Portuguese, students will be able to:

1. Demonstrate an advanced level of communicative proficiency when writing, speaking, listening to, reading and translating Spanish or Portuguese, including a high degree of ability in interacting with native Spanish or Portuguese speakers and text.
2. Demonstrate analytical competence and independent and critical thinking skills by analyzing and responding to Spanish or Portuguese communications, including: identifying and evaluating arguments, ideas, and evidence, constructing critical responses to Spanish or Portuguese texts, and pursuing independent study or research in some facet of Spanish or Portuguese language or culture.
3. Demonstrate advanced knowledge of the social, historical, political, and cultural aspects of the Spanish-speaking world and Spanish-speaking communities and apply this knowledge to reading and analyzing authentic cultural products, including literature, art and film. They will understand how these cultural products reflect or construct facets of the Spanish-speaking world’s history, culture, and identity.

**Requirements for the BA Degree with a Major in Spanish and Portuguese**

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Spanish and Portuguese must complete:

- A minimum of 12 courses (36 credit hours) to satisfy major requirements.
- A minimum of 12 courses (36 credit hours) taken at the 300-level or above.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside the major.

Students who are pursuing two majors (i.e., are double majors) and have declared the major in Spanish and Portuguese must complete:

- A minimum of 10 courses (30 credit hours) to satisfy major requirements.
- A minimum of 10 courses (30 credit hours) taken at the 300-level or above.

Double majors who drop the other major are required to meet the requirements listed for single majors.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Spanish and Portuguese (for single majors)</td>
<td>36</td>
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</table>
Total Credit Hours Required for the Major in Spanish and Portuguese (for double majors)  30
Total Credit Hours Required for the BA Degree with a Major in Spanish and Portuguese  120

### Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
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<td><strong>Core Requirements</strong></td>
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<tr>
<td></td>
<td>Writing Seminar</td>
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<tr>
<td>SPPO 330</td>
<td>HISPANIC WRITING SEMINAR</td>
<td>3</td>
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<tr>
<td>or SPPO 331</td>
<td>BRASIL ATUAL</td>
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<tr>
<td>SPPO 332</td>
<td>APPROACHES TO HISPANIC LITERATURES</td>
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<td><strong>Hispanic Linguistics</strong></td>
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<td>Select 1 from the following:</td>
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<td>SPPO 340</td>
<td>INTRODUCTION TO SPANISH LINGUISTICS</td>
<td>2</td>
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<tr>
<td>SPPO 341</td>
<td>DIALECTS IN CONTACT: SEARCHING FOR THE &quot;INTERNATIONAL&quot; FORM OF SPANISH</td>
<td>2</td>
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<tr>
<td>SPPO 360</td>
<td>SECOND LANGUAGE ACQUISITION: LINGUISTIC, COGNITIVE AND SOCIAL DIMENSIONS</td>
<td>3</td>
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<td></td>
<td><strong>Advanced Coursework in Spanish and Portuguese</strong></td>
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<td></td>
<td>Select 2 Survey courses between course numbers SPPO 340 and SPPO 359</td>
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<tr>
<td></td>
<td>Select 3 Advanced courses between course numbers SPPO 360 and SPPO 399</td>
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<tr>
<td></td>
<td>Select 3 Seminar courses between course numbers SPPO 401 and SPPO 489</td>
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<td></td>
<td><strong>Elective Requirements</strong></td>
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<td>Select 2 from the following:</td>
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<tr>
<td></td>
<td>Any course offering from Spanish (SPAN) between course numbers SPAN 303 and SPAN 324</td>
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<td></td>
<td>Any course offering from Spanish and Portuguese (SPPO) at the 330 course number or above</td>
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</tr>
<tr>
<td></td>
<td>Any department approved elective course (see below for course list)</td>
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<td><strong>Total Credit Hours Required for the Major in Spanish and Portuguese (for single majors)</strong></td>
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<td><strong>Total Credit Hours Required for the Major in Spanish and Portuguese (for double majors)</strong></td>
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<td>Additional Credit Hours to Complete BA Degree Requirements</td>
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<td>University Graduation Requirements (p. 25)</td>
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<tr>
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<td><strong>Total Credit Hours</strong></td>
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</tbody>
</table>

### Footnotes and Additional Information

1. Double majors who drop the other major are required to meet the requirements listed for single majors.
2. If SPPO 340 or SPPO 341 are selected as the Hispanic Linguistics Core Requirement, it will fulfill 1 of the 2 required Survey courses between course numbers SPPO 340 and SPPO 359.
3. If SPPO 360 is selected as the Hispanic Linguistics Core Requirement, it will fulfill 1 of the 3 required Advanced courses between course numbers SPPO 360 and SPPO 399 (for single majors) or it will fulfill 1 of the 2 required Advanced courses between course numbers SPPO 360 and SPPO 399 (for double majors).
4. Double majors may satisfy this requirement by completing 2 Advanced courses (6 credit hours) between course numbers SPPO 360 and SPPO 399.
5. Double majors may satisfy this requirement by completing 2 Seminar courses (6 credit hours) between course numbers SPPO 401 and SPPO 489.

### Elective Requirements

Both single and double majors must complete 2 elective courses (6 credit hours). These may be selected as 1 course (3 credit hours) from Spanish (SPAN) course offerings between SPAN 303 and SPAN 324, or 1 course (3 credit hours) from Spanish and Portuguese (SPPO) course offerings at the 330 course number or higher, or 1 course (3 credit hours) from the department approved electives listed below.

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td><strong>Department Approved Electives</strong></td>
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<td>Select 2 from the following:</td>
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<td>ANTH 334</td>
<td>THE CULTURE OF IDENTITY POLITICS IN CONTEMPORARY BRAZIL</td>
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<td>HIST 333</td>
<td>CONTEMPORARY BRAZIL</td>
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<tr>
<td>ANTH 361</td>
<td>LATIN AMERICAN TOPICS</td>
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<tr>
<td>HART 265</td>
<td>A VISUAL CULTURE TRAVEL: ART AND POLITICS IN MODERN LATIN AMERICA</td>
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<td>HART 310</td>
<td>BRAZIL BUILT: THE CLINIC, THE TROPICAL, AND THE AESTHETIC</td>
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<td>ARCH 315</td>
<td>LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN CITIES</td>
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<td>HART 465</td>
<td>LATIN AMERICAN BODIES: ON MODERNISM</td>
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<td>HIST 226</td>
<td>COLONIAL SPANISH AMERICA</td>
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<td>HIST 227</td>
<td>LATIN AMERICAN CULTURAL TRADITIONS</td>
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<td>HIST 251</td>
<td>CONTINUITIES AND CHANGES IN BRAZILIAN HISTORY</td>
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<td>LASR 251</td>
<td>CARIBBEAN HISTORY 1838 TO PRESENT</td>
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<td>HIST 337</td>
<td>LATIN AMERICAN PERSPECTIVES</td>
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<td>HIST 366</td>
<td>RIO DE JANEIRO: A SOCIAL AND ARCHITECTURAL HISTORY</td>
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<td>LASR 158</td>
<td>INTRODUCTION TO LATIN AMERICAN STUDIES</td>
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<td>SPPO 158</td>
<td>LATIN AMERICAN STUDIES CAPSTONE</td>
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<td>POLI 328</td>
<td>LATINO POLITICS IN THE UNITED STATES</td>
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<td>POLI 352</td>
<td>THE POLITICS AND CULTURE OF MEXICO</td>
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<td>POLI 354</td>
<td>LATIN AMERICAN POLITICS</td>
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<tr>
<td>POLI 459</td>
<td>SEX, GENDER, AND POLITICAL REPRESENTATION IN LATIN AMERICA</td>
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</table>

* Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

* Double majors who drop the other major are required to meet the requirements listed for single majors.
Policies for the BA Degree with a Major in Spanish and Portuguese

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Spanish and Portuguese should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Spanish, Portuguese, and Latin American Studies website: http://spanishandportuguese.rice.edu/

Opportunities for the BA Degree with a Major in Spanish and Portuguese

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Departmental Honors
The department offers to outstanding majors the opportunity to do honors work during their final year of study. Honors work consists of an independent research project leading to a thesis and is undertaken under the direction of a departmental faculty member. Every year, the department also presents the Cervantes Award for Outstanding Seniors to its top students. Students wishing to do honors work must submit a thesis proposal to be approved by the department before the end of the semester prior to the semester in which they will register for the honors thesis (SPPO 495).

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Sport Management

Contact Information
Sport Management
http://sport.rice.edu/
2nd Floor, Tudor Fieldhouse
713-348-5764

Clark Haptonstall
Department Chair

 hapton@rice.edu

Sport Management is an interdisciplinary field of study that draws from a wide range of academic disciplines, including business, management, law, and communication. The thoroughly interdisciplinary emphasis of the sport management major aims to educate students in the skills and theory necessary to assume leadership roles both in and out of the sport industry.

Career preparation for leadership and entrepreneurial positions is the ultimate goal of the sport management major at Rice. Students will acquire a solid academic and practical foundation and thus will be competitive for opportunities that include entering the sport business industry or applying to the country’s best law and business schools.

Bachelor’s Programs
- Bachelor of Arts (BA) Degree with a Major in Sport Management
  - and a Major Concentration in Sport Analytics (p. 709)
  - and a Major Concentration in Sport Law (p. 710)
  - and a Major Concentration in Sport Leadership (p. 712)

Sport Management does not currently offer an academic program at the graduate level.

Chair and Professor in the Practice
Clark D. Haptonstall

Associate Professors
James G. Disch

Professors in the Practice
Diane Crossey
Tom Stallings

Lecturer
Karen Jones

Adjunct Lecturers
Joe Branch
Chris Canetti
Jeff Luhnow
Daryl Morey
Carrie Potter

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: SMGT

Program Description and Code
- Sport Management: SMGT

Undergraduate Degree Description and Code
- Bachelor of Arts degree: BA
Undergraduate Major Description and Code
• Major in Sport Management: SMGT

Undergraduate Major Concentration Descriptions and Codes
• Major Concentration in Sport Analytics: SPAS
• Major Concentration in Sport Law: SPLW
• Major Concentration in Sport Leadership: SPLE

Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Analytics

Program Learning Outcomes for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Analytics

Upon completing the BA Degree with a major in Sport Management, students will be able to:

1. Develop and hone professional skills through classroom learning and experiential learning through a steady progression of internships with added responsibilities.
2. Develop a diverse set of fundamental principles and skills, including skills in business, finance, and marketing that would be necessary to produce or evaluate an event from beginning to end (from marketing and media promotion, to budget and sales, to execution and post-event evaluation).
3. Develop an understanding of the sports industry in relationship to the legal sector as well as the broader relationship between the industry and society.
4. Develop a marketing plan specific to a product in the sport industry.

Upon completing the BA Degree with a major in Sport Management and a major concentration in Sport Analytics, students will be able to:

1. Create a research project specific to Sport Analytics.

Requirements for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Analytics

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Sport Management and must complete:

• A minimum of 15 courses (46-47 credit hours depending on major concentration declared) to satisfy major requirements.
• A minimum of 120 hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A minimum of 7-8 courses (21-24 credit hours) depending on major concentration declared taken at the 300-level or above.

• The requirements of a major concentration. When students declare the major (p. 12) in Sport Management, students must additionally identify and declare one of the three major concentrations, either in:
  • Sport Analytics (p. 709), or
  • Sport Law (p. 710), or
  • Sport Leadership (p. 712)

The 3 Sport Management major concentrations and descriptions are listed below:

• Sport Analytics: Designed to prepare our graduates as to how to properly use big data to make educated decisions in the sport management industry.
• Sport Law: Designed to prepare our graduates for law school.
• Sport Leadership: Designed to prepare our graduates for management, leadership, and entrepreneurial roles within the sport industry.

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BUSI 296</td>
<td>BUSINESS COMMUNICATIONS</td>
<td>3</td>
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<tr>
<td>or MANA 404</td>
<td>MANAGEMENT COMMUNICATIONS IN A CONSULTING SIMULATION</td>
<td>3</td>
</tr>
<tr>
<td>ECON 100</td>
<td>PRINCIPLES OF ECONOMICS</td>
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</tr>
<tr>
<td>ECON 239</td>
<td>LAW AND ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>or SMGT 364</td>
<td>SPORT LAW</td>
<td>3</td>
</tr>
<tr>
<td>SMGT 260</td>
<td>INTRODUCTION TO SPORT MANAGEMENT</td>
<td>3</td>
</tr>
<tr>
<td>SMGT 266</td>
<td>LEADING WITH SERVICE</td>
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</tr>
<tr>
<td>SMGT 276</td>
<td>SPORT MANAGEMENT PRACTICUM</td>
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<td>SMGT 362</td>
<td>SPORT MARKETING</td>
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<td>SMGT 366</td>
<td>EVENT MANAGEMENT</td>
<td>3</td>
</tr>
<tr>
<td>SMGT 376</td>
<td>SPORT MANAGEMENT INTERNSHIP 1</td>
<td>3</td>
</tr>
<tr>
<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS</td>
<td>4</td>
</tr>
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Major Concentration

Select 1 of the following Major Concentrations (see below for Major Concentration requirements):

<table>
<thead>
<tr>
<th>Sport Analytics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sport Law</td>
</tr>
</tbody>
</table>
Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Law

**Total Credit Hours Required for the Major in Sport Management**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 140</td>
<td>COMPUTATIONAL THINKING</td>
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</tr>
<tr>
<td>COMP 330</td>
<td>TOOLS AND MODELS FOR DATA SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>SMGT 430</td>
<td>INTRODUCTION TO SPORT ANALYTICS</td>
<td>3</td>
</tr>
<tr>
<td>STAT 405</td>
<td>R FOR DATA SCIENCE</td>
<td>3</td>
</tr>
</tbody>
</table>

**Capstone**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMGT 490</td>
<td>SEMINAR IN SPORTS ANALYTICS</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credit Hours**

16

**Footnotes and Additional Information**

1. Students must complete this course after all required courses have been completed.

**Opportunities for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Analytics**

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

**Internships**

Students are required to complete at least one internship prior to graduation, often with one of the professional teams in Houston (Rockets, Astros, Texans, Dynamo, etc.). Students also will receive networking and out-of-class developmental training, as these play a significant role in obtaining high-profile positions in collegiate and professional sports.

For additional information, please see the Sport Management website: [http://sport.rice.edu/](http://sport.rice.edu/).

**Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Law**

**Program Learning Outcomes for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Law**

Upon completing the BA Degree with a major in Sport Management, students will be able to:

1. Develop and hone professional skills through classroom learning and experiential learning through a steady progression of internships with added responsibilities.
2. Develop a diverse set of fundamental principles and skills, including skills in business, finance, and marketing that would be necessary to produce or evaluate an event from beginning to end (from marketing and media promotion, to budget and sales, to execution and post-event evaluation).
3. Develop an understanding of the sports industry in relationship to the legal sector as well as the broader relationship between the industry and society.
4. Develop a marketing plan specific to a product in the sport industry.

Upon completing the BA Degree with a major in Sport Management and a major concentration in Sport Law, students will be able to:

1. Develop proficiency in legal analysis by evaluating and communicating the theories and ethical dilemmas impacting the sports industry.

---

2017-2018 General Announcements
Requirements for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Law

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Sport Management must complete:

- A minimum of 15 courses (46-47 credit hours depending on major concentration declared) to satisfy major requirements.
- A minimum of 120 hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 7-8 courses (21-24 credit hours) depending on major concentration declared taken at the 300-level or above.
- The requirements of a major concentration. When students declare the major (p. 12) in Sport Management, students must additionally identify and declare one of the three major concentrations, either in:
  - Sport Analytics (p. 709),
  - Sport Law (p. 710),
  - Sport Leadership (p. 712)

The 3 Sport Management major concentrations and descriptions are listed below:

- Sport Analytics: Designed to prepare our graduates as to how to properly use big data to make educated decisions in the sport management industry.
- Sport Law: Designed to prepare our graduates for law school.
- Sport Leadership: Designed to prepare our graduates for management, leadership, and entrepreneurial roles within the sport industry.

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Sport Management</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Sport Management</td>
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</table>

### Degree Requirements

<table>
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<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
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<td><strong>Core Requirements</strong></td>
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<tr>
<td>BUSI 296</td>
<td>BUSINESS COMMUNICATIONS</td>
<td>3</td>
</tr>
<tr>
<td>or MANA 404</td>
<td>MANAGEMENT COMMUNICATIONS IN A CONSULTING SIMULATION</td>
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<td>ECON 100</td>
<td>PRINCIPLES OF ECONOMICS</td>
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<tr>
<td>ECON 239</td>
<td>LAW AND ECONOMICS</td>
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<tr>
<td>SMGT 260</td>
<td>INTRODUCTION TO SPORT MANAGEMENT</td>
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</tr>
<tr>
<td>SMGT 266</td>
<td>LEADING WITH SERVICE</td>
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</tr>
<tr>
<td>SMGT 276</td>
<td>SPORT MANAGEMENT PRACTICUM</td>
<td>3</td>
</tr>
<tr>
<td>SMGT 362</td>
<td>SPORT MARKETING</td>
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</tr>
<tr>
<td>SMGT 366</td>
<td>EVENT MANAGEMENT</td>
<td>3</td>
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<tr>
<td>SMGT 376</td>
<td>SPORT MANAGEMENT INTERNSHIP</td>
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</tr>
<tr>
<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Major Concentration</strong></td>
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</tr>
<tr>
<td></td>
<td>Select 1 of the following Major Concentrations (see below for Major Concentration requirements):</td>
<td>15-16</td>
</tr>
<tr>
<td></td>
<td>Sport Analytics</td>
<td></td>
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<td></td>
<td>Sport Law</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sport Leadership</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credit Hours Required for the Major in Sport Management</strong></td>
<td>46-47</td>
</tr>
<tr>
<td></td>
<td><strong>Additional Credit Hours to Complete BA Degree Requirements</strong></td>
<td>13-14</td>
</tr>
<tr>
<td></td>
<td><strong>University Graduation Requirements (p. 25)</strong> *</td>
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</tr>
<tr>
<td></td>
<td><strong>Total Credit Hours</strong></td>
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</tr>
</tbody>
</table>

### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

### Policies for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Law

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.
Departmental Transfer Credit Guidelines
Students pursuing the major in Sport Management should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Sport Management website: http://sport.rice.edu/.

Opportunities for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Leadership

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Internships
Students are required to complete at least one internship prior to graduation, often with one of the professional teams in Houston (Rockets, Astros, Texans, Dynamo, etc.). Students also will receive networking and out-of-class developmental training, as these play a significant role in obtaining high-profile positions in collegiate and professional sports.

For additional information, please see the Sport Management website: http://sport.rice.edu/.

Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Leadership

Program Learning Outcomes for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Leadership

Upon completing the BA Degree with a major in Sport Management, students will be able to:

1. Develop and hone professional skills through classroom learning and experiential learning through a steady progression of internships with added responsibilities.

2. Develop a diverse set of fundamental principles and skills, including skills in business, finance, and marketing that would be necessary to produce or evaluate an event from beginning to end (from marketing and media promotion, to budget and sales, to execution and post-event evaluation).

3. Develop an understanding of the sports industry in relationship to the legal sector as well as the broader relationship between the industry and society.

4. Develop a marketing plan specific to a product in the sport industry.

Upon completing the BA Degree with a major in Sport Management and a major concentration in Sport Leadership, students will be able to:

1. Develop proficiency in leadership by evaluating and communicating the theories of management and leadership in the sport industry.

Requirements for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Leadership

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Sport Management must complete:

- A minimum of 15 courses (46-47 credit hours depending on major concentration declared) to satisfy major requirements.

- A minimum of 120 hours to satisfy degree requirements.

- A minimum of 60 credit hours outside of major requirements.

- A minimum of 7-8 courses (21-24 credit hours) depending on major concentration declared taken at the 300-level or above.

- The requirements of a major concentration. When students declare the major (p. 12) in Sport Management, students must additionally identify and declare one of the three major concentrations, either in:
  - Sport Analytics (p. 709), or
  - Sport Law (p. 710), or
  - Sport Leadership (p. 712)

The 3 Sport Management major concentrations and descriptions are listed below:

- Sport Analytics: Designed to prepare our graduates as to how to properly use big data to make educated decisions in the sport management industry.

- Sport Law: Designed to prepare our graduates for law school.

- Sport Leadership: Designed to prepare our graduates for management, leadership, and entrepreneurial roles within the sport industry.

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Sport Management (depending on major concentration declared)</td>
<td>46-47</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Sport Management</td>
<td>120</td>
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</tbody>
</table>
### Degree Requirements

<table>
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<tr>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Core Requirements</strong></td>
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</tr>
<tr>
<td>BUSI 296</td>
<td>BUSINESS COMMUNICATIONS</td>
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</tr>
<tr>
<td>ECON 239</td>
<td>LAW AND ECONOMICS</td>
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</tr>
<tr>
<td>or SMGT 364</td>
<td>SPORT LAW</td>
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<tr>
<td>SMGT 260</td>
<td>INTRODUCTION TO SPORT MANAGEMENT</td>
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<td>SMGT 266</td>
<td>LEADING WITH SERVICE</td>
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<td>SPORT MANAGEMENT PRACTICUM</td>
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<td>SMGT 362</td>
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<td>SMGT 366</td>
<td>EVENT MANAGEMENT</td>
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<td>SMGT 376</td>
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</tr>
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<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS</td>
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<td></td>
<td><strong>Major Concentration</strong></td>
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<tr>
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<td>Select 1 of the following Major Concentrations (see below for Major Concentration requirements):</td>
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<tr>
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<td>Sport Analytics</td>
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<td></td>
<td>Sport Law</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sport Leadership</td>
<td></td>
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<td></td>
<td><strong>Total Credit Hours Required for the Major in Sport Management</strong></td>
<td>46-47</td>
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<td><strong>Additional Credit Hours to Complete BA Degree Requirements</strong></td>
<td>13-14</td>
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<td><strong>University Graduation Requirements (p. 25)</strong></td>
<td>60</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credit Hours</strong></td>
<td>120</td>
</tr>
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</table>

#### Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

### Major Concentration: Sport Leadership

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<th>Code</th>
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<tbody>
<tr>
<td></td>
<td><strong>Required Courses</strong></td>
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<td>SMGT 350</td>
<td>SPORT ETHICS</td>
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<td>SMGT 377</td>
<td>SPORT MANAGEMENT INTERNSHIP 2</td>
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<td>SMGT 466</td>
<td>SPORT PUBLIC RELATIONS</td>
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<td><strong>Elective Requirements</strong></td>
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<td>Select 2 from the following:</td>
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<td>BUSI 310</td>
<td>LEADING PEOPLE IN ORGANIZATIONS</td>
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<tr>
<td>BUSI 390</td>
<td>STRATEGIC MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>BUSI 463</td>
<td>FOUNDATIONS OF ENTREPRENEURSHIP: STRATEGY AND FUNDING</td>
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</tr>
<tr>
<td>BUSI 464 / GLHT 464</td>
<td>SOCIAL ENTREPRENEURSHIP</td>
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<td>ECON 210</td>
<td>BEHAVIORAL ECONOMICS</td>
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</tr>
<tr>
<td>SMGT 360</td>
<td>SALES &amp; REVENUE GENERATION IN SPORT</td>
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</tr>
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</table>

### Policies for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Leadership

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

#### Departmental Transfer Credit Guidelines

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- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

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#### Opportunities for the BA Degree with a Major in Sport Management and a Major Concentration in Sport Leadership

### Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) ([summa cum laude](#), [magna cum laude](#), and [cum laude](#)) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

### Internships

Students are required to complete at least one internship prior to graduation, often with one of the professional teams in Houston (Rockets, Astros, Texans, Dynamo, etc.). Students also will receive networking and out-of-class developmental training, as these play a significant role in obtaining high-profile positions in collegiate and professional sports.
Statistics

Contact Information

Statistics
https://statistics.rice.edu/
2103 Duncan Hall
713-348-6032

Marina Vannucci
Department Chair
marina@rice.edu

Rudy Guerra
Associate Department Chair
rguerra@rice.edu

Statistics course work acquaints students with the role played in the modern world by probabilistic and statistical ideas and methods. Students grow familiar with both the theory and the application of techniques in common use as they are trained in statistical research.

The flexibility of the undergraduate program allows students to concentrate on theoretical or applied training, or they may link their studies in statistics to work in other related departments.

The graduate program has concentrations in applied probability, Bayesian methodology, bioinformatics, biomathematics, biostatistics, computational finance, epidemiology, large and complex data, machine and statistical learning, quality control, statistical computing, spatial and stochastic processes, and time series analysis. Statistics is a cornerstone of the campus wide data science initiative.

A coordinated MBA/professional Master of Statistics degree also is available in conjunction with the Jesse H. Jones Graduate School of Business.

Bachelor's Program
• Bachelor of Arts (BA) Degree with a Major in Statistics (p. 715)

Minor
• Minor in Statistics (p. 719)

Master's Programs
• Master of Arts (MA) Degree in the field of Statistics*
• Master of Statistics (MStat) Degree (p. 718)

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Statistics (p. 716)

Coordinated Program
• Master of Business Administration (MBA) Degree / Master of Statistics (MStat) Degree (p. 717)

* Although students are not normally admitted to a Master of Arts (MA) degree program, graduate students may earn the MA as they work towards the PhD.

Chair
Marina Vannucci

Professors
Dennis Cox
Katherine B. Ensor
Rudy Guerra
Mark Kimmel
David Scott
James R. Thompson

Assistant Professors
Genevera Allen
Philip Ernst
Daniel Kowal
Meng Li
Michael Schweinberger

Professor in the Practice
John A. Dobelman
Loren Raun

Lecturer
E. Neely Atkinson

Professors, Joint Appointments
Bryan W. Brown
Mahmoud El-Gamal
Don H. Johnson
Krishna Palem
Robin Sickles
Edward E. Williams
Rick K. Wilson

Associate Professors, Joint Appointments
David M. Lane
Barbara Ostdiek

Research Professor
Erzsébet Merényi

Associate Research Professor
Janet Siefert

Adjunct Professors
Donald A. Berry
Barry Brown
Scott Cantor
Kim-Anh Do
Richard Heydorn
Sallie Keller
Suzanne Leal
J. Jack Lee
Description and Code Legend

**Note:** Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**
- Course offerings/subject code: STAT

**Department Description and Code**
- Statistics: STAT

**Undergraduate Degree Description and Code**
- Bachelor of Arts Degree: BA

**Undergraduate Major Description and Code**
- Major in Statistics: STAT

**Undergraduate Minor Description and Code**
- Minor in Statistics: STAS

**Graduate Degree Descriptions and Codes**
- Master of Arts degree: MA
- Master of Statistics degree: MStat
- Doctor of Philosophy degree: PhD

**Graduate Degree Program Description and Code**
- Degree Program in Statistics: STAT

**Requirements for the BA Degree with a Major in Statistics**

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Statistics must complete:

- A minimum of 16 courses (49-51 credit hours) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 12 courses (35 credit hours) at the 300-level or above.
- A maximum of 3 courses (9 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

**Summary**

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tr>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Statistics</td>
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**Degree Requirements**

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
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<td></td>
<td>Core Requirements</td>
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<tr>
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<td>Mathematics</td>
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<td>SINGLE VARIABLE CALCULUS II</td>
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<td>MULTIVARIABLE CALCULUS</td>
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<td>CAAM 335</td>
<td>MATRIX ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 355</td>
<td>LINEAR ALGEBRA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Computation</td>
<td></td>
</tr>
<tr>
<td>STAT 405</td>
<td>R FOR DATA SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Basic Computing</td>
<td>3-4</td>
</tr>
<tr>
<td></td>
<td>Select 1 from the following:</td>
<td></td>
</tr>
<tr>
<td>COMP 100</td>
<td>INTRODUCTION TO COMPUTING AND INFORMATION SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>COMP 130</td>
<td>ELEMENTS OF ALGORITHMS AND COMPUTATION</td>
<td></td>
</tr>
<tr>
<td>COMP 140</td>
<td>COMPUTATIONAL THINKING</td>
<td></td>
</tr>
<tr>
<td>COMP 182</td>
<td>ALGORITHMIC THINKING</td>
<td></td>
</tr>
<tr>
<td>COMP 200</td>
<td>ELEMENTS OF COMPUTER SCIENCE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Advanced Computing</td>
<td>3-4</td>
</tr>
<tr>
<td></td>
<td>Select 1 from the following:</td>
<td></td>
</tr>
<tr>
<td>COMP 215</td>
<td>INTRODUCTION TO PROGRAM DESIGN</td>
<td></td>
</tr>
<tr>
<td>COMP 322 / ELEC 323</td>
<td>PRINCIPLES OF PARALLEL PROGRAMMING</td>
<td></td>
</tr>
<tr>
<td>COMP 330</td>
<td>TOOLS AND MODELS FOR DATA SCIENCE</td>
<td></td>
</tr>
</tbody>
</table>

**Bachelor of Arts (BA) Degree with a Major in Statistics**

Program Learning Outcomes for the BA Degree with a Major in Statistics

Upon completing the BA degree with a major in Statistics, students will be able to:

1. Apply fundamental theory in probability and statistical inference.
2. Apply and evaluate statistical models.
3. Apply statistical computing for data analysis and data science.
4. Demonstrate competency as a professional statistician.
5. Effectively communicate as a professional statistician.
Doctor of Philosophy (PhD) Degree in the field of Statistics

Program Learning Outcomes for the MA and PhD Degrees in the field of Statistics

Upon completing the MA and PhD degree in the field of Statistics, students will be able to:

1. Master fundamental theory in probability and statistics.
2. Become familiar with a broad range of statistical methods for applications.
4. Develop effective communication skills as a professional statistician.
5. Develop the skills to do independent research.

Policies for the BA Degree with a Major in Statistics

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Statistics should be aware of the following departmental transfer credit guidelines:

- No more than 3 courses (9 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Statistics website: https://statistics.rice.edu/.

Opportunities for the BA Degree with a Major in Statistics

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Internship and Research Opportunities
The Department of Statistics encourages its major and minors to participate the practice of statistics through summer internships, employment and research. Information on current opportunities are posted here: https://statistics.rice.edu/undergraduate-program/opportunities. Students can also approach individual faculty about research opportunities in their group. An undergraduate advisor can talk with you about these and other possibilities.

For additional information, please see the Statistics website: https://statistics.rice.edu/.

Doctor of Philosophy (PhD) Degree in the field of Statistics

Probability and Statistics

COMP 382 REASONING ABOUT ALGORITHMS
CAAM 378 INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION
CAAM 440 APPLIED MATRIX ANALYSIS
CAAM 453 NUMERICAL ANALYSIS I
CAAM 471 LINEAR AND INTEGER PROGRAMMING
CAAM 519 COMPUTATIONAL SCIENCE I

Elective Requirements
Select 6 courses from departmental (STAT) course offerings at the 300-level or above, including at least 3 from the following list of methodology/theory courses: ¹

STAT 411 ADVANCED STATISTICAL METHODS
STAT 413 INTRODUCTION TO STATISTICAL MACHINE LEARNING
STAT 418 PROBABILITY
STAT 419 STATISTICAL INFERENCE
STAT 421 APPLIED TIME SERIES AND FORECASTING
STAT 425 INTRODUCTION TO BAYESIAN INFERENCE
STAT 453 BIOSTATISTICS
STAT 502 / COMP 502 / ELEC 502 NEURAL MACHINE LEARNING I
STAT 541 MULTIVARIATE ANALYSIS
STAT 545 GLM & CATEGORICAL DATA ANALYSIS

Senior Capstone
STAT 450 SENIOR CAPSTONE PROJECT

Total Credit Hours Required for the Major in Statistics
49-51

University Graduation Requirements (p. 25) *
69-71

Total Credit Hours
120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

¹ With advisor approval, 1 course (3 credit hours) from departments other than Statistics may be used as an elective. The substitution course may not be used as a replacement for 1 of the 3 required methodology/theory courses listed above. STAT 305 and STAT 385 will not count as electives.
Requirements for the MA and PhD Degrees in the field of Statistics

For general university requirements, please see Doctoral Degrees (p. 64). Students pursuing the PhD degree in the field of Statistics must complete:

- A minimum of 90 credit hours of approved course work beyond the bachelor’s degree and a minimum of 60 hours beyond a master’s degree.
- A satisfactory performance on preliminary and qualifying examinations, and an original thesis with a public oral defense.

All Statistics graduate students are assigned a limited amount of teaching and other departmental service as part of their graduate education. The assignment usually entails less than 10 hours per week, averaged over the semester. Students completing the PhD degree in 4 years will be assigned no more than 6 semesters of service.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the PhD Degree in the field of Statistics</td>
<td>90</td>
</tr>
</tbody>
</table>

MA Degree Program

The MA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). Students awarded the MA degree in the field of Statistics should be aware that:

- The MA degree in the field of Statistics requires 30 credit hours of approved course work as well as one of the following:
  a. the completion of an original thesis and defense in a public oral examination; or
  b. satisfactory performance on the PhD comprehensive examinations, and the completion of a major project.
- A candidacy MA degree is awarded to statistics PhD students through option (2) where the major project corresponds to the doctoral thesis proposal.
- An MA degree is available to PhD students in the Departments of Economics or Political Science through option (1) where the original doctoral thesis and defense is related to the MA in the field of statistics.
- The MA degree awarded in the field of statistics is a non-thesis master’s degree.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MA Degree in the field of Statistics</td>
<td>30</td>
</tr>
</tbody>
</table>

Policies for the PhD Degree in the field of Statistics

Master of Business Administration (MBA) Degree / Master of Statistics (MStat) Degree

Program Learning Outcomes for the MStat Degree

Upon completing the MStat degree, students will be able to:

1. Master fundamental theory in probability and statistics.
2. Become familiar with a broad range of statistical methods for applications.
4. Develop effective communication skills as a professional statistician.

Program Learning Outcomes for the MBA Degree Programs

Upon completing the MBA degree programs, students will be able to:

1. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
2. Develop, evaluate, and implement complex business strategies and operational solutions holistically, integrating management principles across the functional areas.
3. Function effectively in a team setting both as a leader and a contributor.

Requirements for the MBA/MStat Coordinated Degree Program

Students may earn this non-thesis Master of Engineering degree in the following fields:

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computational and Applied Mathematics
- Computational Science and Engineering


Admission

Preparation for PhD Program. All applicants are required to take the Graduate Record Exam (GRE), and admission applications should include GRE scores on the quantitative, verbal, and analytical tests. Financial support is available for well-qualified doctoral students.

For additional information, please see the Statistics website: https://statistics.rice.edu/

Opportunities for the PhD Degree in the field of Statistics

For additional information, please see the Statistics website: https://statistics.rice.edu/
Coordinated degree candidates can fulfill requirements for both degrees in 2 academic years.

For the coordinated MBA/Master of Engineering degree, students must complete:

- A minimum of 2 academic years in residence at Rice
- A minimum of 69 semester hours in approved coursework, including:
  - A minimum of 24 credit hours in an engineering discipline
  - A minimum of 45 credit hours in business
- At minimum of 6 credit hours of the 45 credit hours in business must also meet the requirements towards the Master of Engineering degree and will be counted towards both degrees.

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the Jones Graduate School of Business Registrar Department.

### Policies for the MBA/MStat Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: [https://business.rice.edu/](https://business.rice.edu/)
2. Please see the Statistics website: [https://statistics.rice.edu/](https://statistics.rice.edu/)

### Opportunities for the MBA/MStat Coordinated Degree Program

For additional information on these two degrees:

1. Please see the Business website: [https://business.rice.edu/](https://business.rice.edu/)
2. Please see the Statistics website: [https://statistics.rice.edu/](https://statistics.rice.edu/)
Students are allowed to choose either a broad-based or specialized program of study. Depending on the student's selected specialization, the mix of required, specialization-specific and elective courses will be jointly determined by the student and the graduate advisor. Students will meet with their advisor during the first year of the program to select an individualized plan of study, with periodic tune-ups as the program progresses.

Students may be asked to take specific courses outside the department, depending on the incoming background of the student, career objectives, and funding sources.

Policies for the MStat Degree
Department of Statistics Graduate Program Handbook
For more detailed information regarding the MStat degree program policies, please see Statistics department's Graduate Handbook, which can be found here: http://gradhandbooks.rice.edu/2017_18/Statistics_Graduate_Handbook.pdf

Program Restrictions and Exclusions
Students pursuing this degree should be aware of the following program restriction:

- Courses comprising the 30-credit hour requirement shall not be taken or completed on a pass/fail grading basis.

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

For additional information, please see the Statistics website: https://statistics.rice.edu/

Opportunities for the MStat Degree
For additional information, please see the Statistics website: https://statistics.rice.edu/

Minor in Statistics
Program Learning Outcomes for the Minor in Statistics
Upon completing the minor in Statistics, students will be able to:

Requirements for the Minor in Statistics
Students pursuing the minor in Statistics must complete:

- A minimum of 6 courses (19-20 credit hours depending on area of specialization/track selected) to satisfy minor requirements.
- A minimum of 5 courses (15 credit hours) at the 300-level or above.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.
- The requirements of 1 area of specialization. There are 2 areas of specialization offered to students pursuing the Statistics minor.
  - Track A is designed for mathematically sophisticated students who wish to understand not only how statistical methods are used, but also how they are developed.
  - Track B is designed to help students develop a working knowledge of statistics and the wide range of possibilities for the use and misuse of statistical methods.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Minor in Statistics</td>
<td>19-20</td>
</tr>
</tbody>
</table>

Minor Requirements

Area of Specialization
Select 1 from the following (see below for Area of Specialization requirements):

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Track A</td>
<td>19-20</td>
</tr>
<tr>
<td></td>
<td>Track B</td>
<td>19-20</td>
</tr>
</tbody>
</table>

Total Credit Hours | 19-20

Area of Specialization: Track A
Students must complete the 6 courses (19 credit hours total) as listed below to satisfy the requirements for the Track A specialization.

Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 310 / ECON 307</td>
<td>PROBABILITY AND STATISTICS</td>
<td>3</td>
</tr>
<tr>
<td>STAT 405</td>
<td>R FOR DATA SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>STAT 410</td>
<td>LINEAR REGRESSION</td>
<td>4</td>
</tr>
</tbody>
</table>

Elective Requirements
Select 3 electives from departmental (STAT) course offerings at the 300-level or above.

Total Credit Hours | 19

Footnotes and Additional Information

- STAT 305 and STAT 385 do not count as electives for Track A.
- The following are recommended electives for Track A: STAT 313, STAT 411, STAT 413, STAT 418, STAT 421, STAT 423, STAT 425, STAT 449, and STAT 453. Other electives may be chosen as well.

Area of Specialization: Track B
Students must complete the 6 courses (20 credit hours total) as listed below to satisfy the requirements for the Track B specialization.

Core Requirements

Select 2 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS</td>
<td>8</td>
</tr>
<tr>
<td>or STAT 305 INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT 385</td>
<td>METHODS OF DATA ANALYSIS AND SYSTEM OPTIMIZATION</td>
<td></td>
</tr>
</tbody>
</table>

2017-2018 General Announcements
Elective Requirements

Select 4 electives from departmental (STAT) course offerings at the 300-level or above.  

| Total Credit Hours | 20 |

Footnotes and Additional Information

1. STAT 305 and STAT 385 do not count as electives for Track B. The following are recommended electives for Track B: STAT 313, STAT 405, STAT 482, STAT 484 / CEVE 484, STAT 485, and STAT 486. Other electives may be chosen as well. With advisor approval, 1 elective may be from departments other than Statistics.

Policies for the Minor in Statistics

Program Restrictions and Exclusions

Students pursuing the minor in Statistics should be aware of the following program restriction:

- As noted in Majors, Minors, and Certificates (p. 12), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the minor in Statistics should be aware of the following departmental transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.
- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Statistics website: https://statistics.rice.edu/.

Opportunities for the Minor in Statistics

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

For additional information, please see the Statistics website: https://statistics.rice.edu/.

Study of Women, Gender and Sexuality

Contact Information

Study of Women, Gender and Sexuality
https://cswgs.rice.edu/
114 Humanities Building
713-348-5784
Susan Lurie
Program Director
lurie@rice.edu

The undergraduate major, honors track undergraduate major, and the graduate certificate program take an interdisciplinary approach in their exploration of women's lives and histories and the role that ideas about sexual differences and sexual identities have played in human societies.

Areas of inquiry include women's participation in social and cultural production; the construction of heteronormative gender and sexuality as well as lesbian, gay, bisexual, and transgender identities; the relationship between ideas about gender and concepts inherent in other social, political, and legal structures; and the implications of feminist and sexuality studies for philosophical and epistemological traditions. Students acquire an understanding of how adopting gender as a significant category of analysis challenges existing disciplines. They gain proficiency in the methods used to study and compare cultural constructions of gender and sexuality, and they become familiar with the ongoing fundamental debates in women's, gender, and sexuality studies.

Bachelor's Program

- Bachelor of Arts (BA) Degree with a Major in the Study of Women, Gender, and Sexuality (p. 721)

Certificate

- Certificate in Women, Gender, and Sexuality (p. 725)

Director and Graduate Advisor

Susan Lurie

Associate Director and Undergraduate Advisor

Cymene Howe

Professors

Tani Barlow
Elias K. Bongmba
Marcia Brennan
Krista Comer
Marcia J. Citron
April D. DeConick
James D. Faubion
Eugenia Georges
Beatriz González-Stephan
Bridget K. Gorman
Michelle R. Hebl

2017-2018 General Announcements
Rice University
Rosemary Hennessy
Rachel Kimbro
Anne C. Klein
Jeffrey J. Kripal
Caroline R. Levander
Susan Keech McIntosh
Helena Michie
Deborah Nelson-Campbell
Kirsten Ostherr
Nanxiu Qian
Sonia Ryang
Leslie Schwindt-Bayer
Paula Sanders
Meredith Skura
Ewa M. Thompson
Lora Wildenthal
Diane Wolfthal

Associate Professors
José F. Aranda, Jr.
Jenifer Bratter
Joseph Campana
Scott S. Derrick
Sarah Ellenzeig
Julie Fette
Deborah A. Harter
Cymene Howe
Betty Joseph
Colleen R. Lamos
Susan Lurie
Nancy A. Niedzielski
Elora Shehabuddin
Nicole A. Waligora-Davis
Kerry Ward
Fay Yarbrough

Assistant Professors
Andrea Ballestero
Erin Cech
Sergio Chávez
Zoë Wool

Professors in the Practice
Brian Scott Riedel
Diana L. Strassmann

Lecturers
Thad Logan
Marwa Shalaby
Melissa Weininger

Postdoctoral Fellow
Natali Valdez

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
Course offerings/subject code: SWGS

Program Description and Code
Center for the Study of Women, Gender, and Sexuality: SWGS

Undergraduate Degree Code and Description
Bachelor of Arts Degree: BA

Undergraduate Major Code and Description
Major in the Study of Women, Gender, and Sexuality: SWGS

Graduate Certificate Description and Code
• Certificate in Study of Women, Gender and Sexuality: WGS

Bachelor of Arts (BA) Degree with a Major in Study Of Women, Gender and Sexuality

Program Learning Outcomes for the BA Degree with a Major in the Study of Women, Gender and Sexuality

Upon completing the BA degree with a major in the Study of Women, Gender and Sexuality, students will be able to:

1. Demonstrate an awareness of the diversity of feminist thought in the past and present.
2. Demonstrate familiarity with key issues in the study of women’s lives and histories.
3. Demonstrate knowledge of social, political, and cultural features of gender and sexuality in the US and globally.
4. Understand diverse global feminist perspectives, including critical race studies and feminist contributions to social and critical theory.
5. Demonstrate knowledge of the feminist concept of engaged research based upon cumulative practice as engaged researchers in extra-classroom activities.
6. Develop skill in analytical writing as well as oral and visual presentation.

Requirements for the BA Degree with a Major in the Study of Women, Gender and Sexuality

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in the Study of Women, Gender and Sexuality must complete:

• A minimum of 12-13 courses (36-37 credit hours) to satisfy major requirements.
• A minimum of 120 credit hours to satisfy degree requirements.
• A minimum of 60 credit hours outside of major requirements.
• A maximum of 4 courses (12 credit hours) from a single department course offering/subject code outside of the SWGS course offerings/subject code (or not cross-listed with the SWGS course offerings/subject code).
• A minimum of 5 courses (15 credit hours) taken at the 300-level or above.

Students who are pursuing two majors (i.e., are double majors) and have declared the major in the Study of Women, Gender and Sexuality must complete:

• A minimum of 10-11 courses (30-31 credit hours) to satisfy major requirements.
• A maximum of 4 courses (12 credit hours) from a single department course offering/subject code outside of the SWGS course offerings/subject code (or not cross-listed with the SWGS course offerings/subject code).
• A minimum of 5 courses (15 credit hours) taken at the 300-level or above.

Double majors who drop the other major are required to meet the requirements listed for single majors.

All students must work out their individual courses of study with their faculty advisors. Each student's course of study must be approved by the Study of Women, Gender and Sexuality advisor. Course requirement tracking forms are available in the Study of Women, Gender and Sexuality office.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWGS 101 / or SWGS 201</td>
<td>INTRODUCTION TO WOMEN &amp; GENDER</td>
<td>3</td>
</tr>
<tr>
<td>Select 1 Non-Western Studies Elective (see below for course list)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Select 1 Critical Race Studies Elective (see below for course list)</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
| Select 1 from the following:  
  SWGS 345 / HIST 340 | HISTORY OF FEMINISM | 3            |
| 1 Theory Elective (see below for course list) | 3            |

Elective Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWGS 497</td>
<td>ENGAGED RESEARCH SEMINAR</td>
<td>Honors Research and Thesis:</td>
</tr>
<tr>
<td>SWGS 498</td>
<td>RESEARCH IN THE STUDY OF WOMEN GENDER SEXUALITY</td>
<td>18</td>
</tr>
<tr>
<td>SWGS 499</td>
<td>RESEARCH IN THE STUDY OF WOMEN GENDER SEXUALITY</td>
<td>18</td>
</tr>
</tbody>
</table>

Elective Requirements

Select 6 courses from department approved electives or from additional electives in Non-Western, Critical Race Studies, or Theory (see below for course lists) 3

Total Credit Hours Required for the Major in Women, Gender and Sexuality (for single majors) 36-37

Total Credit Hours Required for the Major in Women, Gender and Sexuality (for double majors) 30-31

Additional Credit Hours to Complete BA Degree Requirements 23-30

University Graduation Requirements (p. 25) 60

Total Credit Hours 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

1 Double majors who drop the other major are required to meet the requirements listed for single majors.

2 Students may pursue an optional specialization in Poverty, Social Justice and Human Capabilities. See the Opportunities tab for more information.

3 Double majors may satisfy this requirement by selecting 4 courses (12 credit hours) from the department approved electives, or from additional electives in Non-Western Studies, Critical Race Studies, or Theory.

Elective Requirements

Students must select a minimum of 1 course (3 credit hours) from Non-Western Studies and a minimum of 1 course (3 credit hours) from Critical Race Studies. If SWGS 345/HIST 340 is not selected as a Core Requirement, students must select a minimum of 1 course (3 credit hours) from Theory electives. To fulfill the remaining major requirements, students must complete a total of 6 courses (18 credit hours) from the department approved electives, or from additional electives in Non-Western Studies, Critical Race Studies, or Theory. 3 Course offerings may vary from year to year, students are urged to consult with the undergraduate advisor or with the director at the beginning of each semester.

Non-Western Studies Electives

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWGS 240 / ASIA 240 / RELI 285</td>
<td>GENDER AND POLITICIZED RELIGION</td>
<td>3</td>
</tr>
<tr>
<td>SWGS 250 / ASIA 251</td>
<td>SEX, MONEY, AND POWER AROUND THE WORLD</td>
<td>3</td>
</tr>
<tr>
<td>Code</td>
<td>Title</td>
<td>Credit Hours</td>
</tr>
<tr>
<td>----------</td>
<td>---------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>SWGS 315 / RELI 315 / ASIA 315</td>
<td>GENDER AND ISLAM</td>
<td></td>
</tr>
<tr>
<td>SWGS 384 / HIST 384 / ASIA 328</td>
<td>MODERN GIRL AND ASIA IN THE WORLD</td>
<td></td>
</tr>
<tr>
<td>SWGS 394 / SOCI 394</td>
<td>HUMAN DEVELOPMENT IN GLOBAL AND LOCAL COMMUNITIES</td>
<td></td>
</tr>
<tr>
<td>SWGS 399 / ASIA 399 / MDEM 379</td>
<td>WOMEN IN CHINESE LITERATURE</td>
<td></td>
</tr>
<tr>
<td>SWGS 449 / ANTH 449</td>
<td>CULTURES OF SEXUALITY</td>
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<tr>
<td>SWGS 492 / ASIA 492 / HIST 492</td>
<td>GENDER HISTORIES OF MODERN CHINA</td>
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<td>SWGS 234 / HIST 241</td>
<td>U.S. WOMEN'S HISTORY I: COLONIAL BEGINNINGS TO THE CIVIL WAR</td>
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<td>SWGS 235 / HIST 242</td>
<td>U.S. WOMEN'S HISTORY II: CIVIL WAR TO THE PRESENT</td>
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<td>SWGS 329 / ENGL 369</td>
<td>THE AMERICAN WEST AND ITS OTHERS</td>
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<td>SWGS 338 / HIST 338</td>
<td>19TH CENTURY WOMEN'S NARRATIVES</td>
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<td>SWGS 348</td>
<td>SEX AND GENDER IN MODERN JEWISH CULTURE</td>
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<td>SWGS 354 / ENGL 371 / SPPO 354</td>
<td>CHICANO/A LITERATURE</td>
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<td>SWGS 370 / ENGL 370</td>
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<td>SWGS 415 / LING 415</td>
<td>SOCIOLINGUISTICS</td>
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<td>SWGS 453 / ENGL 470</td>
<td>STUDIES IN AFRICAN AMERICAN LITERATURE</td>
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<td>SWGS 466 / SPPO 430</td>
<td>LATIN AMERICAN WOMEN'S CULTURE</td>
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### Critical Race Studies Electives

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<td>INTRODUCTION TO FEMINIST PHILOSOPHY</td>
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<tr>
<td>SWGS 130 / FSEM 130 / GERM 130</td>
<td>WOMEN AND NAZI GERMANY</td>
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<td>SWGS 205 / LING 205</td>
<td>LANGUAGE AND SOCIETY</td>
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<td>SWGS 225 / CLAS 225</td>
<td>WOMEN IN GREECE AND ROME</td>
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<td>SWGS 273 / ENGL 273</td>
<td>MEDICINE AND MEDIA</td>
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<td>SWGS 301 / ENGL 317 / MDEM 317</td>
<td>ARTHURIAN LITERATURE</td>
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<td>SWGS 303</td>
<td>GENDER AND SCIENCE</td>
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<td>HUMAN SEXUALITY</td>
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<td>SWGS 308</td>
<td>THE FUTURE OF FOOD: FEMINIST, QUEER, AND CRITICAL APPROACHES</td>
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<tr>
<td>SWGS 314 / MDEM 314 / RELI 314</td>
<td>DIVINE SEX: GENDER AND DIVINITY IN THE MIDDLE AGES</td>
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<tr>
<td>SWGS 320 / THEA 320</td>
<td>GENDER, SEXUALITY AND THE ADAPTATION OF TRANSCATIONAL LITERATURE TO PERFORMANCE</td>
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<td>SWGS 324 / SOCI 306</td>
<td>SOCIOLOGY OF GENDER</td>
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<td>SWGS 325 / SOCI 334</td>
<td>SOCIOLOGY OF THE FAMILY</td>
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<td>SWGS 327 / ENGL 381</td>
<td>TOPICS IN WOMEN WRITERS</td>
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<td>SWGS 331 / PSYC 331</td>
<td>PSYCHOLOGY OF GENDER</td>
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<td>SEX, SELF, AND SOCIETY IN ANCIENT GREECE</td>
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<td>SWGS 333 / ANTH 311</td>
<td>MASCULINITIES</td>
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<td>SWGS 335 / ANTH 388</td>
<td>THE LIFE CYCLE: A BIOCULTURAL VIEW</td>
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<td>SWGS 336 / ANTH 308</td>
<td>THE ANTHROPOLOGY OF THE HISTORICAL IMAGINATION</td>
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<td>SWGS 343 / ENGL 343</td>
<td>JANE AUSTEN'S WORLDS</td>
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<td>SWGS 346 / HART 346</td>
<td>SEMINAR ON LOVE: MAKING LOVE IN MODERN ART AND THOUGHT</td>
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Bachelor of Arts (BA) Degree with a Major in Study Of Women, Gender and Sexuality

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<td>ANTH 327</td>
<td>GENDER AND SYMBOLISM</td>
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<tr>
<td>SWGS 353 /</td>
<td></td>
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<td>ANTH 354</td>
<td>ILLNESS, DISABILITY, AND THE GENDERED BODY</td>
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<td>SWGS 358 /</td>
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<td>GERM 321 /</td>
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<tr>
<td>HUMA 321 /</td>
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<tr>
<td>HART 385</td>
<td>EUROPEAN WOMEN FILMMAKERS</td>
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<tr>
<td>SWGS 361 /</td>
<td></td>
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<tr>
<td>GERM 338 /</td>
<td></td>
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<tr>
<td>HUMA 373</td>
<td>NEW GERMAN FILM: HITLER'S CINEMATIC CHILDREN</td>
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<td>SWGS 364 /</td>
<td></td>
</tr>
<tr>
<td>ENGL 354</td>
<td>QUEER LITERARY CULTURES</td>
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<tr>
<td>SWGS 367 /</td>
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<td>ENGL 367</td>
<td>LITERATURE AND CULTURE OF THE U.S.-MEXICO</td>
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<td>ENGL 370</td>
<td>AFRICAN AMERICAN LITERATURE</td>
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<tr>
<td>SWGS 372 /</td>
<td></td>
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<tr>
<td>ENGL 342</td>
<td>SURVEY OF VICTORIAN FICTION</td>
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<td>SWGS 376 /</td>
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<td>ENGL 378</td>
<td>LITERATURE OF THE AMERICAS</td>
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<td>SWGS 385</td>
<td>SEXUAL DEBATES IN THE U.S.: SOCIAL AND CULTURAL</td>
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<td>SWGS 389 /</td>
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<td>YOUTH STUDIES</td>
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<td>SWGS 390 /</td>
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<td>TRENDS IN HISPANIC CINEMA</td>
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<td>SWGS 393</td>
<td>SCIENCE, FEMINISM AND CHRISTIANITY IN THE</td>
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<td>SWGS 398 /</td>
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<td>HIST 398</td>
<td>THE TEN MOST IMPORTANT SUPREME COURT DECISIONS</td>
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<td>SWGS 400</td>
<td>CONSTRUCTING IDENTITIES IN MODERN FICTION</td>
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<td>ENGL 443</td>
<td>AUSTEN ONLY: NOVELS &amp; FILM</td>
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<td>SWGS 412 /</td>
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<tr>
<td>FREN 360</td>
<td>WOMEN, SEXUALITY &amp; LITERARY</td>
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<td>SWGS 424 /</td>
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<td>FREN 424</td>
<td>WOMEN IN FRANCE</td>
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<td>SWGS 434 /</td>
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<td>HART 434 /</td>
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<td>MDHM 434</td>
<td>SEEING SEX IN EUROPEAN ART, 1400-1700</td>
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<td>SWGS 440 /</td>
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<td>MUSI 526</td>
<td>WOMEN IN MUSIC</td>
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<td>SWGS 453 /</td>
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<td>ENGL 470</td>
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<td>SWGS 462 /</td>
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<td>ENGL 462</td>
<td>20TH-21ST CENTURY AMERICAN STUDIES</td>
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<td>SWGS 465 /</td>
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<td>SOCI 465</td>
<td>GENDER AND HEALTH</td>
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<tr>
<td>SWGS 470</td>
<td>ADVANCED SEMINAR IN POVERTY, JUSTICE, AND CAPABILITIES</td>
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<tr>
<td>SWGS 472 /</td>
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<tr>
<td>ENGL 432</td>
<td>TOPICS IN RICHARDSON'S CLARISSA</td>
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<tr>
<td>SWGS 485 /</td>
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<td>HART 485</td>
<td>GENDER AND HOLLYWOOD CINEMA IN THE 1950'S</td>
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<td>SWGS 495</td>
<td>INDEPENDENT STUDY</td>
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</table>

Policies for the BA Degree with a Major in the Study of Women, Gender and Sexuality

**Transfer Credit**

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oa.a.rice.edu](http://oa.a.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**

Students pursuing the major in Study of Women, Gender and Sexuality should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Center for the Study of Women, Gender and Sexuality website: [https://cswgs.rice.edu/](https://cswgs.rice.edu/)

Opportunities for the BA Degree with a Major in the Study of Women, Gender and Sexuality

**Academic Honors**

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) ([summa cum laude](https://cswgs.rice.edu/)), ([magna cum laude](https://cswgs.rice.edu/)), and ([cum laude](https://cswgs.rice.edu/)) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

**Honors Program**

Students wishing to pursue the Study of Women, Gender and Sexuality Honors Program will complete a thesis. The process of preparing the thesis begins in the late spring of the junior year.

In that spring semester, the student chooses an advisor from the SWGS faculty and with that advisor produces a proposal for a research project. The proposal must be approved by the Study of Women, Gender, and Sexuality major advisor by the last day of the exam period in the spring of the junior year.

In the fall of the senior year, students enroll in SWGS 498 for directed research supervised by a CSWGS faculty affiliate and are in regular consultation with their advisors.

In the spring of the senior year, students enroll in SWGS 499 and work closely with their advisors as they complete the thesis. Honors students present their projects in a public event at the end of the semester.
Research, Practicum, and Seminar

The Engaged Research Practicum and Seminar courses (SWGS 494, SWGS 496, and SWGS 497) are open to non-majors. Permission of the instructor is required as well as some background in the study of women, gender or sexuality.

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Certificate in Women, Gender and Sexuality

Program Learning Outcomes for the Certificate in the Study of Women, Gender and Sexuality

Upon completing the Certificate in the Study of Women, Gender and Sexuality, students will be able to:

1. Demonstrate knowledge of historical and contemporary approaches to the study of women, gender and sexuality across diverse disciplines.
2. Engage through their intellectual production feminist concepts and methodologies, and features of women's studies, gender studies, and/or sexuality studies as academic fields.
3. Incorporate critical debates in the study of women, gender and sexuality in their oral presentations and written analyses, including work for publication and/or use in a dissertation.

Requirements for the Certificate in the Study of Women, Gender and Sexuality

The Certificate in Women, Gender and Sexuality is a graduate certificate. For general university requirements, please see Graduate Certificates (p. 53).

Students pursuing the Certificate in the Study of Women, Gender and Sexuality must complete:

- A minimum of 3 courses (9 credit hours) to satisfy certificate requirements
- A minimum of 4 semesters of participation in the SWGS Department Annual Colloquium\textsuperscript{1,3}
- A dissertation (for the PhD program in which they have been admitted) that in some way features the study of women, gender and/or sexuality\textsuperscript{2,3}
- All required coursework associated with the student's corresponding degree program.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferment of the student's Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate's academic advisor (or official certifier).

Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
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<td>SWGS 501</td>
<td>FEMINIST DEBATES</td>
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<td>SWGS 502</td>
<td>GENDER, THE DISCIPLINES, AND INTERDISCIPLINARITY</td>
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Elective Requirement

Select 1 from the following:

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<td>SWGS 517 / ENGL 517</td>
<td>MEDIEVAL WOMEN WRITERS</td>
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<td>SWGS 520 / ENGL 520</td>
<td>SHAKESPEARE AND DIFFERENCE</td>
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<td>SWGS 522</td>
<td>FEMINIST ECONOMICS</td>
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<td>SWGS 525 / ANTH 525</td>
<td>SEX, SELF, AND SOCIETY IN ANCIENT GREECE</td>
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<td>SWGS 542 / ENGL 542</td>
<td>VICTORIAN FICTION</td>
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<td>SWGS 545 / HIST 545</td>
<td>WOMEN AND GENDER: EUROPE AND BEYOND</td>
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<td>SWGS 546 / ENGL 546</td>
<td>SPECIAL TOPICS: 20TH CENTURY BRITISH LITERATURE</td>
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<td>SWGS 556 / LING 556</td>
<td>SEMINAR IN SOCIOLINGUISTICS</td>
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<td>SWGS 577 / RELI 577</td>
<td>THE KNOWING BODY: BUDDHISM, GENDER, AND THE SOCIAL WORLD</td>
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<td>SWGS 580</td>
<td>SEXUALITY, SANCTITY, AND PSYCHOANALYSIS</td>
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<tr>
<td>SWGS 581 / ENGL 581</td>
<td>CULTURAL STUDIES: CONTEMPORARY LITERATURE, CULTURE AND POLITICS</td>
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<td>SWGS 585 / ENGL 585</td>
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Total Credit Hours

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<td>Elective Requirement</td>
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</table>

Annual Colloquium (minimum of 4 semesters)\textsuperscript{1}

Total Credit Hours

| 9 |
Footnotes and Additional Information

1 The Annual Colloquium requirement is met by attending a series of colloquium seminars and associated public lectures offered by the Center for the Study of Women, Gender and Sexuality (CSWGS) over the course of a year, for a total of four (4) semesters. Generally students complete this requirement within two (2) years of study. It is recommended, though not required, that students attend the Annual Colloquium beyond the minimum requirements. For more information about the Annual Colloquium, see the Opportunities tab.

2 CSWGS must verify that a student’s dissertation (for the PhD program in which they have been admitted) in some way features the study of women, gender and/or sexuality. Students are strongly encouraged to include a member of the SWGS faculty on their dissertation committee and to consult regularly with the faculty member as they pursue their dissertation work.

3 The participation in the SWGS Department Annual Colloquium and the dissertation that in some way features the study of women, gender, and/or sexuality together comprise the experiential learning opportunity requirement for the WGS certificate.

Opportunities for the Certificate in the Study of Women, Gender and Sexuality

Program Restrictions and Exclusions

Students pursuing this certificate should be aware of the following program restriction:

- Graduate students may declare their intent to pursue a university certificate only after they have first been admitted into a graduate-level Rice degree-granting program.

Dissertation Work

Students pursuing the Certificate in the Study of Women, Gender and Sexuality are strongly encouraged to include a member of the SWGS faculty on their dissertation committee and to consult regularly with the faculty member as they pursue their dissertation work.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

For additional information, please see the Center for the Study of Women, Gender and Sexuality website: https://cswgs.rice.edu/
The professional master's degree in Subsurface Geoscience is designed for students who wish to become proficient in applying geological knowledge and geophysical methods to finding and developing reserves of oil and natural gas.

Students can specialize in 2 focus areas: 1) geology or 2) geophysics.

- The geology focus area prepares students to be explorationists, with strong skills in using seismic and other geophysical methods along with geological principles to find oil and natural gas.
- The geophysics focus area prepares students to become technical experts in aspects of exploration seismology.

This degree is 1 of 5 degrees in the professional science master's (PSM) program at Rice housed in the Wiess School of Natural Sciences. These master's degrees are designed for students seeking to gain further scientific core expertise coupled with enhanced management and communication skills. These degrees instill a level of scholastic proficiency that exceeds that of the bachelor's level, and they create the cross-functional aptitudes needed in modern industry. This program will allow students to move more easily into management careers in consulting or research and development, design, and/or marketing within oil-and gas-related industries.

A coordinated MBA/MSSG degree is offered in conjunction with the Jesse H. Jones Graduate School of Business.

Subsurface Geoscience does not currently offer an academic program at the undergraduate level.

**Master’s Program**
- Master of Science in Subsurface Geoscience (MSSG) Degree (p. 728)

**Coordinated Program**
- Master of Business Administration (MBA) Degree / Master of Science in Subsurface Geoscience (MSSG) Degree (p. 727)

**Director**
André W. Droxler

**Professors**
John B. Anderson
Gerald R. Dickens
Alan Levander
Julia Morgan
Fenglin Niu
Dale S. Sawyer
Colin A. Zelt

**Associate Professors**
Helge Gonnerman

**Assistant Professors**
Jeff Nittrouer

**Adjunct Faculty**
Vitor Abreu
Gary Gray

Mitch Harris
Malcom Ross
Erik Scott

**Description and Code Legend**

*Note: Internally the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:*

**Course Catalog/Schedule**
- Course offerings/subject codes: Courses from various subjects may apply toward the graduate degree.

**Program Description and Code**
- Earth Science: EEPS

**Undergraduate Degree Description and Code**
- Master of Science in Subsurface Geoscience degree: MSSG

**Undergraduate Degree Program Description and Code**
- Degree Program in Bioscience and Health Policy: Sgeo

**Master of Business Administration (MBA) Degree / Master of Science in Subsurface Geoscience (MSSG) Degree**

**Program Learning Outcomes for the MBA/MSSG Coordinated Degree Program**
Upon completing the MBA/MSSG Coordinated Degree Program, students will:

1. Become proficient in applying geological and geophysical knowledge and methods.
2. Demonstrate an understanding and application of the foundational frameworks and tools of all business disciplines, including accounting, finance, marketing, organizational behavior, and strategic management.
3. Develop, evaluate, and implement business strategies and operational solutions holistically, effectively integrating management principles across the functional areas both as a leader and a contributor.

**Requirements for the MBA/MSSG Coordinated Degree Program**
Students may earn a Master of Science degree from the Weiss School of Natural Sciences Professional Science Master’s (PSM) program in the following fields:

- Bioscience and Health Policy
- Environmental Analysis and Decision Making
- Nanoscale Science
- Space Studies
- Subsurface Geoscience

For the coordinated MBA/Master of Science degree from the professional master’s program, students must complete:
Master of Science in Subsurface Geoscience (MSSG) Degree

Program Learning Outcomes for the MSSG Degree

Upon completing the MSSG degree, students will be able to:

1. Become proficient in applying geological and geophysical knowledge and methods.
2. Develop business and management skills, and obtain practical skills valuable to the energy industry.
3. Develop written, oral, and visual communication skills to bridge the gap between science and business.

Requirements for the MSSG Degree

The MSSG degree is a non-thesis master's degree. For general university requirements for non-thesis masters degrees, please see Non-Thesis Master's Degrees (p. 66). Students pursuing the MSSG degree must complete:

- A minimum of 14 courses (39-41 credit hours) to satisfy degree requirements.
- A 3-6 month internship. Instead of a thesis, students must present their internship project in both oral and written form in the Professional Master's Seminar. Part-time students who already work in their area of study may fulfill the internship requirement by working on an approved project with their current employer.

- The requirements for one area of specialization (see below for areas of specializations). The MSSG degree offers two areas of specialization:
  - Geology (p. 728), or
  - Geophysics (p. 729)

- A minimum of 30 credit hours at the 500-level or above.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the PSM (Professional Science Masters) program director and the MSSG advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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Degree Requirements

Core Requirements

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<td>NSCI 501</td>
<td>PROFESSIONAL MASTER'S SEMINAR (required for 2 semesters, spring semester)</td>
<td>1</td>
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<tr>
<td>NSCI 511</td>
<td>SCIENCE POLICY, AND ETHICS</td>
<td>3</td>
</tr>
<tr>
<td>NSCI 512</td>
<td>PROFESSIONAL MASTER'S PROJECT</td>
<td>1</td>
</tr>
<tr>
<td>NSCI 610 / ENGI 610</td>
<td>MANAGEMENT FOR SCIENCE AND ENGINEERING</td>
<td>3</td>
</tr>
</tbody>
</table>

Three to Six Month Internship

Practical experience is offered via a 3 to 6 month work immersion.

Area of Specialization

Select 1 of the following area of specializations (see below for areas of specialization):

- Geology Specialization
- Geophysics Specialization

Total Credit Hours: 39-41

Footnotes and Additional Information

1. A 3 to 6 month internship under the guidance of a host company, government agency or national laboratory is required. At the conclusion of this internship, students must present their internship project in both oral and written form as part of the NSCI 512 Professional Master's Project Cohort Course.

Area of Specialization: Geology

Students must complete a total of 10 courses (30-32 credit hours depending on course selection) to satisfy the requirements for the MSSG degree program's Geology area of specialization.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 334</td>
<td>GEOLOGICAL TECHNIQUES</td>
<td>21-22</td>
</tr>
<tr>
<td>Course Code</td>
<td>Title</td>
<td>Credit Hours</td>
</tr>
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</tr>
<tr>
<td>ESCL 504</td>
<td>SILICICLASTIC DEPOSITIONAL SYSTEMS</td>
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<tr>
<td>ESCL 506</td>
<td>CARBONATE DEPOSITIONAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>ESCL 507</td>
<td>APPLIED SEDIMENTOLOGY II</td>
<td>3</td>
</tr>
<tr>
<td>ESCL 527</td>
<td>SEMINAR: QUANTITATIVE PETROLEUM SYSTEMS ANALYSIS</td>
<td>2</td>
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<tr>
<td>ESCL 544</td>
<td>HYDROCARBON EXPLORATION</td>
<td>3</td>
</tr>
<tr>
<td>ESCL 550</td>
<td>MODERN EXPLORATION TECHNOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>ESCL 558</td>
<td>3D SEISMIC REFLECTION DATA INTERPRETATION</td>
<td>3</td>
</tr>
<tr>
<td>ESCL 564</td>
<td>SEISMIC REFLECTION DATA PROCESS</td>
<td>3</td>
</tr>
<tr>
<td>ESCL 567</td>
<td>UNCONVENTIONAL ENERGY EXPLORATION</td>
<td>3</td>
</tr>
<tr>
<td>ESCL 652</td>
<td>GIS FOR SCIENTISTS AND ENGINEERS</td>
<td>3</td>
</tr>
<tr>
<td>ESCL 663</td>
<td>STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS</td>
<td>3</td>
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</table>

Total Credit Hours: 30-31

**Elective Requirements**

Select 3 (minimum of 9 credit hours) from the following (see also Additional Electives course list below):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCL 334</td>
<td>GEOLOGICAL TECHNIQUES</td>
<td>3</td>
</tr>
<tr>
<td>ESCL 504</td>
<td>SILICICLASTIC DEPOSITIONAL SYSTEMS</td>
<td>3</td>
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<tr>
<td>ESCL 506</td>
<td>CARBONATE DEPOSITIONAL SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>ESCL 544</td>
<td>HYDROCARBON EXPLORATION</td>
<td>3</td>
</tr>
<tr>
<td>ESCL 545</td>
<td>HYDROCARBON SYSTEMS ANALYSIS</td>
<td>3</td>
</tr>
<tr>
<td>ESCL 627</td>
<td>SEQUENCE STRATIGRAPHY</td>
<td>3</td>
</tr>
<tr>
<td>ESCL 652</td>
<td>GIS FOR SCIENTISTS AND ENGINEERS</td>
<td>3</td>
</tr>
<tr>
<td>ESCL 663</td>
<td>STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 609</td>
<td>MANAGING ENERGY TRANSITIONS</td>
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</tr>
<tr>
<td>MGMT 610</td>
<td>FUNDAMENTALS OF THE ENERGY INDUSTRY</td>
<td>3</td>
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</tbody>
</table>

Total Credit Hours: 30-31

**Additional Electives for Both Specializations**

The following courses are additional electives that can be used to satisfy the requirements in both specializations:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAAM 378</td>
<td>INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION</td>
<td>3</td>
</tr>
<tr>
<td>CEVE 528 /</td>
<td>ENGINEERING ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>ENGI 528</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMP 556 /</td>
<td>INTRODUCTION TO COMPUTER NETWORKS</td>
<td>4</td>
</tr>
<tr>
<td>ELEC 556</td>
<td></td>
<td></td>
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<tr>
<td>ECON 601</td>
<td>ENERGY ECONOMICS I</td>
<td>4</td>
</tr>
<tr>
<td>ESCI 652</td>
<td>GIS FOR SCIENTISTS AND ENGINEERS</td>
<td>3</td>
</tr>
<tr>
<td>GLBL 543</td>
<td>ENERGY POLICY</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 611</td>
<td>GEOPOLITICS OF ENERGY</td>
<td>1.5</td>
</tr>
<tr>
<td>MGMT 661</td>
<td>INTERNATIONAL BUSINESS LAW</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 670</td>
<td>OPERATIONS STRATEGY</td>
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</tr>
<tr>
<td>MGMT 676</td>
<td>SOCIAL ENTERPRISE</td>
<td>1.5</td>
</tr>
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<td>STAT 518</td>
<td>PROBABILITY</td>
<td>3</td>
</tr>
<tr>
<td>STAT 615</td>
<td>REGRESSION AND LINEAR MODELS</td>
<td>3</td>
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</tbody>
</table>

**Footnotes and Additional Information**

1. Substitutions for required or elective courses may be approved by the Track Advisor.
2. Taught at the University of Houston campus.

**Area of Specialization: Geophysics**

Students must complete a total of 10 courses (30-31 credit hours depending on course selection) to satisfy the requirements for the MSSG degree program's Geophysics area of specialization.

**Policies for the MSSG Degree**

**Subsurface Geoscience Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Subsurface Geoscience publishes a graduate program handbook, which can be found here:


**Admission**

Admission to graduate study in subsurface geoscience is open to qualified students holding a bachelor's degree in a related science that includes coursework in geoscience, general chemistry, physics, calculus,
and differential equations. Department faculty evaluate the previous academic record and credentials of each applicant individually.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

For additional information, please see the Subsurface Geoscience website: https://profms.rice.edu/

Opportunities for the MSSG Degree
Fifth-Year MSSG Degree Option for Rice Undergraduate Students
Rice undergraduate students have an option to pursue the MSSG degree by adding an additional fifth year to their four undergraduate years of science studies. Advanced Rice undergraduate students in good academic standing may apply to the graduate program during their junior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking required core courses of the Subsurface Geoscience program during their senior year. A plan of study based on their particular focus area will need to be approved by the PSM (Professional Science Masters) program director and the MSSG advisor.

As part of this option and opportunity, Rice undergraduate students:

• must complete the requirements for their bachelor’s degree and the MSSG degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
• should be aware that there could be financial aid implications, if the conversion of undergraduate coursework to that of graduate-level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).

For additional information, please see the Subsurface Geoscience website: https://profms.rice.edu/

Systems, Synthetic and Physical Biology
Contact Information
Systems, Synthetic and Physical Biology
http://sspb.rice.edu/
170 BioScience Research Collaborative
713-348-5961

Jonathan (Joff) Silberg
Program Director
joff@rice.edu

Systems, Synthetic and Physical Biology (SSPB) is a new discipline that draws upon principles from physics, chemistry, engineering, and mathematics and integrates experimental biochemical, cell biological, and molecular genetics approaches with computational design, simulation, and modeling to anticipate the properties of complex and multiscale biological systems. The Graduate Program in SSPB represents a cooperative effort by faculty in the schools of Natural Sciences and the Engineering to provide training in this highly interdisciplinary field. This program is overseen by the Institute of Biosciences and Bioengineering (IBB) and overseen by an executive committee composed of members from any of the participating departments.

The interdisciplinary nature of the SSPB program allows students to achieve their graduate degree requirements by taking select classes from any of the participating departments and performing their dissertation research under supervision of any faculty associated with the program.

Systems, Synthetic, and Physical Biology does not currently offer an academic program at the undergraduate level.

Master's Program
• Master of Science (MS) Degree in the field of Systems, Synthetic, and Physical Biology*

Doctoral Program
• Doctor of Philosophy (PhD) Degree in the field of Systems, Synthetic, and Physical Biology (p. 731)
• Although students are not normally admitted to a Master of Science (MS) degree program, graduate students may earn the MS as they work towards the PhD.

Director
Jonathan (Joff) Silberg, BioSciences

Professors
Pedro Alvarez, Civil and Environmental Engineering
Gang Bao, Bioengineering
George N. Bennett, BioSciences
Cecilia Clementi, Chemistry
Michael Deem, Bioengineering
Ramon Gonzalez, Chemical and Biomolecular Engineering
Lydia E. Kavraki, Computational and Applied Mathematics
Marek Kimmel, Statistics
Anatoly B. Kolomeisky, Chemistry
Christy Landes, Chemistry
Herbert Levine, Bioengineering
Jianpeng Ma, Bioengineering
Fred Mackintosh, Chemical and Biomolecular
Jose Onuchic, Physics and Astronomy
George Phillips, BioSciences
Susan Rosenberg, Biochemistry & Cell Biology
Ka-Yiu San, Bioengineering
Yousif Shamoo, Bioengineering
Peter G. Wolynes, Chemistry

Associate Professors
Matthew R. Bennett, BioSciences
Michael Diehl, Bioengineering
Ido Golding, Bioengineering
Oleg A. Igoshin, Bioengineering
Ching-Hwa Kiang, Physics and Astronomy
Michael Kohn, BioSciences
Christy Landes, Chemistry
Luay K. Nakhle, Computational and Applied Mathematics
Robert Raphael, Bioengineering
Laura Segatori, Chemical and Biomolecular Engineering

2017-2018 General Announcements
Assistant Professors
Junghae Suh, Bioengineering
Jeffrey J. Tabor, Bioengineering
Caleb Bashor, Bioengineering
James Chappell, BioSciences
Sherry Xue Gao, Chemical and Biomedical Engineering
Isaac Hilton, Bioengineering
Natasha Kirienko, BioSciences
Xaq Pitkow, Electrical and Computer Engineering
Amina A. Qutub, Bioengineering
Jacob Robinson, Electrical and Computer Engineering
François St-Pierre, Electrical and Computer Engineering
Lauren Stadler, Civil and Environmental Engineering
Jeffrey J. Tabor, Bioengineering
Aryeh Warmflash, BioSciences
Han Xiao, Chemistry
David Y. Zhang, Bioengineering
Weiwei Zhong, BioSciences

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject codes: Courses from various subjects may apply toward this program

Program Description and Code
• Systems, Synthetic, and Physical Biology: SSPB

Graduate Degree Descriptions and Codes
• Master of Science degree: MS
• Doctor of Philosophy degree: PhD

Graduate Degree Program Description and Code
• Degree Program in Systems, Synthetic and Physical Biology: SSPB

Doctor of Philosophy (PhD) Degree in the field of Systems, Synthetic and Physical Biology

Program Learning Outcomes for MS and PhD Degrees in the field of Systems, Synthetic and Physical Biology

Upon completing the MS and PhD degrees in the field of Systems, Synthetic and Physical Biology, students graduating will:

1. Develop knowledge of the breadth of topics within Science, Technology, Engineering and Mathematics (STEM) disciplines that underlie the foundations of Systems, Synthetic and Physical Biology.
2. Demonstrate the critical thinking skills and ability to integrate knowledge from diverse STEM fields to solve biological problems.
3. Demonstrate the written communication skills required for a thesis describing independent research, published research, and external research proposals.
4. Demonstrate the effective oral and visual communication skills necessary for articulating scientific findings and significance to diverse audiences.

Requirements for the MS and PhD Degrees in the field of Systems, Synthetic and Physical Biology

For general university requirements, please see Doctoral Degrees (p. 64). The Graduate Program in SSPB offers Master’s and Doctoral degrees. Students will be directly admitted only to the Doctoral program. For each degree, the student must fulfill the university requirements set forth in the General Announcements under which he or she entered. The semester credit hour requirements may be fulfilled both by classroom hours and research hours. Students are required to accumulate at least 25 semester hours of graduate approved courses while maintaining a GPA of 3.0 or higher. Students must be enrolled for at least 12 credits each semester.

Summary

Total Credit Hours Required for the PhD Degree in the field of Systems, Synthetic and Physical Biology

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<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
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</table>

Degree Requirements

Required Courses for the PhD in the field of Systems, Synthetic and Physical Biology

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>SSPB 501 / BIOE 502</td>
<td>PHYSICAL BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>SSPB 502 / BIOE 552</td>
<td>INTRO COMPUTATIONAL SYSTEMS BIOLOGY: MODELING &amp; DESIGN PRINCIPLES OF BIOCHEM NETWORKS</td>
<td>3</td>
</tr>
<tr>
<td>SSPB 503 / BIOE 508</td>
<td>SYNTHETIC BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>UNIV 594</td>
<td>RESPONSIBLE CONDUCT OF RESEARCH</td>
<td>1</td>
</tr>
<tr>
<td>SSPB 599</td>
<td>GRADUATE TEACHING IN SSPB</td>
<td>1</td>
</tr>
</tbody>
</table>

Advanced Topics

Select at least 3 courses from approved Advanced Topics in the SSPB field

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
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Seminars

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<tr>
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<th>Title</th>
<th>Minimum of 4 credit hours</th>
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<tr>
<td>SSPB 550</td>
<td>GRADUATE SEMINAR (each semester of their first two years)</td>
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Elective Requirements

Select 2 open elective courses

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</table>

Additional Credit Hours as Defined by Department

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<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td>64</td>
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</tbody>
</table>

Total Credit Hours

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>90</td>
</tr>
</tbody>
</table>

Footnotes and Additional Information

1 All students are required to complete UNIV 594 during their first semester, and credit earned for UNIV 594 does not apply toward the minimum of 24 credit hours in coursework requirement for the degree.
Courses are subject to approval by the Graduate Advising Committee (GAC). It is recommended that at least one of the courses in advanced topics apply quantitative concepts from computer science, physics, and mathematics or statistics to biological problems, and at least one of the courses focus on biology within the sub-area where students pursue their dissertation research.

Other Program Requirements (MS students)
The MS degree is a thesis master’s degree. For general university requirements, please see Thesis Master’s Degrees (p. 67). All students involved in research must complete the Collaborative Institutional Training Initiative (CITI) Responsible Conduct of Research online course. Candidates for the MS degree also must:

- Choose an advisor (PI) by the end of the first semester
- Fulfill a teaching requirement
- Submit an original research thesis
- Complete 30 semester hours of study (including thesis research hours)
- Defend the thesis in a public oral examination.

Other Program Requirements (PhD students)
All students involved in research must complete the Collaborative Institutional Training Initiative (CITI) Responsible Conduct of Research online course. Candidates for the PhD degree also must:

- Choose an advisor (PI) by the end of the first semester or equivalent
- Fulfill a teaching requirement
- Submit a thesis proposal that provides evidence of their ability to carry out original research in a specialized area of Systems, Synthetic and Physical Biology before the beginning of their fifth semester in residence
- Complete 90 semester hours of advanced study (including thesis research hours)
- Pass their qualifying exam which includes thesis proposal defense
- Defend the PhD thesis in a public oral examination.

Qualifying Exam (PhD students)
Students are expected to pass their qualifying exam before the beginning of their fifth semester in residence unless an extension has been granted by the Program Director. Students may retake the exam up to two times if granted permission to do so by the Program Director. Students who do not pass the Qualifying Exam may exit the program with a MS degree if the appropriate requirements have been met.

Thesis Proposal Defense
Students are required to submit their written proposal to their Research Progress Committee no later than two weeks before the scheduled exam. The proposal is expected to be in NIH NRSA-like format - limited to 10 pages (not including References) and include the following sections: Abstract, Background, Problem Statement, Research Plan, Preliminary Results, References, and Proposed Timeline. Students whose research area may not be suitable for this format may seek approval of an alternative format by their Research Progress Committee. On the day of the defense, students are expected to give an oral presentation of their proposal and answer technical questions. The student should expect to give a presentation, which if uninterrupted would last about 45 minutes, and be prepared for substantial questioning by the Research Progress Committee.

Policies for the MS and PhD Degrees in the field of Systems, Synthetic and Physical Biology

Systems, Synthetic and Physical Biology Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Systems, Synthetic and Physical Biology publishes a graduate program handbook, which can be found here: [http://gradhandbooks.rice.edu/2017_18/Systems_Synthetic_Physical_Biology_Graduate_Handbook.pdf](http://gradhandbooks.rice.edu/2017_18/Systems_Synthetic_Physical_Biology_Graduate_Handbook.pdf)

Admission
Applicants for graduate study in Systems, Synthetic and Physical Biology must have:

- BA or BS degree in natural sciences, engineering, or related field (or some equivalent)
- Strong ability and motivation for research as indicated by academic record, Graduate Record Examination (GRE) scores, and recommendations

Although the program offers an MS degree, only students who intend to pursue the PhD degree are admitted into the program. In rare instances, students who fulfilled the MS degree requirements and who do not wish to continue their studies toward their PhD degree may choose to graduate with MS degree. Information on admission to the program is available on the SSPB website ([http://sspb.rice.edu/admissions](http://sspb.rice.edu/admissions)).

Prerequisite Requirements
Students are required to have training in the following 5 foundation areas:

1. Molecular Biology (Introductory Biology class, and at least 1 upper-level biology class such as Cell Biology, Genetics, or Biophysics)
2. Biochemical Reaction Kinetics (Biochemistry, Bioreaction Engineering, or equivalent)
3. Physical Chemistry or Thermodynamics or Statistical Mechanics
4. Ordinary Differential Equations
5. Statistics

If students are missing formal training in these subjects, they are required to take the equivalent background courses during their first year at Rice (no more than 1 of these classes can be taken as Pass/Fail). The corresponding courses at Rice include the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOC 341</td>
<td>CELL BIOLOGY</td>
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<tr>
<td>Select 1 from the following:</td>
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<tr>
<td>BIOC 301</td>
<td>BIOCHEMISTRY I</td>
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</tr>
<tr>
<td>BIOE 330</td>
<td>BIOREACTION ENGINEERING</td>
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<td>Select 1 from the following:</td>
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<tr>
<td>BIOC 352</td>
<td>PHYSICAL CHEMISTRY FOR THE BIOSCIENCES</td>
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<tr>
<td>BIOE 332</td>
<td>BIOENGINEERING THERMODYNAMICS</td>
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<tr>
<td>CHEM 311</td>
<td>PHYSICAL CHEMISTRY I</td>
<td></td>
</tr>
<tr>
<td>PHYS 425</td>
<td>STATISTICAL &amp; THERMAL PHYSICS</td>
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Select 1 from the following:

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<th>Course</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA</td>
</tr>
<tr>
<td>CAAM 336</td>
<td>DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING</td>
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Select 1 from the following:

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<tr>
<th>Course</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>BIE 439</td>
<td>APPLIED STATISTICS FOR BIOENGINEERING AND BIOTECHNOLOGY</td>
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<tr>
<td>STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
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<td>STAT 310</td>
<td>PROBABILITY AND STATISTICS</td>
</tr>
</tbody>
</table>

For additional information, please see the Systems, Synthetic and Physical Biology website: [http://sspb.rice.edu/](http://sspb.rice.edu/)

**Opportunities for the MS and PhD Degrees in the field of Systems, Synthetic and Physical Biology**

For additional information, please see the Systems, Synthetic and Physical Biology website: [http://sspb.rice.edu/](http://sspb.rice.edu/)

**Teacher Education**

**Contact Information**

Teacher Education  
http://teach.rice.edu/  
17 Herman Brown Hall  
713-348-4826

Judy Radigan  
Program Director  
jradian@rice.edu

Teacher Education courses are open to Rice students studying for careers in teaching and to Rice students interested in studying the complexities of the educational system and its role in society. The program provides fieldwork grounded in education research and theory. All of the courses include field-based experiences that encourage students to compare and apply their theoretical work to what is actually happening in schools. Our 21st century mission is to prepare and support teacher leaders to work with diverse students and be responsive to the paradigm shift in education that moves us from teaching academic content to teaching skills and strategies that foster lifelong learning.

The teacher education program engages, prepares, and supports its leaders for student-centered classrooms in a diverse society. The program emphasizes the value of equity in education and the political and educational policies that should undergird that equity. Students acquire a strong foundation in educational leadership, assessment, classroom culture, instructional strategies, literacy across the curriculum, and human developmental processes. All students will implement culturally relevant content and pedagogy in working with English language and diverse learners as this program acknowledges the changing face of Houston and the nation.

Rice offers four teacher education plans:

1. a program leading to the state of Texas teacher certification in combination with the undergraduate degree in the elected subject field(s), including notation of that Texas Teacher Certificate on the recipient’s Rice academic transcript,
2. a Master of Arts in Teaching (MAT) that can be completed concurrently with a Rice bachelor's degree with generally one additional year of study,
3. a Master of Arts in Teaching (MAT) for pre-service, and
4. a Master of Arts in Teaching (MAT) for experienced teachers with an optional route to principal certification.

The Rice teacher education program balances academic integrity with Texas Education Agency compliance. Students seeking additional information about the teacher education program are encouraged to meet with an advisor in Teacher Education.

**Texas Teaching Credentials (the Texas Teacher Certificate)**

Rice is approved by the State of Texas to offer teacher preparation programs in the following fields: art, English language arts and reading, history, Latin, life sciences, mathematics, physical sciences, physics/mathematics, science, social studies, Spanish, and principalship.

After satisfactory completion of the Rice teacher education program, which includes the state-mandated examinations for teachers, students are recommended for a Texas teaching credential. The Texas Education Agency then awards a Texas Teacher Certificate (Grades 7–12) or Principal Certificate.

**Higher Education Act Title II Reports**

The Higher Education Act (HEA) of the U.S. Congress requires each institution of higher education with a teacher preparation program that enrolls students receiving federal assistance under this act to report annually "to the State and the general public" certain information. This information includes the pass rate of their program completers on assessments required by the state for teacher licensure or certification, the statewide pass rate on those assessments and other basic information on their teacher preparation program.

Rice University's Education program is accredited by the state of Texas. The first year pass rate for program completers on assessments required by the state for 2015-2016 was 100%, compared with 95% for the overall state pass rate. Fifteen students were enrolled in the program in 2015-2016. Student teachers spent an average of 40 hours per week in supervised student teaching with a student/faculty ratio of 1.25-to-1.

Rice teacher education program graduates are regularly recruited by school districts in Houston and the surrounding areas because of their innovative ideas, content knowledge, expertise, leadership abilities, and dedication to the teaching profession.

**Texas Teacher Certification for Rice Undergraduates**

The Teacher Education Program does not currently offer an academic major at the undergraduate level, however, the following lists a description of the Texas Teacher Certification program.

For general university requirements, see Graduation Requirements (p. 25). The Rice University Teacher Education Program seeks to engage, prepare, and support teacher leaders for student-centered classrooms in a diverse society. While Rice does not award a formal certificate for
teacher education, Rice University Teacher Education does offer a plan to current Rice degree-seeking undergraduate students. The plan fulfills all requirements for Texas Teacher Certification for grades 7-12. Upon completion of the Teacher Education program, all undergraduate degree requirements, and certification by the State of Texas, Rice students will receive an acknowledgement and formal notation of their Texas teacher certification on their Rice academic transcript.

Undergraduate students participating in the Teacher Education program, who wish to obtain Texas Teacher Certification must complete:

- A minimum of 30 credit hours to satisfy the Texas Teacher Certificate requirements. Students must meet with a Teacher Education Program advisor to develop a course of study.
- Complete all university and major requirements for a bachelor's degree.
- Complete all courses in teaching field and education with a C+ or better.
- Complete the content courses specified by the certification field advisor(s). Lists of courses for each subject are available online and in the Teacher Education office.
- Complete 75 hours of field-based experience in local secondary schools, in conjunction with satisfactory results on background check with participating school districts.

In addition, undergraduate students in this program must satisfy the following requirements:

- Students must begin two-semester work in assigned school with first semester curriculum development and theory and methods courses and a second semester full-day practicum with a cooperating teacher (EDUC 421, EDUC 460-EDUC 466, and EDUC 467).
- Students must pass appropriate TExES exams.
- Students must apply with the appropriate (Texas) state agency for Texas Teacher Certification when all requirements are completed.

Professional Education Courses
The following courses fulfill requirements for Texas Teacher Certification. For additional information regarding requirements, students should contact the Teacher Education Program. (http://teach.rice.edu/texas-teacher-certification-rice-undergraduates)

<table>
<thead>
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<th>Title</th>
<th>Credit Hours</th>
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<td>EDUC 305</td>
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<td>EDUC 316</td>
<td>ASSESSMENT</td>
<td>3</td>
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<tr>
<td>EDUC 319</td>
<td>TEACHING AND LEARNING WITH INQUIRY</td>
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<td>EDUC 320</td>
<td>TEACHING DIVERSE LEARNERS</td>
<td>3</td>
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<td>HIST 421</td>
<td>RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH</td>
<td>3</td>
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<tr>
<td>or EDUC 304</td>
<td>RACE, CLASS, GENDER IN EDUCATION</td>
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<td>EDUC 421</td>
<td>CURRICULUM DEVELOPMENT</td>
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<td>LITERACY ACROSS THE CURRICULUM</td>
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<td>THEORY AND METHODS: ART</td>
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<td>EDUC 461</td>
<td>THEORY AND METHODS: ENGLISH LANGUAGE ARTS &amp; READING (ELAR)</td>
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<td>EDUC 462</td>
<td>THEORY AND METHODS: LOTE</td>
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<td>EDUC 463</td>
<td>THEORY AND METHODS: MATHEMATICS</td>
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<td>EDUC 465</td>
<td>THEORY AND METHODS: SCIENCE</td>
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<tr>
<td>EDUC 466</td>
<td>THEORY AND METHODS: SOCIAL STUDIES</td>
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</tr>
<tr>
<td>EDUC 467</td>
<td>PRACTICUM FOR PRESERVICE TEACHERS</td>
<td>6</td>
</tr>
</tbody>
</table>

Total Credit Hours 30

Admission
Rice students may apply for admission to the Rice University Teacher Education program if they show:

- Attainment of sophomore standing at Rice University.
- Grades of C+ or better in all semester hours for the teaching field and a grade point average of 2.5 or better, both in courses for the teaching field and overall.
- Evidence of adequate physical vigor and speech to perform as a teacher in a classroom.

A completed plan of study approved by a department advisor and the major field advisor is required before completion of the Teacher Education program. Once completed, and after completion of the student's Rice undergraduate degree requirements, and certification by the State of Texas, an acknowledgement and formal notation of the student's Texas teacher certification will be made on their Rice academic transcript.

Master's Program
- Master of Arts in Teaching (MAT) Degree (p. 735)

Associate Dean
Jennifer Gigliotti

Director
Judy Radigan

Professor
Linda M. McNeil

Lecturers
Margie Crawford
Shelah Crear
Scott Hochberg
Robert Lundin
Angela Rabuck
Judy Radigan
Thomas Schanding
Sheila Whitford

Adjunct Professor
Roland B. Smith, Jr.

Description and Code Legend
*Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:
Program Description and Code
• Education: EDUC

Graduate Degree Description and Code
• Master of Arts in Teaching degree: MAT

Graduate Degree Program Description and Code
• Degree Program in Education: EDUC

Master of Arts in Teaching (MAT) Degree

Program Learning Outcomes for the MAT Degree
Upon completing the requirements for the MAT degree, students will be able to:

1. Create environments where students discover and construct meaning from content (using classroom students’ unique perceptions, thoughts, and feelings).
2. Facilitate teaching strategies for diverse learners.
3. Assess students’ progress and content mastery to guide instruction.
5. Demonstrate instructional and organizational leadership.

Requirements for the MAT Degree
The MAT degree is a non-thesis masters degree. For general university requirements, please see Non-Thesis Master’s Degrees (p. 66). Students pursuing the MAT degree must complete:

• A minimum of 36 credit hours at the 500-level or above to satisfy degree requirements.
• All courses with a grade of B- (2.67 grade points) or better to receive credit.

The MAT is a non-thesis degree program for students who want to qualify for secondary school teaching following a bachelor’s degree. Most candidates entering the program have had no professional education courses. By completing the program, candidates fulfill all requirements for a Texas Standard Teaching Certificate for grades 7–12. The specific requirements for the Texas Standard Teaching Certificate are listed below.

• Complete 75 hours of field-based experience in local secondary schools, in conjunction with satisfactory results on background check with participating school districts.
• Make grades of B- or better in all teaching field and education courses.
• Pass appropriate TExES exams.
• Apply for Texas State certification when all requirements are completed.

The cooperating school districts pay a regular salary for internship teaching.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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Degree Requirements

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<td>RACE, CLASS, GENDER IN EDUCATION or HIST 521</td>
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<td>EDUC 505</td>
<td>EDUCATIONAL PSYCHOLOGY</td>
<td>3</td>
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<tr>
<td>EDUC 516</td>
<td>ASSESSMENT</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 519</td>
<td>TEACHING AND LEARNING WITH INQUIRY</td>
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<td>EDUC 520</td>
<td>TEACHING DIVERSE LEARNERS</td>
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<td>EDUC 521</td>
<td>CURRICULUM DEVELOPMENT</td>
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<td>EDUC 522</td>
<td>LITERACY_across the CURRICULUM</td>
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<td>THEORY AND METHODS: ART</td>
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<td>EDUC 561</td>
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<td>THEORY AND METHODS: LOTE</td>
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<td>EDUC 563</td>
<td>THEORY AND METHODS: MATHEMATICS</td>
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<td>THEORY AND METHODS: SOCIAL STUDIES</td>
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<td>EDUC 567</td>
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<tr>
<td>EDUC 540</td>
<td>SEMINAR FOR FIRST-YEAR TEACHERS (2 semesters total)</td>
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</table>

Total Credit Hours 36

Footnotes and Additional Information

1 At the discretion of the associate dean and academic advisor, some students may require additional courses to address deficiencies prior to seeking Texas State teacher certification.

Requirements for the Master of Arts in Teaching (MAT) Degree, for Experienced Teachers

Students pursuing the Master of Arts in Teaching Degree, for Experienced Teachers, must complete:

• A minimum of 36 credit hours at the 500-level or above to satisfy degree requirements.
This MAT degree program is offered for experienced teachers that have a minimum of 2 years experience teaching. This program offers a route toward principal certification (see below under the "Degree Requirements under Requirements for the Master of Arts in Teaching (MAT) Degree, for Experienced Teachers" listing).

Summary

Code | Title | Credit Hours
--- | --- | ---
EDUC 504 | RACE, CLASS, GENDER IN EDUCATION | 3
or HIST 521 | RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH | 3
EDUC 516 | ASSESSMENT | 3
EDUC 519 | TEACHING AND LEARNING WITH INQUIRY | 3
EDUC 520 | TEACHING DIVERSE LEARNERS | 3
EDUC 522 | LITERACY ACROSS THE CURRICULUM | 3
EDUC 590 | INSTRUCTIONAL LEADERSHIP | 3
EDUC 595 | CAPSTONE (2 semesters total, 1st semester) | 3
EDUC 595 | CAPSTONE (2 semesters total, 2nd semester) | 3

Elective Requirements

Select 4 from the following Professional Education courses or Academic Content Specialization:

EDUC 501 | PHILOSOPHICAL, HISTORICAL, AND SOCIAL FOUNDATIONS OF EDUCATION | 3
EDUC 502 | CONTEMPORARY ISSUES IN EDUCATION | 3
EDUC 505 | EDUCATIONAL PSYCHOLOGY | 3
EDUC 510 | INTRODUCTION TO SPECIAL EDUCATION | 3
EDUC 515 | ADOLESCENT DEVELOPMENT | 3
EDUC 521 | CURRICULUM DEVELOPMENT | 3
EDUC 525 | ADOLESCENT LITERATURE | 3
EDUC 530 | THE AMERICAN HIGH SCHOOL | 3
EDUC 535 | URBAN EDUCATION: ISSUES, POLICY, AND PRACTICE | 3
EDUC 545 | EDUCATIONAL TECHNOLOGIES & DIGITAL LEARNING | 3
EDUC 550 | EDUCATION POLICY: FROM LEGISLATURES TO CLASSROOMS | 3
EDUC 560 | THEORY AND METHODS: ART | 3
EDUC 561 | THEORY AND METHODS: ENGLISH LANGUAGE ARTS & READING (ELAR) | 3
EDUC 562 | THEORY AND METHODS: LOTE | 3
EDUC 563 | THEORY AND METHODS: MATHEMATICS | 3
EDUC 564 | THEORY AND METHODS: PHYSICAL EDUCATION | 3

Total Credit Hours: 36

Requirements for the Master of Arts in Teaching (MAT) Degree, for Experienced Teachers with Principal Certification

Students pursuing the Master of Arts in Teaching Degree, for Experienced Teachers with Principal Certification, must complete:

- A minimum of 36 credit hours at the 500-level or above to satisfy degree requirements.
- All courses with a grade of B- (2.67 grade points) or better to receive credit.

Summary

Code | Title | Credit Hours
--- | --- | ---
EDUC 504 | RACE, CLASS, GENDER IN EDUCATION | 3
or HIST 521 | RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH | 3
EDUC 516 | ASSESSMENT | 3
EDUC 519 | TEACHING AND LEARNING WITH INQUIRY | 3
EDUC 520 | TEACHING DIVERSE LEARNERS | 3
EDUC 522 | LITERACY ACROSS THE CURRICULUM | 3
EDUC 545 | EDUCATIONAL TECHNOLOGIES & DIGITAL LEARNING | 3
EDUC 590 | INSTRUCTIONAL LEADERSHIP | 3
EDUC 596 | ORGANIZATIONAL LEADERSHIP | 3
EDUC 597 | PRACTICUM FOR PRINCIPALS (2 semesters total) | 3

Total Credit Hours: 36

Elective Requirements

Select 2 from the following Professional Education courses:

EDUC 502 | CONTEMPORARY ISSUES IN EDUCATION | 3
EDUC 535 | URBAN EDUCATION: ISSUES, POLICY, AND PRACTICE | 3
EDUC 550 | EDUCATION POLICY: FROM LEGISLATURES TO CLASSROOMS | 3
EDUC 591 | INDEPENDENT STUDY AND RESEARCH | 3

Total Credit Hours: 36
Policies for the MAT Degree

Admission
Applicants must have a bachelor’s degree, scholarly ability, and a commitment to teaching, and they must have taken the Graduate Record Examination (GRE) within 5 years. Specific requirements include:

- Completion of a bachelor's degree before admission to the program.
- Completion of 24 credit hours in a specified content area is required.
- Grades of B- (2.67 grade points) or better in all semester hours attempted in the teaching field and a grade point average of 3.0 or better, both in courses for the teaching field and overall.
- Evidence of adequate physical vigor and speech to perform as a teacher in a classroom.

Education team members review each application. Limited tuition assistance is available. See Admission to Graduate Study (https://graduate.rice.edu/admissions).

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 66). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program’s advisor when considering transfer credit possibilities.

For additional information, please see the Teacher Education website: http://teach.rice.edu/

Opportunities for the MAT Degree

Fifth-Year MAT Degree Option for Rice Undergraduate Students
Rice students have an option to achieve the MAT degree by adding an additional fifth year to the four undergraduate years of study. Advanced Rice students in good academic standing may apply during their junior year to the graduate program. Upon acceptance, depending on course load, financial aid status, and other variables they may then start taking required core courses of the MAT degree during their senior year. A plan of study based on their particular focus area will need to be approved by the program director and the MAT advisor.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for their bachelor’s degree and the MAT degree independently of each other (i.e., no course may counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications, if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 hours).

Requirements for Visiting Post-Baccalaureate (VPB) Certification
A non-degree (Visiting Post-Baccalaureate) plan leading to secondary teacher certification or principal certification is available for those who have earned a BA and/or MA degree, but not do not choose to pursue a Rice University graduate degree. Candidates complete all requirements for secondary teacher certification or principal certification, including professional education courses. Interested students should contact the Teacher Education Program.

For additional information, please see the Teacher Education website: http://teach.rice.edu/

Teaching and Learning

Contact Information
Teaching and Learning
http://cte.rice.edu/
Herring Hall 129
713-348-2929
Joshua Eyler
Program Director
jeyler@rice.edu

The graduate certificate in Teaching and Learning is intended to provide participants with a combination of formal pedagogical training, practical experience, and mentoring that will prepare them to be effective college teachers and instructors. The program is open to any Rice graduate student or postdoctoral scholar in good academic standing.

Teaching and Learning does not currently offer an academic program at the undergraduate level.

Certificate
- Certificate in Teaching and Learning (p. 737)

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
- Course offerings/subject code: UNIV

Center Description and Code
- Rice Center for Teaching Excellence: RCTE

Graduate Certificate Description and Code
- Certificate in Teaching and Learning: TAL

Certificate in Teaching and Learning

Program Learning Outcomes for the Certificate in Teaching and Learning
Upon completing the certificate in Teaching and Learning, students will be able to:

1. Develop an understanding of and explain best practices in teaching and learning.
2. Communicate individual pedagogical values and approaches to teaching and learning.
3. Assess key approaches, methodologies, and trends in the scholarship of teaching and learning.
4. Identify and evaluate pedagogical methods that apply to students’ disciplines and teaching interests.
5. Demonstrate effectiveness as instructors through formal presentations.
6. Situate the role of teaching in higher education and the job market.

Requirements for the Certificate in Teaching and Learning

The Certificate in Women, Gender and Sexuality is a graduate certificate. For general university requirements, please see Graduate Certificates (p. 53).

Students pursuing the certificate in Teaching and Learning must complete:

- A minimum of 4 courses (11 credit hours) to satisfy certificate requirements.
- All required coursework associated with the student’s corresponding degree program.

This certificate is not a freestanding degree program; in addition to fulfilling the certificate requirements outlined below, candidates will be required to complete successfully the degree program to which they have been admitted in order to receive this certificate. Upon completion, the certificate is awarded at the same time as the conferral of the student’s Rice degree, along with a formal notation on their academic transcript.

The courses listed below satisfy the requirements for this certificate. In certain instances, courses not on this official list may be substituted upon approval of the certificate’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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### Certificate Requirements

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<td>UNIV 500</td>
<td>PRINCIPLES OF EFFECTIVE COLLEGE TEACHING</td>
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<tr>
<td>UNIV 501</td>
<td>RESEARCH ON TEACHING AND LEARNING</td>
<td>3</td>
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<td>UNIV 502</td>
<td>PRACTICUM IN COLLEGE TEACHING</td>
<td>3</td>
</tr>
<tr>
<td>UNIV 599</td>
<td>TEACHING PORTFOLIO</td>
<td>2</td>
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</table>

Total Credit Hours: 11

### Footnotes and Additional Information

1. The Teaching Portfolio Course (UNIV 599) comprises the experiential learning opportunity requirement for the TAL certificate.

### Policies for the Certificate in Teaching and Learning

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

#### Program Restrictions and Exclusions

Students pursuing the certificate in Teaching and Learning should be aware of the following program restriction:

- Graduate students may declare their intent to pursue a university certificate only after they have first been admitted into a graduate-level Rice degree-granting program.

For additional information, please see the Teaching and Learning website: [http://cte.rice.edu/](http://cte.rice.edu/)

#### Opportunities for the Certificate in Teaching and Learning

For additional information, please see the Teaching and Learning website: [http://cte.rice.edu/](http://cte.rice.edu/)

### University Courses

University courses provide opportunities for dialogue across disciplinary and departmental boundaries. They are an experiment in curriculum development, directed toward students interested in interdisciplinary subjects beyond their elected major.

University Courses is not a degree-granting academic program at the undergraduate level.

University Courses is not a degree-granting academic program at the graduate level.

### Dean of Undergraduates

John Hutchinson

### Dean of Graduate and Postdoctoral Studies

Seichi Matsuda

### Description and Code Legend

**Note:** Internally, the university uses the following descriptions, codes and abbreviations for this academic program. The following is a quick reference:

### Course Catalog/Schedule

- Course offerings/subject: UNIV

### Visual and Dramatic Arts

#### Contact Information

Visual and Dramatic Arts
[http://arts.rice.edu/](http://arts.rice.edu/)
202 Rice Media Center
713-348-4882

John Sparagana
Department Chair
sparaga@rice.edu
The Department of Visual and Dramatic Arts welcomes the full spectrum of Rice University students. Scientists, architects, historians, engineers and economists, among many others, augment our core of arts majors to create a diverse, lively forum of artists and thinkers. We believe this composite community is a vital asset to majors and non-majors alike: art thrives in contact with new and varied perspectives, and the risk-taking and critical thinking necessary to making art are crucial in many other fields. Beyond a dynamic artistic practice, we aim to cultivate an artistic frame of mind.

Students may focus their education in one of three major concentrations, or tracks: studio, theater, or film and photography. Courses draw on the resources of Rice’s active and accomplished faculty, extensive on-campus facilities, and Houston’s vibrant artistic community. The department boasts a state-of-the-art cinema, as well as a 500-seat proscenium-style theater. Immediately next door, the Moody Center for the Arts hosts interdisciplinary arts courses and mounts exhibitions by internationally acclaimed artists. Rice campus is within walking distance of the Museum of Fine Arts Houston and the Contemporary Arts Museum Houston, and a short drive from the renowned Menil Collection. Distinguished speakers, visiting artists, film series, field trips, student exhibitions and performance opportunities all contribute to an immersive arts education that extends well beyond the classroom.

**Bachelor's Program**

- Bachelor of Arts (BA) Degree with a Major in Visual and Dramatic Arts
  - and a Major Concentration in Film and Photography (p. 740)
  - and a Major Concentration in Studio Art (p. 743)
  - and a Major Concentration in Theatre (p. 746)

Visual and Dramatic Arts does not currently offer an academic program at the graduate level.

**Chair**

John Sparagana

**Program Advisor - Film and Photography**

Charles Dove

**Program Advisor - Studio Art**

Christopher Sperandio

**Program Advisor - Theatre**

Christina Keefe

**Professors**

Karin Broker
John Sparagana
Geoff Winningham

**Associate Professors**

Brian Huberman
Christopher Sperandio

**Assistant Professors**

Natasha Bowdoin
Lisa Lapinski

**Professor in the Practice of Film and Media Studies**

Charles Dove

**Professor in the Practice of Theatre**

Christina Keefe

**Lecturer in Film and Media Studies**

Tish Stringer

**Lecturer in Photography**

Paul Hester

**Lecturers in Studio Art**

Josh Bernstein
Will Fowler
Katrina Moorehead

**Lecturers in Theatre**

Heather Breikjern
Mark Krouskop

**Artist in Residence**

Allison Hunter

**Description and Code Legend**

Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

**Course Catalog/Schedule**

- Course offerings/subject code for Visual and Dramatic Arts: ARTS
- Course offerings/subject code for Film: FILM
- Course offerings/subject code for Photography: FOTO
- Course offerings/subject code for Theatre: THEA

**Department Description and Code**

- Visual and Dramatic Arts: VADA

**Undergraduate Degree Description and Code**

- Bachelor of Arts degree: BA

**Undergraduate Major Description and Code**

- Major in Visual and Dramatic Arts: VADA

**Undergraduate Major Concentration Descriptions and Codes**

- Major Concentration in Film and Photography: VFIL
- Major Concentration in Studio Art: VSTU
- Major Concentration in Theatre: VTHE
Bachelor of Arts (BA) Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Film and Photography

Program Learning Outcomes for the Major in Visual and Dramatic Arts and a Major Concentration in Film and Photography

Upon completing the BA degree with a major in Visual and Dramatic Arts and a major concentration in Film and Photography, students will be able to:

1. Understand the social, aesthetic, and technological history of film and photography.
2. Become fluent in both older forms of filmmaking and photography and newer ones.
3. Grasp the relationship between the tools and the art.
4. Utilize the understanding and the fluency to create works of art.

Requirements for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Film and Photography

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Visual and Dramatic Arts must complete:

- A minimum of 11-13 courses (30-40 credit hours), depending on major concentration declared and whether or not the student is a single major or double major, to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 3-7 courses (9-21 credit hours), depending on major concentration declared, taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) of study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The requirements of a major concentration. When students declare the major (p. 12) in Visual and Dramatic Arts, students must additionally identify and declare one of three major concentrations, either in:

- Studio Art (p. 743), or
- Film and Photography (p. 740), or
- Theatre (p. 746)

It is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

Students pursuing the major concentration in Film and Photography are strongly encouraged to explore film-related courses offered in other departments that may enrich their selected major concentration, such as philosophy, anthropology, science, history, cultural studies, language, writing, comparative studies, etc. Students should speak with their faculty advisor prior to enrolling.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
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Degree Requirements

Core Requirements

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<td>FILM 328</td>
<td>FILMMAKING I</td>
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<td>ARTS 328</td>
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<td>FILM 420</td>
<td>FILM STUDIO</td>
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<td>FILM 428</td>
<td>FILMMAKING II</td>
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<td>ARTS 428</td>
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<td>FILM 444</td>
<td>HANDBRAKE FILM</td>
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<td>INTRODUCTION TO PHOTOGRAPHY</td>
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<td>FOTO 210</td>
<td>BEGINNING DIGITAL PHOTOGRAPHY</td>
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<td>FOTO 310</td>
<td>INTERMEDIATE DIGITAL PHOTOGRAPHY</td>
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<td>FOTO 385</td>
<td>PHOTOGRAPHY SEMINAR</td>
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<td>FOTO 410</td>
<td>ADVANCED DIGITAL PHOTOGRAPHY</td>
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<td>FOTO 383</td>
<td>PHOTOGRAPHY BOOKMAKING</td>
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<td>PHOTOGRAPHY IN CHINA</td>
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<td>FOTO 390</td>
<td>VISUALIZING NATURE</td>
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Select 2 from the following:

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<td>HISTORY &amp; AESTHETICS OF FILM</td>
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<td>ARTS 280</td>
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<td>HART 280</td>
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<td>NONFICTION FILM</td>
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<td>HART 284</td>
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<tr>
<td>FILM 383</td>
<td>GLOBAL CINEMA</td>
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<td>HART 383</td>
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2017-2018 General Announcements
FILM 432 / FILM GENRE: THE WESTERN
ARTS 432

FILM 433 / FILM GENRE: SCIENCE FICTION CINEMA

FILM 435 / SEMINAR ON FILM AUTHORSHIP THE NEW HOLLYWOOD
ARTS 435 / HART 480

Elective Requirements
Directed electives in Visual Arts, Film, Photography, or Theatre
Select 3 electives from Studio Arts (ARTS), Film (FILM), Photography (FOTO) or Theatre (THEA) course offerings at the 100-level or above.  
Advisor Directed Electives in Visual Arts, Film, Photography, or Theatre
Select 2 electives in the Theory/Criticism of Studio Arts (ARTS), Theatre (THEA), or Film/Media Studies (offered in the departments of Anthropology, English, French Studies, History, etc.)
Total Credit Hours Required for the Major in Visual and Dramatic Arts and a Major Concentration in Film and Photography (for single majors)
Total Credit Hours Required for the Major in Visual and Dramatic Arts and a Major Concentration in Film and Photography (for double majors)
University Graduation Requirements (p. 25)  
Total Credit Hours

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.
1 Double majors who drop the other major are required to meet the requirements listed for single majors.
2 Double majors must complete a total of 2 courses (6 credit hours) from Studio Arts (ARTS), Film (FILM), Photography (FOTO) or Theatre (THEA) course offerings at the 100-level or above.
3 Theory/Criticism elective courses should be selected in consultation with a Visual and Dramatic Arts faculty advisor. Double majors must complete 1 course (3 credit hours) in Theory/Criticism of Studio Arts (ARTS), Theatre (THEA), or Film/Media Studies (offered in the departments of Anthropology, English, French Studies, History, etc.). Open selections may be qualified by course prerequisites.

Policies for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Film and Photography

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Visual and Dramatic Arts should be aware of the following departmental transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major. The 2 transfer credit courses should be studio, film, photography, or theatre practice courses required for all majors.
- Transfer students who are transferring coursework from another accredited college or university should be allowed to transfer their undergraduate art courses. However, students must speak with the department chair or program advisor immediately upon transferring to Rice.
- Academic work completed in the Spring at NYU program or the National Theater Institute at the Eugene O’Neill Theater Center will be accepted as transfer credit to fulfill major requirements (following university transfer credit guidelines).
- Transfer credit received via the articulation of advanced placement (AP) credit, international baccalaureate (IB) credit, or A-level credit will not be considered towards major requirements.
- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Visual and Dramatic Arts website: https://arts.rice.edu/

Opportunities for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Film and Photography

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Distinction in Research and Creative Work
Distinction in Research and Creative Work is a university award for select undergraduates, granted at commencement, which appears on the transcript and diploma. Students must apply within their department or program to be considered for the award, and a letter from a faculty member must support the application.

Eligibility for the award extends widely to include a variety of research, design, and other creative projects, as well as persistent dedication to community partners will be eligible for consideration.

Applicants must be in good academic standing and have a cumulative GPA of at least 3.30 in courses completed at Rice.

Also, of further note: The award will be granted only to projects that produce a concrete outcome – e.g. an essay, invention, design, art exhibition, project or performance, or musical composition – and demonstrate commitment and/or achievement above and beyond the norm. Students who complete senior theses, senior design projects, or
other required senior capstone projects shall not qualify automatically for consideration for this university distinction.

For the Department of Visual and Dramatic Arts, the application for Distinction in Research and Creative Work must include:

1. application form, including portfolio;
2. overall GPA of 3.30;
3. a written artist statement;
4. letter of support from a Visual and Dramatic Arts faculty member;
5. public exhibition, screening, publication, or performance that includes a lecture or artist talk component by applicant;
6. two-page description of how the project meets the requirements of Distinction.

The department requires exceptional evidence of success, as defined by completion of a project (body of artwork, film, theatrical design work, etc.). Support through the application process is available through the department – e.g. workshops, seminars and individual meetings with faculty mentors.

Contact the department or look online for deadline dates. No electronic submissions accepted. Please note that your project does not have to be already completed to apply for Distinction (all final materials will be due in Spring 2018). The department selects a very limited number of students for this university academic honor.

ARTS 294 Special Problems: Junior Field Trip

Recommended for students pursuing the major concentration in Film and Photography. The junior year field trip is designed to help VADA majors focus on the upcoming senior year of intensive studio work, and to get to know the Visual and Dramatic Arts faculty and staff. These are trips to cultural centers nationally and internationally, including visits to museums, galleries, artist studios, theaters, and meetings with creative professionals in the fields of film/photo, theater, and studio arts.

Exhibitions, Lectures, and Arts Programs at Rice

The Department of Visual and Dramatic Arts mounts several art and photography exhibitions and stage productions each year. In addition, exhibitions and related activities organized by the Rice University Art Gallery enrich the teaching program of the Visual and Dramatic Arts department, as well as the larger university and Houston communities.

The department enjoys an ongoing close relationship with local theatres, museums, and galleries. The department offers opportunities for students to work and study with local art venues and alternative art spaces by way collaborative events and programs. The collections and exhibitions of local museums are often the subject of course lectures.

Lectures, symposia, and talks are sponsored by the department and are designed to bring local, national, and international scholars, actors, directors, critics, and studio artists to campus to speak on a broad range of topics and current interests.

Rice Film Program

Rice’s film program works in concert with the Visual and Dramatic Arts department’s academic mission to enrich students’ undergraduate experience. Film and media studies students are provided state-of-the-art screening facilities to examine and study the historical and methodological aspects of movies from around the world in celluloid and 4K Digital Cinema Projection with Dolby Digital Sound. Film production students can showcase their work during the academic year on our silver screen in recently renovated projection facilities.

During the academic year, Rice Cinema screens films from around the world—foreign features, shorts, documentaries, and animation—as part of our ongoing partnership with the diverse cultural communities of the City of Houston. Film at Rice reaches beyond the university’s hedges to create, engage, and encourage scholarly thought and dialog on the many issues that impact our world. Internationally known filmmakers who have appeared on our campus over the years include Werner Herzog, Rakhshan Banietemad, Atom Egoyan, Shirin Neshat, Martin Scorsese, Andy Warhol, George Lucas, and Dennis Hopper.

Rice Theatre Program

The Rice Theatre Program curriculum offers a solid foundation in all aspects of theatrical production from acting and directing to technology and design for students who wish to pursue a professional career in theatre or continue on to a graduate program. Theatre courses also are open to non-majors who want to gain a greater appreciation for the art of theatre.

There are two main-stage productions (one fall and one spring) and the possibility of two student showcases offered each year in Hamman Hall, a 450-seat proscenium theatre facility. The department invites distinguished guest artists each semester to direct and produce the two main-stage productions. Participation in productions is open to all students.

Theatre Program faculty are actively involved in professional theatre and film locally, nationally, and internationally and actively pursue opportunities to involve advanced students in that work. In addition, advanced students are encouraged to apply for internships positions whenever possible. Rice students have been accepted in competitive internships at theatres such as The Alley Theatre, Houston Shakespeare Festival, Berkeley Repertory Theatre, and Williamstown Theatre Festival. In addition, students are encouraged to study theatre abroad and transfer course credit back to Rice. Approval for transfer credit must be sought prior to enrollment in a study-abroad program by contacting the director of the Theatre Program.

In even numbered years, the Theatre Program, sponsored by the Alan and Shirley Grob Endowment for Shakespeare in Performance, hosts the Actors From the London Stage, one of the oldest established touring Shakespeare theatre companies in the world for a week-long residency of workshops, performances, and lectures. Each tour presents a full-length play by Shakespeare performed by five classically trained actors who come from such prestigious companies as the Royal Shakespeare Company, the Royal National Theatre of Great Britain, and Shakespeare’s Globe Theatre.

National Theater Institute

The National Theater Institute is the educational arm of the renowned Eugene O’Neill Theater Center. The program is designed to complement a liberal arts education with three distinct study-away programs, all offering rigorous, risk-taking theater exploration. The semester long program at the O’Neill Center in Connecticut, the NTI Moscow Art Theater semester, and the seven-week Theatremakers summer program confront the serious theater student with opportunities to discover new creative possibilities.

The National Theater Institute offers an extensive conservatory-based training program for the dedicated student. Distinguished master teaching artists guide the classes in courses in acting, directing, design,
playwriting, stage combat, voice, and movement. The Department of Visual and Dramatic Arts will accept academic work completed at the National Theater Institute as transfer credit to fulfill major requirements (following university transfer credit guidelines).

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.

Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Studio Art

Program Learning Outcomes for the Major in Visual and Dramatic Arts and a Major Concentration in Studio Art

Upon completing the BA degree with a major in Visual and Dramatic Arts and a major concentration in Studio Art, students will be able to:

1. Demonstrate a knowledge and understanding of a variety of materials and processes in a range of two and three-dimensional media as well as the ability to apply these acquired skills to other materials and ways of working. This includes students developing their own artistic vocabularies.

2. Demonstrate the ability to explore and hone a variety of techniques and materials while developing their own artistic vocabularies and creative vision. This involves gaining a familiarity with a wide range of skills, concepts, and approaches essential to artistic development.

3. Demonstrate an understanding of the meaning and potential purpose of the arts, a knowledge of art history, art’s role and varied guises in contemporary society, and art’s relationship and engagement with other disciplines including literature, music, philosophy, and the sciences.

4. Develop an understanding of self in the larger context of the practice of art.

Requirements for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Studio Art

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Visual and Dramatic Arts must complete:

- A minimum of 11-13 courses (30-40 credit hours), depending on major concentration declared and whether or not the student is a single major or double major, to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 3-7 courses (9-21 credit hours), depending on major concentration declared, taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) of study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.
- The requirements of a major concentration. When students declare the major (p. 12) in Visual and Dramatic Arts, students must additionally identify and declare one of three major concentrations, either in:
  - Studio Art (p. 743), or
  - Film and Photography (p. 740), or
  - Theatre (p. 746)

It is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

Students pursuing the major concentration in Studio Art are strongly encouraged to explore art-related courses offered in other departments that may enrich their selected major concentration, such as: philosophy, anthropology, science, history, cultural studies, language, writing, comparative studies, etc. Students should speak with their faculty advisor prior to enrolling.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>Total Credit Hours Required for the Major in Visual and Dramatic Arts and a Major Concentration in Studio Art (for single majors)</td>
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<td>Total Credit Hours Required for the Major in Visual and Dramatic Arts and a Major Concentration in Studio Art (for double majors)</td>
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<td>Total Credit Hours Required for the BA Degree with a Major in Visual and Dramatic Arts</td>
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Degree Requirements

Core Requirements

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<td>ARTS 103</td>
<td>CREATIVE 2-D DESIGN</td>
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<td>ARTS 225</td>
<td>BEGINNING DRAWING</td>
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<td>COMICS AND SEQUENTIAL ART</td>
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<td>ARTS 323</td>
<td>DRAWING STUDIO</td>
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<td>ARTS 325</td>
<td>LIFE DRAWING</td>
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<td>ARTS 294</td>
<td>SPECIAL PROBLEMS IN STUDIO ART: JUNIOR FIELD TRIP</td>
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<td>ARTS 301</td>
<td>BEGINNING PAINTING</td>
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<td>ARTS 311</td>
<td>BEGINNING PRINTMAKING</td>
<td>3</td>
</tr>
<tr>
<td>ARTS 388</td>
<td>CRITICAL STUDIES FOR STUDIO PRACTICE</td>
<td>3</td>
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<tr>
<td>ARTS 499</td>
<td>SENIOR STUDIO (taken in both the fall and spring semesters of the senior year, fall semester)</td>
<td>3</td>
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</tbody>
</table>
Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Studio Art

Elective Requirements

Art History (HART) Electives
Select 2 electives from HART course offerings at the 100-level or above.

Directed Electives in Visual Arts, Film, Photography, Theatre
Select 2 electives from Visual Arts (ARTS), Film (FILM), Photography (FOTO), or Theatre (THEA) course offerings at the 100-level or above. 3

Advanced Studio Arts (ARTS) 300-Level or 400-Level Elective
Select 1 from the following:

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<tr>
<td>ARTS 320</td>
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<td>DRAWING STUDIO</td>
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<td>ARTS 349</td>
<td>PRINTMAKING STUDIO</td>
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<td>ARTS 366</td>
<td>SCULPTURE STUDIO</td>
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<td>ARTS 401</td>
<td>PAINTING STUDIO</td>
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Total Credit Hours Required for the Major in Visual and Dramatic Arts and a Major Concentration in Studio Art (for single majors)
Total Credit Hours Required for the Major in Visual and Dramatic Arts and a Major Concentration in Studio Arts (for double majors)
Total Credit Hours

University Graduation Requirements (p. 25) ¹

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1 Double majors who drop the other major are required to meet the requirements listed for single majors.

2 The junior year field trip (ARTS 294) is designed to help visual arts majors focus on the upcoming senior year of intensive studio work, and to get to know the Visual and Dramatic Arts faculty and staff. These are trips to cultural centers nationally and internationally, including visits to museums, galleries, artist studios, theaters, and meetings with creative professionals in the fields of film/photo, theater, and studio arts. It is required for students pursuing the major concentration in Studio Art.

3 Double majors must complete at least 1 course (3 credit hours) from Visual Arts (ARTS), Film (FILM), Photography (FOTO), or Theatre (THEA) course offerings at the 100-level or above.

Opportunities for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Studio Art

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Distinction in Research and Creative Work
Distinction in Research and Creative Work is a university award for select undergraduates, granted at commencement, which appears on the transcript and diploma. Students must apply within their department or program to be considered for the award, and a letter from a faculty member must support the application.

Eligibility for the award extends widely to include a variety of research, design, and other creative projects, as well as persistent dedication to research. Projects completed in part or entirely at other institutions or with community partners will be eligible for consideration.

Applicants must be in good academic standing and have a cumulative GPA of at least 3.30 in courses completed at Rice.

Also, of further note: The award will be granted only to projects that produce a concrete outcome – e.g. an essay, invention, design, art exhibition, project or performance, or musical composition – and demonstrate commitment and/or achievement above and beyond the norm. Students who complete senior theses, senior design projects, or program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Visual and Dramatic Arts should be aware of the following departmental transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major. The 2 transfer credit courses should be studio, film, photography, or theatre practice courses required for all majors.
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For additional information, please see the Visual and Dramatic Arts website: [https://arts.rice.edu/](https://arts.rice.edu/)

Policies for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Studio Art

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: [http://oaa.rice.edu](http://oaa.rice.edu). Students are encouraged to meet with their academic
other required senior capstone projects shall not qualify automatically for consideration for this university distinction.

For the Department of Visual and Dramatic Arts, the application for Distinction in Research and Creative Work must include:

1. application form, including portfolio;
2. overall GPA of 3.30;
3. a written artist statement;
4. letter of support from a Visual and Dramatic Arts faculty member;
5. public exhibition, screening, publication, or performance that includes a lecture or artist talk component by applicant;
6. two-page description of how the project meets the requirements of Distinction.

The department requires exceptional evidence of success, as defined by completion of a project (body of artwork, film, theatrical design work, etc.). Support through the application process is available through the department – e.g. workshops, seminars and individual meetings with faculty mentors.

Contact the department or look online for deadline dates. No electronic submissions accepted. Please note that your project does not have to be already completed to apply for Distinction (all final materials will be due in Spring 2018). The department selects a very limited number of students for this university academic honor.

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There are two main-stage productions (one fall and one spring) and the possibility of two student showcases offered each year in Hamman Hall, a 450-seat prosenium theatre facility. The department invites distinguished guest artists each semester to direct and produce the two main-stage productions. Participation in productions is open to all students.

Theatre Program faculty are actively involved in professional theatre and film locally, nationally, and internationally and actively pursue opportunities to involve advanced students in that work. In addition, advanced students are encouraged to apply for internship positions whenever possible. Rice students have been accepted in competitive internships at theatres such as The Alley Theatre, Houston Shakespeare Festival, Berkeley Repertory Theatre, and Williamstown Theatre Festival.

In addition, students are encouraged to study theatre abroad and transfer course credit back to Rice. Approval for transfer credit must be sought prior to enrollment in a study-abroad program by contacting the director of the Theatre Program.

In even numbered years, the Theatre Program, sponsored by the Alan and Shirley Grob Endowment for Shakespeare in Performance, hosts the Actors From the London Stage, one of the oldest established touring Shakespeare theatre companies in the world for a week-long residency of workshops, performances, and lectures. Each tour presents a full-length play by Shakespeare performed by five classically trained actors who come from such prestigious companies as the Royal Shakespeare Company, the Royal National Theatre of Great Britain, and Shakespeare’s Globe Theatre.

National Theater Institute

The National Theater Institute is the educational arm of the renowned Eugene O’Neill Theater Center. The program is designed to complement a liberal arts education with three distinct study-away programs, all offering rigorous, risk-taking theater exploration. The semester long program at the O’Neill Center in Connecticut, the NTI Moscow Art Theater semester, and the seven-week Theateamakers summer program confront the serious theater student with opportunities to discover new creative possibilities.

The National Theater Institute offers an extensive conservatory-based training program for the dedicated student. Distinguished master teaching artists guide the classes in courses in acting, directing, design, playwriting, stage combat, voice, and movement. The Department of Visual and Dramatic Arts will accept academic work completed at the National Theater Institute as transfer credit to fulfill major requirements (following university transfer credit guidelines).

See https://humanities.rice.edu/student-life for tables of fellowships, prizes, and internships/practica that may be relevant to this major.
Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Theatre

Program Learning Outcomes for the Major in Visual and Dramatic Arts and a Major Concentration in Theatre

Upon completing the BA degree with a major in Visual and Dramatic Arts and a major concentration in Theatre, students will be able to:

1. Demonstrate the ability to adapt and apply their foundational skills and knowledge in theatre design, direction, performance, sound, etc., to fulfill professionally and effectively a range of roles in an actual, hands-on, theatrical production.
2. Demonstrate the ability to use critical thinking and analytical skills to analyze and evaluate a theatrical text, including being able to identify its structure and form, and to understand characters and specific scenes with the depth necessary for effective performance, scene study, and design.
3. Demonstrate the ability to communicate effectively both verbally and in writing in situations of performance, play analysis, and performance direction, which necessitates collaboration and communication amongst many contributing individuals.
4. Understand theatre and performance broadly, and specific theatrical works or performances, within their historical, social, cultural, and political contexts.

Requirements for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Theatre

For general university requirements, see Graduation Requirements (p. 25). Students pursuing the BA degree with a major in Visual and Dramatic Arts must complete:

- A minimum of 11-13 courses (30-40 credit hours), depending on major concentration declared and whether or not the student is a single major or double major, to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 3-7 courses (9-21 credit hours), depending on major concentration declared, taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) of study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.
- The requirements of a major concentration. When students declare the major (p. 12) in Visual and Dramatic Arts, students must additionally identify and declare one of three major concentrations, either in:
  - Studio Art (p. 743), or
  - Film and Photography (p. 740), or
  - Theatre (p. 746)

It is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (registrar@rice.edu).

Students pursuing the major concentration in Theatre are strongly encouraged to explore theatre-related courses offered in other departments that may enrich their selected major concentration, such as: philosophy, anthropology, science, history, cultural studies, language, writing, comparative studies, etc. Students should speak with their faculty advisor prior to enrolling.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor (or official certifier). Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Visual and Dramatic Arts and a Major Concentration in Theatre (for single majors)</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Visual and Dramatic Arts and a Major Concentration in Theatre (for double majors)</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Visual and Dramatic Arts</td>
<td>120</td>
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</table>

### Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 1 from the following:</td>
<td>3</td>
</tr>
<tr>
<td>THEA 100</td>
<td>STAGE CRAFT</td>
<td></td>
</tr>
<tr>
<td>THEA 101</td>
<td>THEATRE TECHNOLOGY: COSTUME CONSTRUCTION</td>
<td></td>
</tr>
<tr>
<td>THEA 103</td>
<td>THEATRE TECHNOLOGY</td>
<td></td>
</tr>
<tr>
<td>THEA 300</td>
<td>INTRODUCTION TO THEATRE DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>or THEA 301</td>
<td>ACTING I</td>
<td></td>
</tr>
<tr>
<td>THEA 315</td>
<td>THEATRE IN WESTERN CULTURE: A HISTORICAL INTRODUCTION</td>
<td>3</td>
</tr>
<tr>
<td>THEA 331</td>
<td>THEATRE PRODUCTION</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective Requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electives in Visual Arts, Film, Photography, or Theatre</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Select 6 courses from Theatre (THEA), Studio Arts (ARTS), Photography (FOTO), or Film (FILM) course offerings.</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Electives in Dramatic or Film Theory/Criticism, Dramatic Literature, or Art History</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Select 3 courses in dramatic or film theory or criticism, dramatic literature, or art history.</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major and a Major in Visual and Dramatic Arts and a Major Concentration in Theatre (for single majors)</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major and a Major in Visual and Dramatic Arts and a Major Concentration in Theatre (for double majors)</td>
<td>33</td>
</tr>
</tbody>
</table>
Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1. Double majors who drop the other major are required to meet the requirements listed for single majors.
2. THEA 331 Theatre Production - Crew. Each student must perform crew duties for at least one theatre production as part of the technical or design team.
3. Single majors may not include more than 3 courses (9 credit hours) from ARTS or FILM course offerings to satisfy this requirement.
4. Double majors must complete a total of 4 courses (12 credit hours) from Theatre (THEA), Studio Arts (ARTS), Photography (FOTO), or Film (FILM) course offerings. Double majors may not include more than 2 courses (6 credit hours) from ARTS or FILM course offerings to satisfy this requirement.
5. Elective courses that fulfill dramatic or film theory or criticism, dramatic literature, or art history should be selected in consultation with the theatre faculty advisor.

Policies for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Theatre

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (p. 32). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: http://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the major in Visual and Dramatic Arts should be aware of the following departmental transfer credit guidelines:

• No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major. The 2 transfer credit courses should be studio, film, photography, or theatre practice courses required for all majors.
• Transfer students who are transferring coursework from another accredited college or university should be allowed to transfer their undergraduate art courses. However, students must speak with the department chair or program advisor immediately upon transferring to Rice.
• Academic work completed in the Spring at NYU program or the National Theater Institute at the Eugene O'Neill Theater Center will be accepted as transfer credit to fulfill major requirements (following university transfer credit guidelines).
• Transfer credit received via the articulation of advanced placement (AP) credit, international baccalaureate (IB) credit, or A-level credit will not be considered towards major requirements.

• Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

For additional information, please see the Visual and Dramatic Arts website: https://arts.rice.edu/

Opportunities for the BA Degree with a Major in Visual and Dramatic Arts and a Major Concentration in Theatre

Suggested LPAP (Dance) Courses

Students pursuing the major concentration in Theatre are encouraged to take Lifetime Physical Activity Program (LPAP) courses to supplement and enhance their studies in theatre. Courses include (but not limited to):

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPAP 148</td>
<td>DANCE CHOREOGRAPH</td>
<td>1</td>
</tr>
<tr>
<td>LPAP 130</td>
<td>CONTACT IMPROVISATION</td>
<td>1</td>
</tr>
<tr>
<td>LPAP 155</td>
<td>INTRODUCTION TO BALLET</td>
<td>1</td>
</tr>
<tr>
<td>LPAP 133</td>
<td>CAPOEIRA</td>
<td>1</td>
</tr>
<tr>
<td>LPAP 157</td>
<td>JAZZ DANCE/HIP HOP</td>
<td>1</td>
</tr>
</tbody>
</table>

Students should receive departmental approval and have already satisfied the LPAP graduation requirement before enrolling. Per university policy, students may not take more than four LPAP courses for credit.

ARTS 294 is recommended for students pursuing the major concentration in Theatre. The junior year field trip will be designed to help all visual and dramatic arts majors focus on the upcoming senior year of intensive work, and to get to know the Visual and Dramatic Arts faculty and staff. These are trips to cultural centers nationally and internationally, including visits to museums, galleries, artist studios, theaters, and meetings with creative professionals in the fields of film/photo, theater, and studio arts.

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (p. 47) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (p. 47). Some departments have department-specific Honors awards or designations.

Distinction in Research and Creative Work

Distinction in Research and Creative Work is a university award for select undergraduates, granted at commencement, which appears on the transcript and diploma. Students must apply within their department or program to be considered for the award, and a letter from a faculty member must support the application.

Eligibility for the award extends widely to include a variety of research, design, and other creative projects, as well as persistent dedication to research. Projects completed in part or entirely at other institutions or with community partners will be eligible for consideration.

Applicants must be in good academic standing and have a cumulative GPA of at least 3.30 in courses completed at Rice.

Also, of further note: The award will be granted only to projects that produce a concrete outcome – e.g. an essay, invention, design, art
exhibition, project or performance, or musical composition — and demonstrate commitment and/or achievement above and beyond the norm. Students who complete senior theses, senior design projects, or other required senior capstone projects shall not qualify automatically for consideration for this university distinction.

For the Department of Visual and Dramatic Arts, the application for Distinction in Research and Creative Work must include:

1. application form, including portfolio;
2. overall GPA of 3.30;
3. a written artist statement;
4. letter of support from a Visual and Dramatic Arts faculty member;
5. public exhibition, screening, publication, or performance that includes a lecture or artist talk component by applicant;
6. two-page description of how the project meets the requirements of Distinction.

The department requires exceptional evidence of success, as defined by completion of a project (body of artwork, film, theatrical design work, etc.). Support through the application process is available through the department — e.g. workshops, seminars and individual meetings with faculty mentors.

Contact the department or look online for deadline dates. No electronic submissions accepted. Please note that your project does not have to be already completed to apply for Distinction (all final materials will be due in Spring 2018). The department selects a very limited number of students for this university academic honor.

Exhibitions, Lectures, and Arts Programs at Rice

The Department of Visual and Dramatic Arts mounts several art and photography exhibitions and stage productions each year. In addition, exhibitions and related activities organized by the Rice University Art Gallery enrich the teaching program of the Visual and Dramatic Arts department, as well as the larger university and Houston communities.

The department enjoys an ongoing close relationship with local theatres, museums, and galleries. The department offers opportunities for students to work and study with local art venues and alternative art spaces by way collaborative events and programs. The collections and exhibitions of local museums are often the subject of course lectures.

Lectures, symposia, and talks are sponsored by the department and are designed to bring local, national, and international scholars, actors, directors, critics, and studio artists to campus to speak on a broad range of topics and current interests.

Rice Film Program

Rice's film program works in concert with the Visual and Dramatic Arts department’s academic mission to enrich students’ undergraduate experience. Film and media studies students are provided state-of-the-art screening facilities to examine and study the historical and methodological aspects of movies from around the world in celluloid and 4K Digital Cinema Projection with Dolby Digital Sound. Film production students can showcase their work during the academic year on our silver screen in recently renovated projection facilities.

During the academic year, Rice Cinema screens films from around the world—foreign features, shorts, documentaries, and animation—as part of our ongoing partnership with the diverse cultural communities of the City of Houston. Film at Rice reaches beyond the university’s hedges to create, engage, and encourage scholarly thought and dialog on the many issues that impact our world. Internationally known filmmakers who have appeared on our campus over the years include Werner Herzog, Rakhshan Banietemad, Atom Egoyan, Shirin Neshat, Martin Scorsese, Andy Warhol, George Lucas, and Dennis Hopper.

Rice Theatre Program

The Rice Theatre Program curriculum offers a solid foundation in all aspects of theatrical production from acting and directing to technology and design for students who wish to pursue a professional career in theatre or continue on to a graduate program. Theatre courses also are open to non-majors who want to gain a greater appreciation for the art of theatre.

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COURSES

A

• Air Force Science (AFSC) (p. 750)
• Americas Research Center (ARCR) (p. 751)
• Ancient Mediterranean Civil (AMCI) (p. 752)
• Anthropology (ANTH) (p. 752)
• Applied Physics (APPL) (p. 782)
• Arabic (ARAB) (p. 782)
• Architecture (ARCH) (p. 783)
• Art History (HART) (p. 808)
• Asian Studies (ASIA) (p. 846)
• Astronomy (ASTR) (p. 854)

B

• Biochemistry & Cell Biology (BIOC) (p. 857)
• Bioengineering (BIOE) (p. 872)
• Business (BUSI) (p. 891)

C

• Center for Civic Leadership (LEAD) (p. 899)
• Chemical & Biomolecular Eng (CHBE) (p. 901)
• Chemistry (CHEM) (p. 910)
• Chinese (CHIN) (p. 921)
• Civil and Environmental Eng (CEVE) (p. 924)
• Classical Studies (CLAS) (p. 939)
• Cntr Lang & Intercultural Comm (CLIC) (p. 943)
• Cognitive Sciences (CSCI) (p. 944)
• College Course (COLL) (p. 944)
• Communication (COMM) (p. 952)
• Comp. & Applied Mathematics (CAAM) (p. 952)
• Computer Science (COMP) (p. 960)

D

• Dissertation/Thesis Submission (DSRT) (p. 981)

E

• Earth Science (ESCI) (p. 981)
• Ecology & Evolutionary Biology (EBIO) (p. 1002)
• Economics (ECON) (p. 1011)
• Education (EDUC) (p. 1026)
• Electrical & Comp. Engineering (ELEC) (p. 1035)
• Emergency Med Studies/Practice (EMSP) (p. 1060)
• Engineering (ENGI) (p. 1061)
• English (ENGL) (p. 1067)
• Environmental Studies (ENST) (p. 1091)
• Executive Management (EMBA) (p. 1097)

F

• Film (FILM) (p. 1098)
• First-Yr Writing Intensive Sem (FWIS) (p. 1104)
• French Studies (FREN) (p. 1117)
• Freshman Seminar (FSEM) (p. 1123)

G

• German (GERM) (p. 1128)
• Global Affairs (GLBL) (p. 1137)
• Global Health Technologies (GLHT) (p. 1141)
• Greek (GREE) (p. 1143)

H

• Health Sciences (HEAL) (p. 1145)
• Hebrew (HEBR) (p. 1148)
• Hindi (HIND) (p. 1149)
• History (HIST) (p. 1150)
• Honors Program (HONS) (p. 1177)
• Humanities (HUMA) (p. 1177)
• Humanities Research Center (HURC) (p. 1184)

I

• Italian Language and Culture (ITAL) (p. 1190)

J

• Japanese (JAPA) (p. 1192)
• Jewish Studies (JWST) (p. 1193)

K

• Keck Center (KECK) (p. 1194)
• Kinesiology (KINE) (p. 1194)
• Korean (KORE) (p. 1197)

L

• Latin (LATI) (p. 1198)
• Latin American Studies (LASR) (p. 1201)
• Liberal Studies Core/Capstone (MLSC) (p. 1202)
• Lifetime Phys Activity Credit (LPCR) (p. 1213)
• Lifetime Phys Activity Program (LPAP) (p. 1213)
• Linguistics (LING) (p. 1222)

M

• Management (MGMT) (p. 1231)
• Managerial Studies (MANA) (p. 1269)
• Master Accounting (MACC) (p. 1269)
• Materials Science & NanoEng (MSNE) (p. 1272)
• Mathematics (MATH) (p. 1281)
• MBA for Professionals-Evening (MGMP) (p. 1292)
• MBA for Professionals-Weekend (MGMW) (p. 1297)
• Mechanical Engineering (MECH) (p. 1301)
• Medieval/Early Modern Studies (MDEM) (p. 1314)
• Mgmt Integrated Crse Offering (MICO) (p. 1322)
• Military Science (MLI) (p. 1323)
• Music (MUSI) (p. 1325)
Air Force Science (AFSC)

AFSC 101 - FOUNDATION OF THE USAF I
Short Title: FOUNDATION OF THE USAF I
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Overall roles and missions of the USAF; career fields available. Emphasis on military customs and courtesies, appearance standards, core values, written and personal communications. Introduction to American military history. Course taught on the University of Houston campus in Garrison Gymnasium, Room 116. This course includes a lab taught on Wednesday from 4-6pm. Instructors: Lecture - Kiebach; Lab - Bentley.
Course URL: www.class.uh.edu/rotc/airforce (http://www.class.uh.edu/rotc/airforce)

AFSC 102 - FOUNDATION OF THE USAF II
Short Title: FOUNDATION OF THE USAF II
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Continuation of AFSC 101. Course taught at the University of Houston.
Course URL: www.class.uh.edu/rotc/airforce (http://www.class.uh.edu/rotc/airforce)

AFSC 201 - EVOLUTION OF AIR POWER I
Short Title: EVOLUTION OF AIR POWER I
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Key historical events and milestones in the development of air power as a primary instrument of United States national security. Core values and competencies of leaders in the United States Air Force. Tenets of leadership and ethics. Course taught on the University of Houston campus in Garrison Gymnasium in Room 116. This course also includes a lab taught on Wednesday from 4-6 pm. Instructors: Lecture - Kiebach; Lab - Bentley.
Course URL: www.class.uh.edu/rotc/airforce (http://www.class.uh.edu/rotc/airforce)

AFSC 202 - EVOLUTION OF AIR POWER II
Short Title: EVOLUTION OF AIR POWER II
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Continuation of AFSC 201. Course taught at the University of Houston.
Course URL: www.class.uh.edu/rotc/airforce (http://www.class.uh.edu/rotc/airforce)
AFSC 301 - AIR FORCE LEADERSHIP STUDY I
Short Title: AIR FORCE LEADERSHIP STUDY I
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Leadership, management fundamentals, professional knowledge, Air Force personnel and evaluation systems, and leadership ethics. Case studies of Air Force leadership and management situations. Course taught on the University of Houston campus in Garrison Gymnasium, Room 116. This course includes a lab, taught on Wednesday from 4-6pm. Instructors: Lecture - Bentley; Lab - Bentley.
Course URL: www.class.uh.edu/rotc/airforce

AFSC 302 - AIR FORCE LEADERSHIP STUDY II
Short Title: AIR FORCE LEADERSHIP STUDY II
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Continuation of AFSC 301. Course taught on the University of Houston campus in Garrison Gymnasium, Room 116. This course includes a lab, taught on Wednesday from 4-6pm. Instructors: Lecture - Bentley; Lab - Bentley.
Course URL: www.class.uh.edu/rotc/airforce

AFSC 381 - FIELD TRAINING
Short Title: FIELD TRAINING
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 8
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: No military obligation is associated with this course. Four-week off-campus field training practicum. Introduces students to Air Force leadership. Places students in demanding and stressful leadership positions. Course taught at military base. Instructors: Lecture - Bentley, Lab - Bentley. Department Permission Required.
Course URL: www.class.uh.edu/rotc/airforce

AFSC 401 - NATIONAL SECURITY AFFAIRS I
Short Title: NATIONAL SECURITY AFFAIRS I
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Evolution of the role of national security in a democratic society with emphasis on policy formation, competing values, and organization. Civilian control of the military, roles of the services; functions of the Air Force Commands. Course taught on the University of Houston campus in Garrison Gymnasium, Room 116. This course includes a lab, taught on Wednesday from 4-6pm. Instructors: Lecture - Bentley, Lab - Bentley.
Course URL: www.class.uh.edu/rotc/airforce

AFSC 402 - NATIONAL SECURITY AFFAIRS II
Short Title: NATIONAL SECURITY AFFAIRS II
Department: Air Force Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Continuation of AFSC 401. Course taught at the University of Houston.
Course URL: www.class.uh.edu/rotc/airforce

Americas Research Center (ARCR)

ARCR 451 - CONTEMPORARY SOCIAL MOVEMENTS
Short Title: CONTEMPORARY SOCIAL MOVEMENTS
Department: Americas Research Center
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: 2011 saw an eruption of worldwide protest. These protests created new forms of mass democracy and popular resistance. This course seeks to engage this contemporary wave of global resistance from a multiplicity of vantage points. Graduate students who enroll are each expected to teach at least one class period. Graduate/Undergraduate Equivalency: ARCR 551. Mutually Exclusive: Credit cannot be earned for ARCR 451 and ARCR 551. Repeatable for Credit.

ARCR 478 - THE CARIBBEAN IN FRENCH
Short Title: THE CARIBBEAN IN FRENCH
Department: Americas Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This is the undergraduate senior version of the graduate level seminar FREN/ARCR 578. Both the course's reading list and the length of the research are adjusted to accommodate undergraduate needs. The seminar examines the history, political writings, literature and the arts of the French Caribbean from the beginning of colonization to the present. It will include figures such as Saint-John Perse, Roumain, Cesaire, Fanon, Depestre, Schwarz-Bart, Warner-Vieyra, Glissant, Conde, Chamoiseau, Laferriere, as well as the Caribbean arts and film. Taught in English. Cross-list: FREN 478. Mutually Exclusive: Credit cannot be earned for ARCR 478 and ARCR 578.
ARCR 515 - MAPPING LATINO ART
Short Title: MAPPING LATINO ART
Department: Americas Research Center
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the history of Latino art in the United States since 1945 with emphasis on the artistic cultures of Chicanos, Cuban-Americans and Puerto Ricans. We will also study the problematics of representation via gender, sexuality, race and other identities. Readings include exhibition catalogues, art history, and cultural history.

ARCR 551 - CONTEMPORARY SOCIAL MOVEMENTS
Short Title: CONTEMPORARY SOCIAL MOVEMENTS
Department: Americas Research Center
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: 2011 saw an eruption of worldwide protest. These protests created new forms of mass democracy and popular resistance. This course seeks to engage this contemporary wave of global resistance from a multiplicity of vantage points. Graduate students who enroll are each expected to teach at least one class period. Graduate/Undergraduate Equivalency: ARCR 451. Mutually Exclusive: Credit cannot be earned for ARCR 551 and ARCR 451. Repeatable for Credit.

Ancient Mediterranean Civil (AMCI)

AMCI 400 - DIRECTED HONORS RESEARCH
Short Title: AMC HONORS THESIS
Department: Ancient Mediterranean Civil
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this two semester course an AMC student will write an honors thesis under the direction of an AMC faculty member. Instructor Permission Required. Repeatable for Credit.

Anthropology (ANTH)

ANTH 200 - INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE
Short Title: INTRO TO STUDY OF LANGUAGE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Overview of the scientific study of the structure and function of language. Introduces the main fields of linguistics: phonetics, phonology, morphology, syntax, semantics, discourse, historical linguistics, sociolinguistics, and psycholinguistics. Highlights the interdisciplinary relationship of linguistics with anthropology, sociology, psychology, and cognitive sciences. Fall 2017 - Section 002 is open only to Fall 2017 New Matrics. Cross-list: LING 200.
ANTH 290 - HISTORY AND ETHNOGRAPHY
Short Title: HISTORY & ETHNOGRAPHY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate
Description: This course focuses intensively on the history and ethnography of a single people, the selection of which changes from year to year. Using all available materials, this course provides an introduction to the approaches of the discipline and how they have changed, registered by the different ways anthropologists and others have represented the same subjects over time.

ANTH 299 - EXPERIENTIAL EDUCATION IN ANTHROPOLOGY
Short Title: EXPERIENTIAL EDUCATION IN ANTH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Anthropology. Graduate level students may not enroll.
Course Level: Undergraduate
Description: This course provides one hour of university credit for faculty-directed and approved internship. Students must obtain approval from a member of the department's undergraduate committee and must submit a letter from the internship provider indicating completion and satisfactory performance. Department Permission Required. Repeatable for Credit.

ANTH 300 - LINGUISTIC ANALYSIS
Short Title: LINGUISTIC ANALYSIS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 200 or LING 200
Description: A hands-on, data-oriented approach to how different languages construct words and sentences. Students will develop skills in linguistic problem solving and the foundations for pursuing grammatical description. Topics: word classes, morphology, tense-aspect-modality, clause structure, word order, grammatical relations, existentials/possessives/locatives, voice/valence, questions, negation, relative clauses, complements, causatives. Cross-list: LING 300. Graduate/Undergraduate Equivalency: ANTH 500. Mutually Exclusive: Credit cannot be earned for ANTH 300 and ANTH 500.

ANTH 301 - PHONETICS
Short Title: PHONETICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: Introductory study of sound as it relates to speech and sound systems in the world's languages. Speech sounds are examined in terms of production mechanisms (articulatory phonetics), propagation mechanisms (acoustic phonetics), and perception mechanisms (auditory phonetics). Includes a basic introduction to Digital Signal Processing. Cross-list: LING 301. Graduate/Undergraduate Equivalency: ANTH 501. Mutually Exclusive: Credit cannot be earned for ANTH 301 and ANTH 501.

ANTH 302 - ANTHROPOLOGICAL THEORY: A SURVEY
Short Title: ANTHROPOLOGICAL THEORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A survey of the major theorists and theoretical schools of social-cultural anthropology. Strongly recommended for majors.

ANTH 303 - INTRODUCTION TO ARCHAEOLOGICAL SCIENCE
Short Title: INTRO ARCHAEOLOGY SCIENCE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course focuses on methods of scientific analysis applied to archaeological materials, including bone, stone, pottery, glass, and metal. Methods conclude absolute dating, mineral petrography, experimental archaeology, elemental and isotopic analysis, and ancient DNA. Labs offer hands-on experience with various archaeological materials and analytical methods. Recommended Prerequisite(s):

ANTH 205

ANTH 305 - HISTORICAL LINGUISTICS
Short Title: HISTORICAL LINGUISTICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ANTH 200 or LING 200) and (ANTH 301 or LING 301)
Description: Exploration of the nature of language change. Topics covered include sound change syntactic and semantic change, modeling language splits, the sociolinguistics of language change, and the history of European languages. Cross-list: LING 305. Graduate/Undergraduate Equivalency: ANTH 505. Mutually Exclusive: Credit cannot be earned for ANTH 305 and ANTH 505.
ANTH 308 - THE ANTHROPOLOGY OF THE HISTORICAL IMAGINATION
Short Title: THE HISTORICAL IMAGINATION
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explores ideas of history and attitudes toward the past as culturally conditioned phenomena. Emphasizes history as a statement of cultural values as well as conceptualizations of cause, change, time, and reality. Cross-list: SWGS 336. Graduate/Undergraduate Equivalency: ANTH 508. Mutually Exclusive: Credit cannot be earned for ANTH 308 and ANTH 508.

ANTH 309 - GLOBAL CULTURES
Short Title: GLOBAL CULTURES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This introductory course is designed to encourage ways of thinking about: Cultural China—a broad-ranging concept that includes the People's Republic of China, the newly established Special Administrative Region (SAR) of Hong Kong, the Republic of China on Taiwan, and overseas Chinese communities throughout the world. Graduate/Undergraduate Equivalency: ANTH 509. Mutually Exclusive: Credit cannot be earned for ANTH 309 and ANTH 509.

ANTH 310 - CONTEMPORARY CHINESE CULTURE
Short Title: CONTEMPORARY CHINESE CULTURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course considers anthropological theories of the state and examines ethnographic accounts of states in some unexpected places - that is, outside the official realm of government bureaucracies and institutionalized politics. Topics include so-called "stateless societies," planning and bureaucratic rationality, violence and power, and ethnographic methods for studying the state. Graduate/Undergraduate Equivalency: ANTH 517. Mutually Exclusive: Credit cannot be earned for ANTH 310 and ANTH 517.

ANTH 311 - MASCULINITIES
Short Title: MASCULINITIES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course deals with masculinities in the West, concentrating on concepts of masculine protagonism and personhood. Readings explore identities constructed in realms such as law, politics, finances, art, the home, and war. Cross-list: SWGS 333. Graduate/Undergraduate Equivalency: ANTH 511. Mutually Exclusive: Credit cannot be earned for ANTH 311 and ANTH 511.

ANTH 312 - AFRICAN PREHISTORY
Short Title: AFRICAN PREHISTORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Thematic coverage of developments throughout the continent from the Lower Paleolithic to medieval times, with emphasis on food production, metallurgy and the rise of cities and complex societies. Cross-list: MDEM 311. Graduate/Undergraduate Equivalency: ANTH 512. Mutually Exclusive: Credit cannot be earned for ANTH 312 and ANTH 512.

ANTH 313 - LANGUAGE AND CULTURE
Short Title: LANGUAGE AND CULTURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Investigates the relation between language and thought, language and worldview, language and logic. Cross-list: LING 313. Graduate/Undergraduate Equivalency: ANTH 513. Mutually Exclusive: Credit cannot be earned for ANTH 313 and ANTH 513.

ANTH 317 - REVOLUTIONS AND UTOPIAS
Short Title: REVOLUTIONS AND UTOPIAS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In order to gain a more precise grasp of our contemporary political challenges and possibilities, this course in political anthropology investigates a wide range of historical and contemporary cases of rapid political and social transformation and carefully examines the ideas, desires and utopias that inspired them. Graduate/Undergraduate Equivalency: ANTH 517. Mutually Exclusive: Credit cannot be earned for ANTH 317 and ANTH 517.

ANTH 319 - SYMBOLISM AND POWER
Short Title: SYMBOLISM AND POWER
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course considers anthropological theories of the state and examines ethnographic accounts of states in some unexpected places - that is, outside the official realm of government bureaucracies and institutionalized politics. Topics include so-called "stateless societies," planning and bureaucratic rationality, violence and power, and ethnographic methods for studying the state. Graduate/Undergraduate Equivalency: ANTH 519. Mutually Exclusive: Credit cannot be earned for ANTH 319 and ANTH 519.
ANTH 322 - CULTURES AND IDENTITIES: RACE, ETHNICITY, AND NATIONALISM
Short Title: CULTURES AND IDENTITIES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How do cultural conceptions of race, ethnicity, and nationalism shape who we think we are? How are these ideas related to Western views of the relations between nature and society, and how do these differ from those in other cultures? Graduate/Undergraduate Equivalency: ANTH 522. Mutually Exclusive: Credit cannot be earned for ANTH 322 and ANTH 522.

ANTH 323 - INTRODUCTION TO PHONOLOGY
Short Title: INTRODUCTION TO PHONOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 200 or LING 200
Description: Introduction to analysis techniques and theory concerning patternings of sounds in the world’s languages. The course will involve extensive work with non-English data sets, and development of analytical techniques such as identification of sound alternations or restrictions, and formalization of abstract representations and rules to account for them. Cross-list: LING 311. Graduate/Undergraduate Equivalency: ANTH 523. Mutually Exclusive: Credit cannot be earned for ANTH 323 and ANTH 523.

ANTH 324 - DOCUMENTARY PRODUCTION
Short Title: DOCUMENTARY PRODUCTION
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the expressive possibilities of documentary production using digital systems. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: ARTS 327, FILM 327.

ANTH 325 - SEX, SELF, AND SOCIETY IN ANCIENT GREECE
Short Title: SOCIETY IN ANCIENT GREECE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introductory venture into conducting fieldwork in the past. The course treats a wide range of artifacts, from philosophical essays to vase paintings. It derives its focus from a rich corpus of recent research into the ancient problemization of desire and self-control. Cross-list: SWGS 332. Graduate/Undergraduate Equivalency: ANTH 525. Mutually Exclusive: Credit cannot be earned for ANTH 325 and ANTH 525.

ANTH 326 - LAW, POWER AND CULTURE
Short Title: LAW, POWER AND CULTURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An exploration of normativity and its different social forms across the world. It combines theoretical and ethnographic analyses of legal institutions and practices as cultural phenomena undergirded by power relations, knowledge forms and historical forces. Graduate/Undergraduate Equivalency: ANTH 526. Mutually Exclusive: Credit cannot be earned for ANTH 326 and ANTH 526.

ANTH 327 - GENDER AND SYMBOLISM
Short Title: GENDER AND SYMBOLISM
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examinations of beliefs concerning men, women, and gender in different cultures, including the West, relating to issues of symbolism, power, and the distribution of cultural models. Cross-list: SWGS 350. Graduate/Undergraduate Equivalency: ANTH 527. Mutually Exclusive: Credit cannot be earned for ANTH 327 and ANTH 527.

ANTH 329 - BODIES, SENSUALITIES, AND ART
Short Title: BODIES, SENSUALITIES, & ART
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Cross-cultural approaches to art and the senses. Students may engage any medium. Emphasis to be placed on issues generated from performance in the arts rather than from academia. Contrasts art and academic knowledge to explore alternative epistemologies and aesthetics. Graduate/Undergraduate Equivalency: ANTH 529. Mutually Exclusive: Credit cannot be earned for ANTH 329 and ANTH 529.
### ANTH 330 - GEOARCHAEOLOGY
- **Short Title:** GEOARCHAEOLOGY  
- **Department:** Anthropology  
- **Grade Mode:** Standard Letter  
- **Course Type:** Seminar  
- **Credit Hours:** 3  
- **Restrictions:** Enrollment is limited to students with a major in Anthropology or Earth Science. Graduate level students may not enroll.  
- **Course Level:** Undergraduate Upper-Level  
- **Description:** Overview of the basics of the analysis of soils and sediments as related to archaeological deposits, and introducing the key concepts of surficial geology, site formation, landscape evolution, and the scope of depositional environments. Includes practical methods for describing stratigraphy, sediments and soil profiles in the field. Cross-list: ESCI 330.

### ANTH 331 - ART AND ARCHAEOLOGY OF THE ANCIENT NEAR EAST
- **Short Title:** ANCIENT NEAR EAST  
- **Department:** Anthropology  
- **Grade Mode:** Standard Letter  
- **Course Type:** Lecture  
- **Credit Hours:** 3  
- **Restrictions:** Graduate level students may not enroll.  
- **Course Level:** Undergraduate Upper-Level  
- **Description:** An in-depth examination of the art and archaeology of ancient Mesopotamia, Syria, Anatolia and Persia. Beginning in The Neolithic period, we will examine the development of Near Eastern art and architecture through the study of ancient sites and their associated material culture. Cross-list: HART 311.

### ANTH 332 - THE SOCIAL LIFE OF CLEAN ENERGY
- **Short Title:** SOCIAL LIFE OF CLEAN ENERGY  
- **Department:** Anthropology  
- **Grade Mode:** Standard Letter  
- **Course Type:** Seminar  
- **Credit Hours:** 3  
- **Restrictions:** Graduate level students may not enroll.  
- **Course Level:** Undergraduate Upper-Level  
- **Description:** This course considers the phenomenon of renewable energy, using a social scientific approach to analyze the various forces and interests involved in the development of renewable energy projects (such as hydropower, solar and wind) in both the global North and South. No prerequisites required. Cross-list: ENST 332. Graduate/Undergraduate Equivalency: ANTH 532. Mutually Exclusive: Credit cannot be earned for ANTH 332 and ANTH 532.

### ANTH 333 - THE MATERIAL WORLD
- **Short Title:** THE MATERIAL WORLD  
- **Department:** Anthropology  
- **Grade Mode:** Standard Letter  
- **Course Type:** Seminar  
- **Credit Hours:** 3  
- **Restrictions:** Graduate level students may not enroll.  
- **Course Level:** Undergraduate Upper-Level  
- **Description:** This course explores the mutually constructive relationship between humans and objects; it asks how objects are made meaningful and active by humans, and how, in turn, people acquire meaning, relations, and agency through material culture. Topics include: commoditization, consumption, gift exchange, subjects and objects, identity, fashion, collecting, art, and authenticity. Graduate/Undergraduate Equivalency: ANTH 533. Mutually Exclusive: Credit cannot be earned for ANTH 333 and ANTH 533.

### ANTH 334 - THE CULTURE OF IDENTITY POLITICS IN CONTEMPORARY BRAZIL
- **Short Title:** CULTURE AND IDENTITY IN BRAZIL  
- **Department:** Anthropology  
- **Grade Mode:** Standard Letter  
- **Course Type:** Seminar  
- **Credit Hours:** 3  
- **Restrictions:** Graduate level students may not enroll.  
- **Course Level:** Undergraduate Upper-Level  
- **Description:** This course introduces students to popular cultural manifestations in the form of festivals and artistic movements in the Nordeste of Brazil. The objective is to show how the cultural can be deeply political, with cultural manifestations speaking to everyday forms of representation, new identity formations, and struggles for social justice. Cross-list: HIST 333.

### ANTH 335 - ANTHROPOLOGY AS CULTURAL CRITIQUE
- **Short Title:** ANTHROPOLOGY/CULTURAL CRITIQUE  
- **Department:** Anthropology  
- **Grade Mode:** Standard Letter  
- **Course Type:** Lecture  
- **Distribution Group:** Distribution Group II  
- **Credit Hours:** 3  
- **Restrictions:** Graduate level students may not enroll.  
- **Course Level:** Undergraduate Upper-Level  
- **Description:** The critical assessment and interpretation of Euroamerican social institutions and cultural forms have always been an integral part of anthropology's intellectual project. This course will explain the techniques, history, and achievements of such critique. It will also view the purpose in the context of a more generational tradition of critical social thought in the West, especially the U.S. Graduate/Undergraduate Equivalency: ANTH 535. Mutually Exclusive: Credit cannot be earned for ANTH 335 and ANTH 535.

### ANTH 336 - BECOMING A DOCTOR
- **Short Title:** BECOMING A DOCTOR  
- **Department:** Anthropology  
- **Grade Mode:** Standard Letter  
- **Course Type:** Lecture  
- **Credit Hours:** 3  
- **Restrictions:** Graduate level students may not enroll.  
- **Course Level:** Undergraduate Upper-Level  
- **Description:** The course introduces such classic anthropological techniques, history, and achievements of such critique. It will also view the purpose in the context of a more generational tradition of critical social thought in the West, especially the U.S. Graduate/Undergraduate Equivalency: ANTH 535. Mutually Exclusive: Credit cannot be earned for ANTH 335 and ANTH 535.

### ANTH 337 - JAPANESE POPULAR CULTURE
- **Short Title:** JAPANESE POPULAR CULTURE  
- **Department:** Anthropology  
- **Grade Mode:** Standard Letter  
- **Course Type:** Lecture  
- **Credit Hours:** 3  
- **Restrictions:** Graduate level students may not enroll.  
- **Course Level:** Undergraduate Upper-Level  
- **Description:**Japan and the U.S. are connected by a mutual fascination with each other’s mass culture, with each country frequently employing the other as inspiration or cautionary tale. We will examine selections from anthropological work, juxtaposing it with theoretical readings on the nature of publics, crowds, and image circulation in general.
ANTH 338 - READING POPULAR CULTURE
Short Title: READING POPULAR CULTURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course examines a number of cases from popular
genres-romance, novels, television sit-coms, tourist sites, movies,
rock music and submits them to a variety of theoretical approaches
from disciplines such as anthropology, sociology, literary studies, and
philosophy. Graduate/Undergraduate Equivalency: ANTH 538. Mutually
Exclusive: Credit cannot be earned for ANTH 338 and ANTH 538.

ANTH 339 - IMAGE, MEDIA, ANTHROPOLOGY
Short Title: IMAGE, MEDIA, ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The intersection of anthropology and aesthetics is making
a significant contribution to the discipline. From the modern to the post-
modern to the contemporary work of visual anthropology we will examine
what it means to take up a philosophy of aesthetics, and consider
how we can integrate this genealogy of thought into contemporary
anthropological projects.

ANTH 340 - NEOLIBERALISM AND GLOBALIZATION
Short Title: NEOLIBERALISM & GLOBALIZATION
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores the relationship between two of the
most powerful forces shaping the world today: economic globalization
and political neoliberalism. Using ethnographic, policy and theoretical
documentation drawn from a variety of case studies, we will reconstruct
the interrelated origins of globalization and neoliberalism and map their
social and cultural impacts across the world. Graduate/Undergraduate
Equivalency: ANTH 540. Mutually Exclusive: Credit cannot be earned for
ANTH 340 and ANTH 540.

ANTH 341 - MUSEUMS AND HERITAGE: EXHIBITING ART, EXHIBITING
CULTURE
Short Title: MUSEUMS AND HERITAGE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A wide-ranging introduction to museum studies with a
particular focus on the collection and exhibition of cultural heritage
materials. We will examine how heritage objects are displayed and
represented in museums of art, natural historical history, and heritage.
Topics include looking and ethics of collecting, policies of display,
changing roles for museums; exhibition design and curatorial practice.
Cross-list: HURC 341. Graduate/Undergraduate Equivalency: ANTH 541.
Mutually Exclusive: Credit cannot be earned for ANTH 341 and ANTH 541.

ANTH 342 - ETHNOGRAPHIES OF CARE
Short Title: ETHNOGRAPHIES OF CARE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An ethnographically grounded exploration of the political,
social, and intimate relations that constitute care in various situations of
life and death. We ask how particular populations come to be understood
as requiring, receiving, or being entitle to care? Who becomes obliged
to provide care? And what are care's collateral effects? Graduate/
Undergraduate Equivalency: ANTH 542. Mutually Exclusive: Credit cannot
be earned for ANTH 342 and ANTH 542.

ANTH 343 - NEW RELIGIOUS MOVEMENTS IN AFRICA
Short Title: NEW RELIG MOVEMENTS IN AFRICA
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Discusses new religious movements and the religious,
sociological, and political factors leading to their rise, also missionary
and colonial reactions to them. Examines their relationship to indigenous
religions, political praxis, and their focus on this-worldly salvation in the
wake of political and economic marginality. Cross-list: RELI 342.
ANTH 344 - CITY/CULTURE
Short Title: CITY/CULTURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course treats both the theorization and the ethnographic exploration of the urban imaginary; urban spaces and practices; urban, suburban, and post-urban planning; city-states, colonial cities, and capital cities; and the late 20th century metropolis. Graduate/Undergraduate Equivalency: ANTH 544. Mutually Exclusive: Credit cannot be earned for ANTH 344 and ANTH 544.

ANTH 345 - THE POLITICS OF THE PAST: ARCHAEOLOGY IN SOCIAL CONTEXT
Short Title: ARCHAEOLOGY IN SOCIAL CONTEXT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of the way that archaeological evidence of the past has been used and viewed by particular groups at different times. Using case studies, the course considers issues of gender, race, Eurocentrism, political domination and legitimacy that emerge from critical analysis of representations of the past by archaeologists, museums, and collectors. Graduate/Undergraduate Equivalency: ANTH 545. Mutually Exclusive: Credit cannot be earned for ANTH 345 and ANTH 545.

ANTH 346 - VIRTUAL RECONSTRUCTION OF HISTORICAL CITIES
Short Title: VIRTl RECONSTR HISTORCL CITIES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course, part of the HRC's Digital Humanities Initiative, is devoted to the virtual reconstruction of ancient urban landscapes with focus on individual buildings in their urban settings. All course activities will be based around interdisciplinary student teams who will work together through the semesters to complete a virtual reconstruction project. Instructor Permission Required. Cross-list: ARCH 310, COMP 316, HART 316.

ANTH 347 - THE U.S. AS A FOREIGN COUNTRY
Short Title: THE U.S. AS A FOREIGN COUNTRY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course looks at selected aspects of American culture and society from an anthropological point of view. Readings derive from the works of both foreign and native observers, past and present. Graduate/Undergraduate Equivalency: ANTH 547. Mutually Exclusive: Credit cannot be earned for ANTH 347 and ANTH 547.

ANTH 348 - ANTHROPOLOGIES OF NATURE
Short Title: ANTHROPOLOGIES OF NATURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class examines the uses and makings of nature in accounts of the human and post-human. It introduces students to nature as an object of study, as an analytic and as a heuristic. Some of the topics the course explores include the nature-culture dyad, nature as resource, science and technology and the remaking of nature, economies of nature, materiality, nature and kinship, and natural ontologies. Graduate/Undergraduate Equivalency: ANTH 548. Mutually Exclusive: Credit cannot be earned for ANTH 348 and ANTH 548.

ANTH 349 - THE ANTHROPOLOGY OF ETHICS
Short Title: THE ANTHROPOLOGY OF ETHICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Philosophical ethics argues over the proper criteria of the definition and the assessment of ethical action. This course focuses on an emerging and increasingly salient anthropological project: empirical inquiry into the themes and variations of ethical systems and the sociocultural rationale for their existence and reproduction. Graduate/Undergraduate Equivalency: ANTH 549. Mutually Exclusive: Credit cannot be earned for ANTH 349 and ANTH 549.

ANTH 351 - CULTURES OF NATIONALISM
Short Title: CULTURES OF NATIONALISM
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine the cultural dimensions of nationalism, particularly around the creation of forms of “peoplehood” that seem to be presupposed by almost all nation-building projects. Texts to be analyzed will include the Declaration of Independence, the United States Constitution, and the Declaration of the Rights of Man. Graduate/Undergraduate Equivalency: ANTH 551. Mutually Exclusive: Credit cannot be earned for ANTH 351 and ANTH 551.
ANTH 353 - CULTURES OF INDIA  
Short Title: CULTURES OF INDIA  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Summary of the prehistory, ethnography, and ethnology of the Indian subcontinent. Special emphasis on Hinduism, Buddhism, and Indian philosophy. Graduate/Undergraduate Equivalency: ANTH 553. Mutually Exclusive: Credit cannot be earned for ANTH 353 and ANTH 553.

ANTH 354 - ILLNESS, DISABILITY, AND THE GENDERED BODY  
Short Title: DISABILITY AND GENDERED BODIES  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course draws on critical disability studies and medical anthropology to explore how gender and sexuality matter in contexts of illness and disability across a range of institutional, social, and national contexts. We pay particular attention to the ways illness and disability expose, disturb, or retrench normative arrangements of gender. Cross-list: SWGS 353. Graduate/Undergraduate Equivalency: ANTH 554. Mutually Exclusive: Credit cannot be earned for ANTH 354 and ANTH 554.

ANTH 355 - LANDSCAPE ARCHAEOLOGY  
Short Title: LANDSCAPE ARCHAEOLOGY  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course provides an overview of the way archaeologists study landscapes including studies that emphasize their ecological, symbolic, political economic and religious aspects. Recent theoretical work on landscape will be emphasized, as well as archaeological methods of investigation and interpretation, including remote sensing, surveying, and GIS. Graduate/Undergraduate Equivalency: ANTH 555. Mutually Exclusive: Credit cannot be earned for ANTH 355 and ANTH 555.

ANTH 358 - THE FOURTH WORLD: ISSUES OF INDIGENOUS PEOPLE  
Short Title: FOURTH WORLD:INDIGENOUS PEOPLE  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: In contrast with people self-identified within political structures of the First, Second and Third Worlds, Fourth World peoples are, generally speaking, "stateless peoples." In this course we will examine both how this "unofficial" status affects their struggle for self-determination and how native peoples engage traditional beliefs and practices for self-empowerment. Through readings, films and speakers we will examine current conflicts facing indigenous people in North and South America, the Soviet Union, Europe, Asia, and Australia. Graduate/Undergraduate Equivalency: ANTH 558. Mutually Exclusive: Credit cannot be earned for ANTH 358 and ANTH 558.

ANTH 359 - ASIAN TOPICS  
Short Title: ASIAN TOPICS  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This introductory course covers various topics relating to the ethnography and anthropology of Asian cultures. These may include some or all of the following: popular culture and cultural production, religion, cultural aspects of development and globalization.

ANTH 360 - TOPICS IN AFRICAN CULTURE AND ETHNOGRAPHY  
Short Title: AFRICAN TOPICS  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This introductory course covers various topics relating to the ethnography and anthropology of African cultures. These may include some or all of the following: popular culture and cultural production, cultural aspects of development and globalization.

ANTH 361 - LATIN AMERICAN TOPICS  
Short Title: LATIN AMERICAN TOPICS  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course examines contemporary cultural and political dynamics in Latin America. Topics include: race, ethnicity and indigenousness; borders, migrations and diaspora; genocide and state violence; neo-colonialisms and neo-liberalisms; sexuality, gender and class dynamics; social movements and activism; the politics and practices of medicine and religion; popular culture, media and technology. Graduate/Undergraduate Equivalency: ANTH 561. Mutually Exclusive: Credit cannot be earned for ANTH 361 and ANTH 561.
ANTH 362 - ARCHAEOLOGICAL FIELD TECHNIQUES
Short Title: ARCHAEOLOGICAL FLD TECHNIQUES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 205
Description: Methods used in fieldwork, laboratory analysis, and interpretation of archaeological data from a local site excavated by the class. Graduate/Undergraduate Equivalency: ANTH 562. Mutually Exclusive: Credit cannot be earned for ANTH 362 and ANTH 562. Repeatable for Credit.

ANTH 363 - EARLY CIVILIZATIONS
Short Title: EARLY CIVILIZATIONS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A comparative study of the civilizations of Mesopotamia, Egypt, the Indus, China, and the Maya, emphasizing the causes and conditions of their origins. Graduate/Undergraduate Equivalency. ANTH 563. Mutually Exclusive: Credit cannot be earned for ANTH 363 and ANTH 563.

ANTH 364 - AFRICAN ARCHAEOLOGY FIELD TECHNIQUES
Short Title: AFRICAN ARCHAEOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this course, basic field archaeology techniques are taught on-site in an archaeological context in Africa with emphasis on excavation methods, artifact recovery, and recording techniques. Students will excavate stone structures and a variety of historical deposits. Fieldwork takes place in Africa, June-July. Graduate/Undergraduate Equivalency: ANTH 564. Mutually Exclusive: Credit cannot be earned for ANTH 364 and ANTH 564. Repeatable for Credit.
Course URL: www.songomara.rice.edu/fieldschool.htm

ANTH 365 - POLITICS OF REPRESENTATION: HOW WE UNDERSTAND "WAR" AND "THE RACIAL OTHER"
Short Title: POLITICS OF REPRESENTATION
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Does media show how things really are? This class explores the politics of representation, particularly in times of social mayhem, revolution, and war. Although we will focus primarily on cultural and political representations of the Israeli-Palestinian conflict, this class will also put this dispute in comparison with other global events. Cross-list: SOCI 365.

ANTH 366 - SCIENCE, LOCAL AND GLOBAL
Short Title: SCIENCE, LOCAL AND GLOBAL
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores science as a transnational phenomenon, focusing on the pathways along which it flows around the world. Topics include differences in local styles of reasoning, dynamics of international scientific collaborations, transnational migration of knowledge workers, the role of science in nationalist projects, and the commodification of science. Graduate/Undergraduate Equivalency. ANTH 566. Mutually Exclusive: Credit cannot be earned for ANTH 366 and ANTH 566.

ANTH 370 - ARCHAEOLOGICAL LABORATORY TECHNIQUES AND ANALYSIS
Short Title: ARCHAEOLOGICAL LABORATORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Techniques of processing, conserving, and recording archaeological materials are emphasized. Students will become familiar with procedures for pottery, glass, metals, and building materials in addition to plant and animal remains. Course work includes lectures, hands-on lab work, and informal discussion. Lab takes place in Africa, June-July. Graduate/Undergraduate Equivalency: ANTH 570. Mutually Exclusive: Credit cannot be earned for ANTH 370 and ANTH 570. Repeatable for Credit.

ANTH 371 - MONEY AND EVERYDAY LIFE
Short Title: MONEY AND EVERYDAY LIFE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Money is such a part of everyday modern life that it is hard for us to imagine living without it. Yet in many pre-modern societies, gift-exchange was as important as money is in our own. This course will look at the cultural dimensions of systems of exchange, ranging from gift giving among Northwest Coast Indians to foreign currency exchanges between financial institutions. Along with the classic work of Marx and Simmel on money and capital, we will also cover some of the anthropological work on gifts and exchange, such as that of Mauss, Levi-Strauss, and Bourdieu, as well as some of the contemporary debates initiated by Bataille and Derrida. Graduate/Undergraduate Equivalency. ANTH 571. Mutually Exclusive: Credit cannot be earned for ANTH 371 and ANTH 571.
ANTH 372 - CULTURES OF CAPITALISM
Short Title: CULTURES OF CAPITALISM
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Most of us think of capitalism as primarily an economic phenomenon. Yet, it also has a profoundly cultural dimension. This course will examine how capitalism and related phenomena, such as commodification, markets and marketing, corporate finance and the calculation of risk, both affect and are affected by culture. We will consider the impact of capitalist markets on social relations and gender identities; on ideals of patriotism, responsibility and success; and on popular culture and leisure practices. We will also ask how people resist, appropriate and modify in culturally specific ways the logic and institutions of a global capitalist order. Graduate/Undergraduate Equivalency: ANTH 572. Mutually Exclusive: Credit cannot be earned for ANTH 372 and ANTH 572.

ANTH 374 - ASIAN PREHISTORY
Short Title: ASIAN PREHISTORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course covers select topics in the archaeology and paleoanthropology of Asia from the arrival of Homo erectus to the development of the earliest civilizations. Class discussions will focus on the history of exploration in Asia and the main debates that have shaped the study of prehistory in the largest continent on Earth. Graduate/Undergraduate Equivalency: ANTH 574. Mutually Exclusive: Credit cannot be earned for ANTH 374 and ANTH 574.

ANTH 376 - ART AND ACTIVISM
Short Title: ART AND ACTIVISM
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores art and social change in times of mass displacement, racial oppression, and war. It surveys the efforts involved in achieving justice and the possible implications of remaining historically mute and hopeless. The class will host contemporary activists and artists concerned with radical visions of hope in Houston. Cross-list: SOCI 376.

ANTH 378 - PLACE AND MEMORY IN MIDDLE EASTERN AND EUROPEAN CINEMA
Short Title: MEMORY AND PLACE IN CINEMA
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Focuses on cinematic explorations of and preoccupations with the notion of place. Screenings include iconic and lesser-known films from Europe and the Middle East that offer diverse lenses and contexts (love, family, landscapes, borders, trauma, exile) through which we will examine questions of real and imagined place and the politics of memory. Cross-list: FILM 378, HART 391. Graduate/Undergraduate Equivalency: ANTH 578. Mutually Exclusive: Credit cannot be earned for ANTH 378 and ANTH 578.

ANTH 381 - MEDICAL ANTHROPOLOGY
Short Title: MEDICAL ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Cultural, ecological, and biological perspectives on human health and disease throughout the world. Graduate/Undergraduate Equivalency: ANTH 581. Mutually Exclusive: Credit cannot be earned for ANTH 381 and ANTH 581.

ANTH 382 - BODY, TECHNOLOGY, AND ENHANCEMENT
Short Title: BODY, TECHNOLOGY, ENHANCEMENT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar on the body and the various technologies that are used to optimize it. Includes topics such as cosmetic surgery, diet supplementation, pharmaceutical enhancement and body art. Graduate/Undergraduate Equivalency: ANTH 582. Mutually Exclusive: Credit cannot be earned for ANTH 382 and ANTH 582.

ANTH 384 - PALEO-TECHNOLOGY
Short Title: PALEO-TECHNOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This Stone Age semester will immerse students in hunter-gatherer lifeways and the innovations that allowed our ancestors to survive. Student 'bands' will complete cooperative learning tasks to ensure group survival (assessment). Most class meetings will be held in outdoor space on campus. Graduate/Undergraduate Equivalency: ANTH 584. Mutually Exclusive: Credit cannot be earned for ANTH 384 and ANTH 584.
ANTH 385 - MEDIA, CULTURE, AND SOCIETY
Short Title: MEDIA, CULTURE, AND SOCIETY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course offers a theoretical and ethnographic overview of past, current, and future anthropological research on media. Topics rotate but can include: cultural conservation among indigenous peoples, spectacle and sexuality, nationalism, advertising, journalism, and news-making, political communication and activism, technology and social change. Graduate/Undergraduate Equivalency: ANTH 585. Mutually Exclusive: Credit cannot be earned for ANTH 385 and ANTH 585.

ANTH 386 - MEDICAL ANTHROPOLOGY OF FOOD AND HEALTH
Short Title: MEDICINE, FOOD, AND HEALTH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Food is increasingly understood and manipulated at the molecular level and used in therapy or disease prevention. This course focuses on the fluid intersection of biomedicine and nutrition as changes in agriculture, food safety, and research into the physiological and genetic effects of food alter how Western cultures eat. Graduate/Undergraduate Equivalency: ANTH 586. Mutually Exclusive: Credit cannot be earned for ANTH 386 and ANTH 586.

ANTH 387 - ASIAN AMERICAN CONTEMPORARY COMMUNITIES
Short Title: ASIAN AMERICAN COMMUNITIES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This interdisciplinary course will investigate the diverse cultural traditions and shared experiences of Asian Americans in the United States. By analyzing historical works, literary texts, and films, we will explore a range of topics including Asian immigration, gender roles, identity formation, and ethnic media. Cross-list: ASIA 387.

ANTH 388 - THE LIFE CYCLE: A BIOCULTURAL VIEW
Short Title: LIFE CYCLE: A BIOCULTURAL VIEW
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The human life cycle from conception to death. Focus is on the interaction between biological processes and culture. Cross-list: SWGS 335. Graduate/Undergraduate Equivalency: ANTH 588. Mutually Exclusive: Credit cannot be earned for ANTH 388 and ANTH 588.

ANTH 389 - THE ARCHAEOLOGY OF FOOD
Short Title: ARCHAEOLOGY OF FOOD
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course offers a broad anthropological perspective on food and culture, as well as the way that archaeologists attempt to reconstruct the subsistence technologies and diets of ancient peoples. Topics include forager and agricultural subsistence technologies, the origins of food production, feasting, food and identity, and gender and food. Graduate/Undergraduate Equivalency: ANTH 589. Mutually Exclusive: Credit cannot be earned for ANTH 389 and ANTH 589.

ANTH 390 - CULTURE, NARRATION, AND SUBJECTIVITY
Short Title: CULTURE,NARRATION,SUBJECTIVITY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines how linguistic and narrative structures interact to produce specific cultures of interpretation. The focus will be on linguistic and literary representations of subjectivity. This course will use novels by Western authors, such as Virginia Woolf and Dostoevsky, and some Chinese materials as comparison. Graduate/Undergraduate Equivalency: ANTH 590. Mutually Exclusive: Credit cannot be earned for ANTH 390 and ANTH 590.

ANTH 391 - SPECULATIVE FUTURES
Short Title: SPECULATIVE FUTURES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Drawing from “CliFi,” “Speculative Fiction,” and global anthropological case studies, this course analyzes a series of potential futures as earthly conditions continue to be altered by human activity. Students will develop speculative future models through assessing climate conditions, population displacement, ethics, ecological transformations and human practices and values. Cross-list: ENST 391. Graduate/Undergraduate Equivalency: ANTH 591. Mutually Exclusive: Credit cannot be earned for ANTH 391 and ANTH 591.
ANTH 392 - KINGS, QUEENS, AND COMMONERS: THE ARCHAEOLOGY OF ANCIENT MESOAMERICA
Short Title: ANCIENT MESOAMERICA
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: With an approach in archaeological methods and theories, Ancient Mesoamerica investigates the lives of ancient kings, queens, and commoners of pre-Columbian Central America. The course includes an overview of the culture history of indigenous cultures in this study area, with emphasis on topics of social archaeology that hold relevance to today's world.

ANTH 395 - CULTURES AND COMMUNICATION
Short Title: CULTURES AND COMMUNICATION
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A critical review of work informed by what has sometimes been deemed the "key concept" of anthropological theory and research - in the U.S. and elsewhere. Examples will include how individuals experience and respond to policing, examining the effects of immigration and border security policies, and tracing how people and groups mobilize to challenges laws perceived as unjust. Graduate/Undergraduate Equivalency: ANTH 595. Mutually Exclusive: Credit cannot be earned for ANTH 395 and ANTH 595.

ANTH 396 - LAW AND RESISTANCE IN THE EVERYDAY
Short Title: LAW AND RESISTANCE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will explore how people interact with the law in their everyday lives - in the U.S. and elsewhere. Examples will include how individuals experience and respond to policing, examining the effects of immigration and border security policies, and tracing how people and groups mobilize to challenges laws perceived as unjust. Mutually Exclusive: Credit cannot be earned for ANTH 396 and ANTH 596.

ANTH 397 - ETHNOGRAPHIC RESEARCH METHODS
Short Title: ETHNOGRAPHIC RESEARCH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course considers the practice of ethnographic research (design, data collection and analysis). Topics include the contentious canonization of fieldwork & the ethnographic method, ethics & human subjects, rethinking the field & collaboration. Projects include participant observation, field notes, interviewing, and analysis of archival, ephemeral & audio/visual materials. Graduate/Undergraduate Equivalency: ANTH 598. Mutually Exclusive: Credit cannot be earned for ANTH 398 and ANTH 598.

ANTH 400 - GLOBAL URBAN LAB
Short Title: GLOBAL URBAN LAB
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Guided independent research with lab component to study questions under the topics of sports, healthcare, transportation, immigration, and urban development in Houston and other global cities covered in the Global Urban Lab program. Instructor Permission Required. Mutually Exclusive: Credit cannot be earned for ANTH 400 and POST 400/SOSC 400.

ANTH 403 - ANALYZING PRACTICE
Short Title: ANALYZING PRACTICE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A critical review of work informed by what has sometimes been deemed the "key concept" of anthropological theory and research since the 1960s. Special attention will be devoted to the analytics of practice developed by Foucault, by Bourdieu, and by de Certeau. Graduate/Undergraduate Equivalency: ANTH 603. Mutually Exclusive: Credit cannot be earned for ANTH 403 and ANTH 603.

ANTH 404 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-9
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Directed reading and preparation of written papers on anthropological subjects not offered in the curriculum and advanced study of subjects on which courses are offered. Instructor Permission Required. Repeatable for Credit.
ANTH 405 - MUSEUM INTERNSHIP AND DIRECTED READING
Short Title: MUSEUM INTERNSHIP
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course combines a research-oriented internship at a local museum with directed readings in preparation for the specific focus of the internship. Instructor Permission Required. Recommended Prerequisite(s): ANTH 341.

ANTH 406 - COGNITIVE STUDIES
Short Title: COGNITIVE STUDIES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Relations between thought, language, and culture. Special emphasis given to natural systems of classification and the logical principles underlying them. Cross-list: LING 406. Graduate/Undergraduate Equivalency: ANTH 606. Mutually Exclusive: Credit cannot be earned for ANTH 406 and ANTH 606.

ANTH 407 - LINGUISTIC FIELD METHODS
Short Title: LINGUISTIC FIELD METHODS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 5
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (LING 300 or ANTH 300) and (LING 301 or ANTH 301) and (LING 304 or ANTH 304) and (LING 311 or ANTH 323) or (LING 500 or ANTH 500) and (LING 501 or ANTH 501) and (LING 504 or ANTH 504) and (LING 511 or ANTH 523)
Description: Techniques and practice in the observation, analysis, and recording of a human language. Cross-list: LING 407. Repeatable for Credit.

ANTH 408 - LINGUISTIC FIELD METHODS
Short Title: LINGUISTIC FIELD METHODS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 5
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 407 or LING 407
Description: Continuation of ANTH 407 or LING 407. Cross-list: LING 408. Repeatable for Credit.

ANTH 410 - THE ETHNOGRAPHY OF DEVELOPMENT
Short Title: THE ETHNOGRAPHY OF DEVELOPMENT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course suggests the necessity of a solid ethnographic grounding for both practical development work and for further intellectual growth of the discipline. Graduate/Undergraduate Equivalency: ANTH 610. Mutually Exclusive: Credit cannot be earned for ANTH 410 and ANTH 610.

ANTH 411 - NEUROLINGUISTICS
Short Title: NEUROLINGUISTICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of languages and the brain. Includes localization of speech, language, and memory functions, hemispheric dominance, pathologies of speech and language associated with brain damage, and hypotheses of the representation and operation of linguistic information in the cortex. Cross-list: LING 411, NEUR 411.

ANTH 412 - RHETORIC
Short Title: RHETORIC
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level

ANTH 413 - CULTURE AFTER COMMUNISM
Short Title: CULTURE AFTER COMMUNISM
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examines cultural transformations in the late- and post-socialist societies of East-Central Europe, the former Soviet Union, and Asia. Explores everyday discourses and practices through which new forms of property, selfhood, nationalism, and the state are emerging, and the legacy of cold war politics for ethnographic representation of these societies. Graduate/Undergraduate Equivalency: ANTH 613. Mutually Exclusive: Credit cannot be earned for ANTH 413 and ANTH 613.
ANTH 414 - HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY
Short Title: HERMENEUTICS & LINGUISTIC ANTH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level

ANTH 417 - ONTOLOGIES, VITALITIES, THINGS
Short Title: ONTOLOGIES, VITALITIES, THINGS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course focuses on emerging and established thematics in cultural anthropology that have been drawn from philosophical (and other) interventions concerning being, matter, vibrancy, vitality and objects and considers how these conceptual domains can be productively engaged in the empirical work of anthropology. Graduate/Undergraduate Equivalency: ANTH 617. Mutually Exclusive: Credit cannot be earned for ANTH 417 and ANTH 617.

ANTH 420 - ETHNOGRAPHY STUDIO
Short Title: ETHNOGRAPHY STUDIO
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students will read a selection of contemporary ethnographies deemed "exemplary" by diverse audiences paired with theoretical works that the authors claim in their arguments. The course will focus on how ethnographies are structured, the central issues they investigate, and how they go about doing this. The central task of the class is to analyze, critically but also productively, what rigor and creativity mean in the ethnographic investigation of contemporary and recurring questions and problems, relations between questions, theory and ethnography will also be explored through students' own ethnographic writing. Graduate/Undergraduate Equivalency: ANTH 620. Mutually Exclusive: Credit cannot be earned for ANTH 420 and ANTH 620.

ANTH 422 - INFRASTRUCTURES AND POWER
Short Title: INFRASTRUCTURES AND POWER
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar course asks why "infrastructure" – that which enables other things to happen – has recently become such an important concept in the human sciences. After reviewing recent and classic theoretical approaches we explore recent anthropological studies of infrastructures-in-action ranging from information and media infrastructures to environmental and biotic infrastructures to infrastructures of governance and power. Graduate/Undergraduate Equivalency: ANTH 622. Mutually Exclusive: Credit cannot be earned for ANTH 422 and ANTH 622.

ANTH 423 - AFRICAN MYTHS AND RITUALS
Short Title: AFRICAN MYTHS AND RITUALS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explore and analyze specific myths and rituals which provide legitimation for community ceremonies and that serve as a basis for the negotiation of power and ideology for members within that community. Readings from classic theorists: Durkheim, Levi-Strauss, Edmond Leach, Gennap and Turner, and contemporary theorists: Werbner, Heusch, Comaroff, and Ray. Cross-list: RELI 423.

ANTH 425 - ADVANCED TOPICS IN ARCHAEOLOGY
Short Title: ADVANCED TOPICS IN ARCHAEOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 205 and ANTH 362
Description: Seminar on selected topics in archaeological analysis and theory. The course will variously focus on ceramic analysis and classification, archaeological sampling in regional survey and excavation, and statistical approaches to data analysis and presentation. Please consult with the department for additional information. Graduate/Undergraduate Equivalency: ANTH 625. Mutually Exclusive: Credit cannot be earned for ANTH 425 and ANTH 625. Repeatable for Credit.
ANTH 429 - ACTIVISM AND SOCIAL MOVEMENTS
Short Title: ACTIVISM AND SOCIAL MOVEMENTS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Movements to alleviate inequalities constitute important cultural and political interventions globally. This course examines advocacy practices to create and sustain social movements and political struggles. Cases included grassroots advocacy, NGOs, transnational and technological activism; environmental justice; human rights; gender, ethnic and sexual rights; consumption and globalization; democratization and neoliberalism. Graduate/Undergraduate Equivalency: ANTH 629. Mutually Exclusive: Credit cannot be earned for ANTH 429 and ANTH 629.

ANTH 440 - REGULATORY TRANSLATIONS LAB
Short Title: REGULATORY TRANSLATIONS LAB
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class examines how the concept of "translation" can be used to understand the movement of regulations around our globalized world. It is designed as a research experience that will give students the opportunity to conduct archival research, produce annotated bibliographies, and conduct a literature review with an interdisciplinary approach that combines the social sciences and humanities. This is a hands on lab that will benefit students who are interested in the law from a social perspective and interdisciplinary thinking and research methods. Instructor Permission Required.

ANTH 441 - EXPLORING THE UNDERGROUND THROUGH ETHNOGRAPHY
Short Title: EXPLORING THE UNDERGROUND
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class will be a hands-on research experience to explore the meaning and uses of "the underground and the subterranean" across diverse communities. Students will review existing academic literature and artistic forms of expression that explore the meaning of the underground of r scientists, activists, artists, and everyday citizens. Students will also conduct fieldwork (interviews and participant observation) with Houston communities to understand what practices bring people close to that which is not immediately visible. Instructor Permission Required.

ANTH 442 - MUSEUMS: THEORY AND PRACTICE
Short Title: MUSEUMS: THEORY & PRACTICE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course combines readings and lectures exploring the representation of anthropological and archaeological materials in Museum exhibits with an internship at the Houston Museum of Natural Science. Graduate/Undergraduate Equivalency: ANTH 642. Mutually Exclusive: Credit cannot be earned for ANTH 442 and ANTH 642.

ANTH 443 - ANTHROPOLOGY OF RACE, ETHNICITY AND HEALTH
Short Title: RACE ETHNICITY AND HEALTH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores how human bodies and biomedical "facts" are culturally constructed with respect to race and ethnicity, and examines how these constructs variably impact experiences of health, well-being and illness. Graduate/Undergraduate Equivalency: ANTH 643. Mutually Exclusive: Credit cannot be earned for ANTH 443 and ANTH 643.

ANTH 444 - CULTURE, PSYCHIATRY, AND MENTAL ILLNESS
Short Title: CULTURE AND MENTAL ILLNESS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar takes psychiatric practice as an object of anthropological investigation. It explores the ways in which emotional suffering and therapeutic systems are constituted within various social, cultural, and historical contexts. Topics include affect, anxiety, psychosis, and somatization in cross-cultural perspective; diagnostic standardization; the cultural history of psychiatry; institutionalization and deinstitutionalization; psychiatric professionalization; the globalization of Western psychiatric practice; and critical anti-psychiatry movements. Graduate/Undergraduate Equivalency: ANTH 644. Mutually Exclusive: Credit cannot be earned for ANTH 444 and ANTH 644.

ANTH 445 - EXPERTS AND CULTURES OF EXPERTISE
Short Title: EXPERTS/EXPERTISE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Studies of experts and expert knowledge have recently become one of the most vibrant and promising areas of research in social-cultural anthropology today. This seminar reviews recent anthropological research on experts and their cultures of expertise and situates it in comparison to theoretical, sociological and historical engagements of expert cultures. Graduate/Undergraduate Equivalency: ANTH 645. Mutually Exclusive: Credit cannot be earned for ANTH 445 and ANTH 645.
ANTH 446 - ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY
Short Title: ADV BIOMEDICAL ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 381
Description: Seminar on contemporary research on the biomedical aspects of human health and disease. Includes topics from medical ecology and epidemiology. Graduate/Undergraduate Equivalency: ANTH 646. Mutually Exclusive: Credit cannot be earned for ANTH 446 and ANTH 646.

ANTH 447 - MODERN ETHNOGRAPHY AND THE ETHNOGRAPHY OF MODERNITY
Short Title: MODERN ETHNOGRAPHY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course explores the strategies of representation, the methodologies, and the diagnostic categories to which anthropologists have resorted in coming to terms with such phenomena as rationalization, economic and informational globalization, and the commodification of culture. Graduate/Undergraduate Equivalency: ANTH 647. Mutually Exclusive: Credit cannot be earned for ANTH 447 and ANTH 647.

ANTH 448 - PHENOMENOLOGICAL ANTHROPOLOGY
Short Title: PHENOMENOLOGICAL ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This advanced seminar explores phenomenological theory in the human sciences beginning with Hegel and Marx and examines its uptake in recent works of anthropological ethnography and theory. The course will focus especially upon questions of selfhood and alterity, affect and emotion, and the senses and knowledge. Graduate/Undergraduate Equivalency: ANTH 648. Mutually Exclusive: Credit cannot be earned for ANTH 448 and ANTH 648.

ANTH 449 - CULTURES OF SEXUALITY
Short Title: CULTURES OF SEXUALITY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: What is "sexuality" across cultural milieux? This course analyzes understandings and practices of sexuality from a global, comparative perspective, including different social configurations of gender and intimacy, reproduction, sensuality and the erotic. Case studies explore the complex relationships between sexuality and gender, ethnicity, nationalism, globalization, commodification, politics, media, health and medicine. Cross-list: SWGS 449. Graduate/Undergraduate Equivalency: ANTH 649. Mutually Exclusive: Credit cannot be earned for ANTH 449 and ANTH 649.

ANTH 451 - THE ANTHROPOLOGY OF WATER
Short Title: THE ANTHROPOLOGY OF WATER
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class will offer students concepts and methodological resources to conduct their own research projects on water related issues from an anthropological perspective. It will include reading materials and fieldwork according to each student's project specificities. Mutually Exclusive: Credit cannot be earned for ANTH 451 and ANTH 651.

ANTH 453 - COLLATERAL AFTERWORLDS
Short Title: COLLATERAL AFTERWORLDS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Drawing on ethnography and social theory, this course develops analytics attuned to the socialities, intimacies, temporalities, and forms of ethic that emerge in the precarious spaces of liberal and democratic violence and failure. In refugee camps or climate catastrophes, in a queer present or under enduring legacies, what happens if we think the social with hope and futurity in abeyance? Mutually Exclusive: Credit cannot be earned for ANTH 453 and ANTH 653. Repeatable for Credit.
ANTH 456 - HERITAGE MANAGEMENT
Short Title: HERITAGE MANAGEMENT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the policies and politics of heritage management from a global perspective. We examine how different nations define, protect, and manage heritage resources. Case studies will present debates over the meaning and interpretation of cultural heritage and illustrate connections between heritage and such issues as nationalism and identity. The graduate level course will engage students at a more advanced theoretical level through additional reading assignments and an additional paper. Graduate/Undergraduate Equivalency: ANTH 656. Mutually Exclusive: Credit cannot be earned for ANTH 456 and ANTH 656.

ANTH 458 - HUMAN OSTEOLOGY
Short Title: HUMAN OSTEOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to the analysis of human skeletal material from archaeological sites. Graduate/Undergraduate Equivalency: ANTH 658. Mutually Exclusive: Credit cannot be earned for ANTH 458 and ANTH 658.

ANTH 460 - ADVANCED ARCHAEOLOGICAL THEORY
Short Title: ADVANCED ARCHAEOLOGICAL THEORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 205
Description: History and analysis of the major currents of archaeological theory from the Encyclopaedist origins of positivism, through cultural evolutionism and historical particularism, to the New Archaeology and current trends. Graduate/Undergraduate Equivalency: ANTH 660. Mutually Exclusive: Credit cannot be earned for ANTH 460 and ANTH 660.

ANTH 463 - WEST AFRICAN PREHISTORY
Short Title: WEST AFRICAN PREHISTORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar providing in-depth consideration of the later prehistoric archaeology (late Stone Age and Iron Age) of the West African subcontinent. Graduate/Undergraduate Equivalency: ANTH 663. Mutually Exclusive: Credit cannot be earned for ANTH 463 and ANTH 663.

ANTH 463 - HERITAGE MANAGEMENT
Short Title: HERITAGE MANAGEMENT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the policies and politics of heritage management from a global perspective. We examine how different nations define, protect, and manage heritage resources. Case studies will present debates over the meaning and interpretation of cultural heritage and illustrate connections between heritage and such issues as nationalism and identity. The graduate level course will engage students at a more advanced theoretical level through additional reading assignments and an additional paper. Graduate/Undergraduate Equivalency: ANTH 656. Mutually Exclusive: Credit cannot be earned for ANTH 456 and ANTH 656.

ANTH 460 - ADVANCED ARCHAEOLOGICAL THEORY
Short Title: ADVANCED ARCHAEOLOGICAL THEORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 205
Description: History and analysis of the major currents of archaeological theory from the Encyclopaedist origins of positivism, through cultural evolutionism and historical particularism, to the New Archaeology and current trends. Graduate/Undergraduate Equivalency: ANTH 660. Mutually Exclusive: Credit cannot be earned for ANTH 460 and ANTH 660.

ANTH 463 - WEST AFRICAN PREHISTORY
Short Title: WEST AFRICAN PREHISTORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar providing in-depth consideration of the later prehistoric archaeology (late Stone Age and Iron Age) of the West African subcontinent. Graduate/Undergraduate Equivalency: ANTH 663. Mutually Exclusive: Credit cannot be earned for ANTH 463 and ANTH 663.
ANTH 493 - SENIOR RESEARCH PREPARATION
Short Title: SENIOR RESEARCH PREPARATION
Department: Anthropology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Through this required course for Anthropology majors in their final year of the program, students will cultivate skills in research design and preparation, complete training in research ethics, prepare research ethics protocols, connect with faculty advisors for their senior research project, and connect with other students in their cohort.

ANTH 494 - SENIOR RESEARCH SEMINAR
Short Title: SENIOR RESEARCH SEMINAR
Department: Anthropology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 493
Corequisite: ANTH 495
Description: This is a required course that follows ANTH 493 Senior Research Preparation, and is taken to support ANTH 495, Senior Research. The course supports students in conceptualizing and writing their senior research paper and crating their oral research presentation.

ANTH 495 - ANTHROPOLOGY CAPSTONE
Short Title: ANTHROPOLOGY CAPSTONE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Corequisite: ANTH 494
Description: Required of all anthropology majors who do not enroll in ANTH 490 and ANTH 491. Each student formulates and completes an advanced research project guided by a faculty supervisor and evaluated by a faculty panel. Students who register for ANTH 495 must also simultaneously register for ANTH 494.

ANTH 500 - LINGUISTIC ANALYSIS
Short Title: LINGUISTIC ANALYSIS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A hands-on, data-oriented approach to how different languages construct words and sentences. Students will develop skills in linguistic problem solving and the foundations for pursuing grammatical description. Topics: word classes, morphology, tense-aspect-modality, clause structure, word order, grammatical relations, existentials/possessives/locatives, voice/valence, questions, negation, relative clauses, complements causatives. Cross-list: LING 500. Graduate/Undergraduate Equivalency: ANTH 300. Mutually Exclusive: Credit cannot be earned for ANTH 500 and ANTH 300.

ANTH 501 - PHONETICS
Short Title: PHONETICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introductory study of sound as it relates to speech and sound systems in the world's languages. Speech sounds are examined in terms of production mechanisms (articulatory phonetics), propagation mechanisms (acoustic phonetics), and perception mechanisms (auditory phonetics). Includes a basic introduction to Digital Signal Processing. Without Permission of Instructor, must have Graduate Standing. Cross-list: LING 501. Graduate/Undergraduate Equivalency: ANTH 301. Mutually Exclusive: Credit cannot be earned for ANTH 501 and ANTH 301.

ANTH 505 - HISTORICAL LINGUISTICS
Short Title: HISTORICAL LINGUISTICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ANTH 200 or LING 200
Description: Exploration of the nature of language change. Topics covered include sound change, syntactic and semantic change, modeling language splits, the sociolinguistics of language change, and the history of European languages. Without Permission of Instructor, must have Graduate Standing. Cross-list: LING 505. Graduate/Undergraduate Equivalency: ANTH 305. Mutually Exclusive: Credit cannot be earned for ANTH 505 and ANTH 305.

ANTH 506 - HISTORY OF ANTHROPOLOGICAL IDEAS
Short Title: HIST OF ANTHROPOLOGICAL IDEAS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to the history of anthropology and its theories and methods. The emphasis is upon social and cultural anthropology.

ANTH 507 - ANTHROPOLOGICAL DIRECTIONS FROM SECOND WORLD WAR TO PRESENT
Short Title: ANTHRO FROM 2ND WW-PRESENT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A sequel to ANTH 306/506, the course explores turns and trends in sociocultural research and critique during the past half-century. Special attention is paid to the rise and fall of structuralism, the problematization of "the primitive" and the proliferation of theories of "practice."
ANTH 508 - THE ANTHROPOLOGY OF THE HISTORICAL IMAGINATION
Short Title: THE HISTORICAL IMAGINATION
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Explores ideas of history and attitudes toward the past as culturally conditioned phenomena. Emphasizes history as a statement of cultural values as well as conceptualizations of cause, change, time, and reality. Graduate/Undergraduate Equivalency: ANTH 308. Mutually Exclusive: Credit cannot be earned for ANTH 508 and ANTH 308.

ANTH 509 - GLOBAL CULTURES
Short Title: GLOBAL CULTURES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine specific cultural debates and issues that have "overflowed" national boundaries. Topics will include student movements, democracy and citizenship, and the internationalization of professional and popular culture. Graduate/Undergraduate Equivalency: ANTH 309. Mutually Exclusive: Credit cannot be earned for ANTH 509 and ANTH 309.

ANTH 511 - MASCULINITIES
Short Title: MASCULINITIES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course deals with masculinities in the West, concentrating on concepts of masculine protagonism and personhood. Readings explore identities constructed in realms such as law, politics, finances, art, the home and war. Graduate/Undergraduate Equivalency: ANTH 311. Mutually Exclusive: Credit cannot be earned for ANTH 511 and ANTH 311.

ANTH 512 - AFRICAN PREHISTORY
Short Title: AFRICAN PREHISTORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Thematic coverage of developments throughout the continent from the Lower Paleolithic to medieval times, with emphasis on food production, metallurgy and the rise of cities and complex societies. Graduate/Undergraduate Equivalency: ANTH 312. Mutually Exclusive: Credit cannot be earned for ANTH 512 and ANTH 312. Repeatable for Credit.

ANTH 513 - LANGUAGE AND CULTURE
Short Title: LANGUAGE AND CULTURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Investigates the relation between language and thought, language and world view, language and logic. Without Permission of Instructor, must have Graduate Standing. Cross-list: LING 513. Graduate/Undergraduate Equivalency: ANTH 313. Mutually Exclusive: Credit cannot be earned for ANTH 513 and ANTH 313.

ANTH 517 - REVOLUTIONS AND UTOPIAS
Short Title: REVOLUTIONS AND UTOPIAS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In order to gain a more precise grasp of our contemporary political challenges and possibilities, this course in political anthropology investigates a wide range of historical and contemporary cases of rapid political and social transformation and carefully examines the ideas, desires and utopias that inspired them. Graduate/Undergraduate Equivalency: ANTH 317. Mutually Exclusive: Credit cannot be earned for ANTH 517 and ANTH 317.

ANTH 519 - SYMBOLISM AND POWER
Short Title: SYMBOLISM AND POWER
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course considers anthropological theories of the state and examines ethnographic accounts of states in some unexpected places- that is, outside the official realm of government bureaucracies and institutionalized politics. Topics include so-called "stateless societies," planning and bureaucratic rationality, violence and power, and ethnographic methods for studying the state. Graduate/Undergraduate Equivalency: ANTH 319. Mutually Exclusive: Credit cannot be earned for ANTH 519 and ANTH 319.

ANTH 522 - CULTURES AND IDENTITIES: RACE, ETHNICITY, AND NATIONALISM
Short Title: CULTURES AND IDENTITIES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How do cultural conceptions of race, ethnicity, and nationalism shape who we think we are? How are these ideas related to Western views of the relations between nature and society, and how do these differ from those in other cultures? Graduate/Undergraduate Equivalency: ANTH 322. Mutually Exclusive: Credit cannot be earned for ANTH 522 and ANTH 322.
ANTH 523 - INTRODUCTION TO PHONOLOGY
Short Title: INTRODUCTION TO PHONOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to analysis techniques and theory concerning patterns of sounds in the world's languages. The course will involve extensive work with non-English data sets, and development of analytical techniques such as identification of sound alternations or restrictions, and formalization of abstract representations and rules to account for them. Without Permission of Instructor, must have Graduate Standing. Cross-list: LING 511. Graduate/Undergraduate Equivalency: ANTH 323. Mutually Exclusive: Credit cannot be earned for ANTH 523 and ANTH 323.

ANTH 525 - SEX, SELF, AND SOCIETY IN ANCIENT GREECE
Short Title: SOCIETY IN ANCIENT GREECE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introductory venture into conducting fieldwork in the past. The course treats a wide range of artifacts, from philosophical essays to vase paintings. It derives its focus from a rich corpus of recent research into the ancient problematization of desire and self-control. Cross-list: SWGS 525. Graduate/Undergraduate Equivalency: ANTH 325. Mutually Exclusive: Credit cannot be earned for ANTH 525 and ANTH 325.

ANTH 526 - LAW, POWER AND CULTURE
Short Title: LAW, POWER AND CULTURE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An exploration of normativity and its different social forms across the world. It combines theoretical and ethnographic analyses of legal institutions and practices as cultural phenomena undergirded by power relations, knowledge forms and historical forces. Graduate/Undergraduate Equivalency: ANTH 326. Mutually Exclusive: Credit cannot be earned for ANTH 526 and ANTH 326.

ANTH 527 - GENDER AND SYMBOLISM
Short Title: GENDER AND SYMBOLISM
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examinations of beliefs concerning men, women, and gender in different cultures, including the West, relating to issues of symbolism, power, and the distribution of cultural models. Graduate/Undergraduate Equivalency: ANTH 327. Mutually Exclusive: Credit cannot be earned for ANTH 527 and ANTH 327.

ANTH 529 - BODIES, SENSUALITIES, AND ART
Short Title: BODIES, SENSUALITIES, & ART
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Cross-cultural approaches to art and the senses. Students may engage any medium. Emphasis to be placed on issues generated from performance in the arts rather than from academia. Contrasts art and academic knowledge to explore alternative epistemologies and aesthetics. Graduate/Undergraduate Equivalency: ANTH 329. Mutually Exclusive: Credit cannot be earned for ANTH 529 and ANTH 329.

ANTH 532 - THE SOCIAL LIFE OF CLEAN ENERGY
Short Title: SOCIAL LIFE OF CLEAN ENERGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course considers the phenomenon of renewable energy using a social scientific approach to analyze the various forces and interests involved in the development of renewable energy projects (such as hydropower, solar and wind) in both the global North and South. No prerequisites required. GR/UG Equivalent: ANTH 332. Graduate/Undergraduate Equivalency: ANTH 332. Mutually Exclusive: Credit cannot be earned for ANTH 532 and ANTH 332.

ANTH 533 - THE MATERIAL WORLD
Short Title: THE MATERIAL WORLD
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores the mutually constructive relationship between humans and objects; it asks how objects are made meaningful and active by humans, and how, in turn, people acquire meaning, relations, and agency through material culture. Topics include: commoditization, consumption, gift exchange, subjects and objects, identity, fashion, collecting, art, and authenticity. Graduate/Undergraduate Equivalency: ANTH 333. Mutually Exclusive: Credit cannot be earned for ANTH 533 and ANTH 333.
**ANTH 535 - ANTHROPOLOGY AS CULTURAL CRITIQUE**  
**Short Title:** ANTHROPOLOGY/CULTURAL CRITIQUE  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** The critical assessment and interpretation of Euro American social institutions and cultural forms have always been an integral part of anthropology's intellectual project. This course will explain the techniques, history, and achievements of such critique. It will also view the purpose in the context of a more generational tradition of critical social thought in the West, especially the U.S. Graduate/Undergraduate Equivalency: ANTH 335. Mutually Exclusive: Credit cannot be earned for ANTH 535 and ANTH 335.

**ANTH 536 - BECOMING A DOCTOR**  
**Short Title:** BECOMING A DOCTOR  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** The course introduces such classic anthropological concepts as the rite of passage and the cultural system as frames for the investigation of the professionalization of medicine as a discipline, medical training and the changing epistemologies of medical knowledge and the changing scope and content of the medical cosmos. Graduate/Undergraduate Equivalency: ANTH 336. Mutually Exclusive: Credit cannot be earned for ANTH 536 and ANTH 336.

**ANTH 538 - READING POPULAR CULTURE**  
**Short Title:** READING POPULAR CULTURE  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** The course examines a number of cases from popular genres-romance novels, television sit-coms, tourist sites, movies, rock music and submits them to a variety of theoretical approaches from disciplines such as anthropology, sociology, literary studies, and philosophy. Graduate/Undergraduate Equivalency: ANTH 338. Mutually Exclusive: Credit cannot be earned for ANTH 538 and ANTH 338.

**ANTH 540 - NEOLIBERALISM AND GLOBALIZATION**  
**Short Title:** NEOLIBERALISM & GLOBALIZATION  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course explores the relationship between two of the most powerful forces shaping the world today: economic globalization and political neoliberalism. Using ethnographic, policy and theoretical documentation drawn from a variety of case studies, we will reconstruct the interrelated origins of globalization and neoliberalism and map their social and cultural impacts across the world. Graduate/Undergraduate Equivalency: ANTH 340. Mutually Exclusive: Credit cannot be earned for ANTH 540 and ANTH 340.

**ANTH 541 - MUSEUMS AND HERITAGE: EXHIBITING ART, EXHIBITING CULTURE**  
**Short Title:** MUSEUMS AND HERITAGE  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Course Level:** Graduate  
**Description:** A wide-ranging introduction to museum studies with a particular focus on the collection and exhibition of cultural heritage materials. We will examine how heritage objects are displayed and represented in museums of art, natural historical history, and heritage. Topics include looking and ethics of collecting, policies of display, changing roles for museums; exhibition design and curatorial practice. Instructor Permission Required. Graduate/Undergraduate Equivalency: ANTH 341. Mutually Exclusive: Credit cannot be earned for ANTH 541 and ANTH 341.

**ANTH 542 - ETHNOGRAPHIES OF CARE**  
**Short Title:** ETHNOGRAPHIES OF CARE  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** An ethnographically grounded exploration of the political, social, and intimate relations that constitute care in various situations of life and death. We ask how particular populations come to be understood as requiring, receiving, or being entitled to care? Who becomes obliged to provide care? And what are care's collateral effects? Graduate/Undergraduate Equivalency: ANTH 342. Mutually Exclusive: Credit cannot be earned for ANTH 542 and ANTH 342.
ANTH 544 - CITY/CULTURE  
Short Title: CITY/CULTURE  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The course treats both the theorization and the ethnographic exploration of the urban imaginary; urban spaces and practices; urban, suburban, and post-urban planning; city-states, colonial cities, and capital cities; and the late 20th century metropolis. Graduate/Undergraduate Equivalency: ANTH 344. Mutually Exclusive: Credit cannot be earned for ANTH 544 and ANTH 344.

ANTH 545 - THE POLITICS OF THE PAST: ARCHAEOLOGY IN SOCIAL CONTEXT  
Short Title: ARCHAEOLOGY IN SOCIAL CONTEXT  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: An examination of the way that archaeological evidence of the past has been used and viewed by particular groups at different times. Using case studies, the course considers issues of gender, race, Eurocentrism, political domination and legitimacy that emerge from critical analysis of representations of the past by archaeologists, museums, and collectors. Graduate/Undergraduate Equivalency: ANTH 345. Mutually Exclusive: Credit cannot be earned for ANTH 545 and ANTH 345.

ANTH 547 - THE U.S. AS A FOREIGN COUNTRY  
Short Title: THE U.S. AS A FOREIGN COUNTRY  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The course looks at selected aspects of American culture and society from an anthropological point of view. Readings derive from the works of both foreign and native observers, past and present. Graduate/Undergraduate Equivalency: ANTH 347. Mutually Exclusive: Credit cannot be earned for ANTH 547 and ANTH 347.

ANTH 548 - ANTHROPOLOGIES OF NATURE  
Short Title: ANTHROPOLOGIES OF NATURE  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This class examines the uses and makings of nature in accounts of the human and post-human. It introduces students to nature as an object of study, as an analytic and as a heuristic. Some of the topics the course explores include the nature-culture dyad, nature as resource, science and technology and the remaking of nature, economies of nature, materiality, nature and kinship, and natural ontologies. Graduate/Undergraduate Equivalency: ANTH 348. Mutually Exclusive: Credit cannot be earned for ANTH 548 and ANTH 348.

ANTH 549 - THE ANTHROPOLOGY OF ETHICS  
Short Title: THE ANTHROPOLOGY OF ETHICS  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Philosophical ethics argues over the proper criteria of the definition and the assessment of ethical action. This course focuses on an emerging and increasingly salient anthropological project: empirical inquiry into the themes and variations of ethical systems and the sociocultural rationale for their existence and reproduction. Graduate/Undergraduate Equivalency: ANTH 349. Mutually Exclusive: Credit cannot be earned for ANTH 549 and ANTH 349.

ANTH 550 - HISTORICAL ANTHROPOLOGIES OF RELIGION  
Short Title: HISTORICAL ANTHROPOLOGIES  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will address the study of the religious past through conjunctions of anthropology and history. Readings will include books and selections by Max Weber, Marshall Sahlins, Victor Turner, Jacques Le Goff, Aron Gurevich, and others. Cross-list: RELI 555.

ANTH 551 - CULTURES OF NATIONALISM  
Short Title: CULTURES OF NATIONALISM  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will examine the cultural dimensions of nationalism, particularly around the creation of forms of "peoplehood" that seem to be presupposed by almost all nation-building projects. Texts to be analyzed will include the Declaration of Independence, the United States Constitution, and the Declaration of the Rights of Man. Graduate/Undergraduate Equivalency: ANTH 351. Mutually Exclusive: Credit cannot be earned for ANTH 551 and ANTH 351.

ANTH 553 - CULTURES OF INDIA  
Short Title: CULTURES OF INDIA  
Department: Anthropology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Summary of the prehistory, ethnography, and ethnology of the Indian subcontinent. Special emphasis on Hinduism, Buddhism, and Indian philosophy. Graduate/Undergraduate Equivalency: ANTH 353. Mutually Exclusive: Credit cannot be earned for ANTH 553 and ANTH 353. Repeatable for Credit.
ANTH 554 - ILLNESS, DISABILITY, AND THE GENDERED BODY
Short Title: DISABILITY AND GENDERED BODIES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course draws on critical disability studies and medical anthropology to explore how gender and sexuality matter in contexts of illness and disability across a range of institutional, social, and national contexts. We pay particular attention to the ways illness and disability expose, disturb, or reframe normative arrangements of gender. Cross-list: SWGS 554. Graduate/Undergraduate Equivalency: ANTH 354. Mutually Exclusive: Credit cannot be earned for ANTH 554 and ANTH 354.

ANTH 555 - LANDSCAPE ARCHAEOLOGY
Short Title: LANDSCAPE ARCHAEOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an overview of the way archaeologists study landscapes including studies that emphasize their ecological, symbolic, political economic and religious aspects. Recent theoretical work on landscape will be emphasized, as well as archaeological methods of investigation and interpretation, including remote sensing, surveying, and GIS. Graduate/Undergraduate Equivalency: ANTH 355. Mutually Exclusive: Credit cannot be earned for ANTH 555 and ANTH 355.

ANTH 558 - THE FOURTH WORLD: ISSUES OF INDIGENOUS PEOPLES
Short Title: FOURTH WORLD: INDIGENOUS PEOPLE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In contrast with people self-identified within political structures of the First, Second and Third Worlds, Fourth World peoples are, generally speaking, "stateless peoples." In this course we will examine both how this "unofficial" status affects their struggle for self-determination and how native peoples engage traditional beliefs and practices for self-empowerment. Through readings, films and speakers we will examine current conflicts facing indigenous people in North and South America, the Soviet Union, Europe, Asia, and Australia. Graduate/Undergraduate Equivalency: ANTH 358. Mutually Exclusive: Credit cannot be earned for ANTH 558 and ANTH 358.

ANTH 561 - LATIN AMERICAN TOPICS
Short Title: LATIN AMERICAN TOPICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines contemporary cultural and political dynamics in Latin America. Topics include: race, ethnicity and indigenousness; borders, migrations and diaspora; genocide and state violence; neo-colonialisms and neo-liberalisms; sexuality, gender and class dynamics; social movements and activism; the politics and practices of medicine and religion; popular culture, media and technology. Graduate/Undergraduate Equivalency: ANTH 361. Mutually Exclusive: Credit cannot be earned for ANTH 561 and ANTH 361.

ANTH 562 - ARCHAEOLOGICAL FIELD TECHNIQUES
Short Title: ARCHAEOLOGICAL FLD TECHNIQUES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ANTH 205
Description: Methods used in fieldwork, laboratory analysis, and interpretation of archaeological data from a local site excavated by the class. Graduate/Undergraduate Equivalency: ANTH 362. Mutually Exclusive: Credit cannot be earned for ANTH 562 and ANTH 362. Repeatable for Credit.

ANTH 563 - EARLY CIVILIZATIONS
Short Title: EARLY CIVILIZATIONS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A comparative study of the civilizations of Mesopotamia, Egypt, the Indus, China, and the Maya, emphasizing the causes and conditions of their origins. Graduate/Undergraduate Equivalency: ANTH 363. Mutually Exclusive: Credit cannot be earned for ANTH 563 and ANTH 363.

ANTH 564 - AFRICAN ARCHAEOLOGY FIELD TECHNIQUES
Short Title: AFRICAN ARCHAEOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course, basic field archaeology techniques are taught on-site in an archaeological context in Africa with emphasis on excavation methods, artifact recovery, and recording techniques. Students will excavate stone structures and a variety of historical deposits. Fieldwork takes place in Africa, June-July. Graduate/Undergraduate Equivalency: ANTH 364. Mutually Exclusive: Credit cannot be earned for ANTH 564 and ANTH 364. Repeatable for Credit.
Course URL: www.songomnara.rice.edu/fieldschool.htm
ANTH 566 - SCIENCE, LOCAL AND GLOBAL
Short Title: SCIENCE, LOCAL AND GLOBAL
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores science as a transnational phenomenon, focusing on the pathways along which it flows around the world. Topics include differences in local styles of reasoning, dynamics of international scientific collaborations, transnational migration of knowledge workers, the role of science in nationalist projects, and the commodification of science. Graduate/Undergraduate Equivalency: ANTH 366. Mutually Exclusive: Credit cannot be earned for ANTH 566 and ANTH 366.

ANTH 570 - ARCHAEOLOGICAL LABORATORY TECHNIQUES AND ANALYSIS
Short Title: ARCHAEOLOGICAL LABORATORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Techniques of processing, conserving, and recording archaeological materials are emphasized. Students will become familiar with procedures for pottery, glass, metals, and building materials, in addition to plant and animal remains. Course work includes lectures, hands-on lab work, and informal discussion. Lab takes place in Senegal, June-July. Graduate/Undergraduate Equivalency: ANTH 370. Mutually Exclusive: Credit cannot be earned for ANTH 570 and ANTH 370. Repeatable for Credit.

ANTH 571 - MONEY AND EVERYDAY LIFE
Short Title: MONEY AND EVERYDAY LIFE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Money is such a part of everyday modern life that it is hard for us to imagine living without it. Yet in many pre-modern societies, gift-exchange was as important as money is in our own. This course will look at the cultural dimensions of systems of exchange, ranging from gift giving among Northwest Coast Indians to foreign currency exchanges between financial institutions. Along with the classic work of Marx and Simmel on money and capital, we will also cover some of the anthropological work on gifts and exchange, such as that of Mauss, Levi-Strauss, and Bourdieu, as well as some of the contemporary debates initiated by Bataille and Derrida. Graduate/Undergraduate Equivalency: ANTH 371. Mutually Exclusive: Credit cannot be earned for ANTH 571 and ANTH 371.

ANTH 572 - CULTURES OF CAPITALISM
Short Title: CULTURES OF CAPITALISM
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Most of us think of capitalism as primarily an economic phenomenon. Yet, it also has a profoundly cultural dimension. This class will examine how capitalism and related phenomena, such as commodification, markets and marketing, corporate finance and the calculation of risk, both affect and are affected by culture. We will consider the impact of capitalist markets on social relations and gender identities; on ideals of patriotism, responsibility and success; and on popular culture and leisure practices. We will also ask how people resist, appropriate and modify in culturally specific ways the logic and institutions of a global capitalist order. Graduate/Undergraduate Equivalency: ANTH 372. Mutually Exclusive: Credit cannot be earned for ANTH 572 and ANTH 372.

ANTH 574 - ASIAN PREHISTORY
Short Title: ASIAN PREHISTORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course covers select topics in the archaeology and paleoanthropology of Asia from the arrival of Homo erectus to the development of the earliest civilizations. Class discussions will focus on the history of exploration in Asia and the main debates that have shaped the study of prehistory in the largest continent on Earth. Graduate/Undergraduate Equivalency: ANTH 374. Mutually Exclusive: Credit cannot be earned for ANTH 574 and ANTH 374.

ANTH 578 - PLACE AND MEMORY IN MIDDLE EASTERN AND EUROPEAN CINEMA
Short Title: MEMORY AND PLACE IN CINEMA
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focuses on cinematic explorations of and preoccupations with the notion of place. Screenings include iconic and lesser - known films from Europe and the Middle East that offer diverse lenses and contexts (love, family, landscapes, borders, trauma, exile) through which we will examine questions of real and imagined place and the politics of memory. Cross-list: HART 691. Graduate/Undergraduate Equivalency: ANTH 378. Mutually Exclusive: Credit cannot be earned for ANTH 578 and ANTH 378.
ANTH 581 - MEDICAL ANTHROPOLOGY
Short Title: MEDICAL ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Cultural, ecological, and biological perspectives on human health and disease throughout the world. Graduate/Undergraduate Equivalency: ANTH 381. Mutually Exclusive: Credit cannot be earned for ANTH 581 and ANTH 381.

ANTH 582 - BODY, TECHNOLOGY, ENHANCEMENT
Short Title: BODY, TECHNOLOGY, ENHANCEMENT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on the body and the various technologies that are used to optimize it. Includes topics such as cosmetic surgery, diet supplementation, pharmaceutical enhancement and body art. Graduate/Undergraduate Equivalency: ANTH 382. Mutually Exclusive: Credit cannot be earned for ANTH 582 and ANTH 382. Repeatable for Credit.

ANTH 584 - PALEO-TECHNOLOGY
Short Title: PALEO-TECHNOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This Stone Age semester will immerse students in hunter-gatherer lifeways and the innovations that allowed our ancestors to survive. Student 'bands' will complete cooperative learning tasks to ensure group survival (assessment). Most class meetings will be held in outdoor space on campus. Graduate/Undergraduate Equivalency: ANTH 384. Mutually Exclusive: Credit cannot be earned for ANTH 584 and ANTH 384.

ANTH 585 - MEDIA, CULTURE, AND SOCIETY
Short Title: MEDIA, CULTURE, AND SOCIETY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers a theoretical and ethnographic overview of past, current, and future anthropological research on media. Topics rotate but can include: cultural conservation among indigenous peoples, spectacle and sexuality, nationalism, advertising, journalism, and news-making, political communication and activism, technology and social change. Graduate/Undergraduate Equivalency: ANTH 385. Mutually Exclusive: Credit cannot be earned for ANTH 585 and ANTH 385.

ANTH 586 - MEDICAL ANTHROPOLOGY OF FOOD AND HEALTH
Short Title: MEDICINE, FOOD, AND HEALTH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers a broad anthropological perspective on food and culture, as well as the way that archaeologists attempt to reconstruct the subsistence technologies and diets of ancient peoples. Topics include forager and agricultural subsistence technologies, the origins of food production, feasting, food and identity, and gender and food. Graduate/Undergraduate Equivalency: ANTH 386. Mutually Exclusive: Credit cannot be earned for ANTH 586 and ANTH 386.

ANTH 588 - THE LIFE CYCLE: A BIOCULTURAL VIEW
Short Title: LIFE CYCLE: A BIOCULTURAL VIEW
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The human life cycle from conception to death. Focus is on the interaction between biological processes and culture. Graduate/Undergraduate Equivalency: ANTH 388. Mutually Exclusive: Credit cannot be earned for ANTH 588 and ANTH 388.

ANTH 589 - THE ARCHAEOLOGY OF FOOD
Short Title: ARCHAEOLOGY OF FOOD
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers a broad anthropological perspective on food and culture, as well as the way that archaeologists attempt to reconstruct the subsistence technologies and diets of ancient peoples. Topics include forager and agricultural subsistence technologies, the origins of food production, feasting, food and identity, and gender and food. Graduate/Undergraduate Equivalency: ANTH 389. Mutually Exclusive: Credit cannot be earned for ANTH 589 and ANTH 389.

ANTH 590 - CULTURE, NARRATION, AND SUBJECTIVITY
Short Title: CULTURE, NARRATION, SUBJECTIVITY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines how linguistic and narrative structures interact to produce specific cultures of interpretation. The focus will be on linguistic and literary representations of subjectivity. This course will use novels by Western authors, such as Virginia Woolf and Dostoevsky, and some Chinese materials as comparison. Graduate/Undergraduate Equivalency: ANTH 390. Mutually Exclusive: Credit cannot be earned for ANTH 590 and ANTH 390.
ANTH 591 - SPECULATIVE FUTURES
Short Title: SPECULATIVE FUTURES
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Drawing from "CIIFi," "Speculative Fiction," and global anthropological case studies, this course analyzes a series of potential futures as earthly conditions continue to be altered by human activity. Students will develop speculative future models through assessing climate conditions, population displacement, ethics, ecological transformations and human practices and values. Graduate/Undergraduate Equivalency: ANTH 391. Mutually Exclusive: Credit cannot be earned for ANTH 591 and ANTH 391.

ANTH 595 - CULTURES AND COMMUNICATION
Short Title: CULTURES AND COMMUNICATION
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Investigates the relations between different forms of communication - speech, print, film, and cultural constructions such as audiences, publics, and communities. Graduate/Undergraduate Equivalency: ANTH 395. Mutually Exclusive: Credit cannot be earned for ANTH 595 and ANTH 395.

ANTH 596 - LAW AND RESISTANCE IN THE EVERYDAY
Short Title: LAW AND RESISTANCE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore how people interact with the law in their everyday lives - in the U.S. and elsewhere. Examples will include how individuals experience and respond to policing, examining the effects of immigration and border security policies, and tracing how people and groups mobilize to challenges laws perceived as unjust. Mutually Exclusive: Credit cannot be earned for ANTH 596 and ANTH 396.

ANTH 597 - ANTHROPOLOGY JOURNAL CLUB
Short Title: ANTHROPOLOGY JOURNAL CLUB
Department: Anthropology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students select, read, and discuss current articles from leading journals in sociocultural anthropology and related fields. Department Permission Required. Mutually Exclusive: Credit cannot be earned for ANTH 597 and ANTH 397. Repeatable for Credit.

ANTH 598 - ETHNOGRAPHIC RESEARCH METHODS
Short Title: ETHNOGRAPHIC RESEARCH METHODS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course considers the practice of ethnographic research (design, data collection and analysis). Topics include the contentious canonization of fieldwork & the ethnographic method, ethics & human subjects, rethinking the field & collaboration. Projects include participant observation, field notes, interviewing, and analysis of archival, ephemeral & audio/visual materials. Graduate/Undergraduate Equivalency: ANTH 398. Mutually Exclusive: Credit cannot be earned for ANTH 598 and ANTH 398.

ANTH 600 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

ANTH 601 - GRADUATE PROSEMINAR IN ANTHROPOLOGY: THEORY, METHOD, AND PROFESSIONALIZATION
Short Title: GR PROSEMINAR IN ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar course combines an introduction to classic and contemporary social theory with an overview of the evolving research foci of anthropology today and with detailed discussion of the process of anthropological professionalization. The course is designed for graduate students in anthropology but is open to others with advance permission. Repeatable for Credit.

ANTH 602 - ANTHROPOLOGY PROPOSAL WRITING SEMINAR
Short Title: PROPOSAL WRITING SEMINAR
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar prepares anthropology graduate students to write a successful grant proposal. Basic elements of proposal writing, including problem conceptualization, literature reviews, and methods will be covered.
ANTH 603 - ANALYZING PRACTICE  
**Short Title:** ANALYZING PRACTICE  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** A critical review of work informed by what has sometimes been deemed the "key concept" of anthropological theory and research since the 1960s. Special attention will be devoted to the analytics of practice developed by Foucault, by Bourdieu, and by de Certeau. Graduate/Undergraduate Equivalency: ANTH 403. Mutually Exclusive: Credit cannot be earned for ANTH 603 and ANTH 403.

ANTH 606 - COGNITIVE STUDIES  
**Short Title:** COGNITIVE STUDIES  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Relations between thought, language, and culture. Special emphasis given to natural systems of classification and the logical principles underlying them. Graduate/Undergraduate Equivalency: ANTH 406. Mutually Exclusive: Credit cannot be earned for ANTH 606 and ANTH 406. Repeatable for Credit.

ANTH 610 - THE ETHNOGRAPHY OF DEVELOPMENT  
**Short Title:** THE ETHNOGRAPHY OF DEVELOPMENT  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course suggests the necessity of a solid ethnographic grounding for both practical development work and for further intellectual growth of the discipline. Graduate/Undergraduate Equivalency: ANTH 410. Mutually Exclusive: Credit cannot be earned for ANTH 610 and ANTH 410.

ANTH 612 - RHETORIC  
**Short Title:** RHETORIC  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Overview of classical theories. Intensive discussion of contemporary theories and applications in a wide variety of disciplines. Graduate/Undergraduate Equivalency: ANTH 412. Mutually Exclusive: Credit cannot be earned for ANTH 612 and ANTH 412. Repeatable for Credit.

ANTH 613 - CULTURE AFTER COMMUNISM  
**Short Title:** CULTURE AFTER COMMUNISM  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Examines cultural transformations in the late- and post-socialist societies of East-Central Europe, the former Soviet Union, and Asia. Explores everyday discourses and practices through which new forms of property, selfhood, nationalism, and the state are emerging, and the legacy of cold war politics for ethnographic representation of these societies. Graduate/Undergraduate Equivalency: ANTH 413. Mutually Exclusive: Credit cannot be earned for ANTH 613 and ANTH 413.

ANTH 614 - HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY  
**Short Title:** HERMENEUTICS & LINGUISTIC ANTH  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Application of linguistic theory and method in the analysis of cultural materials. Includes discourse analysis and the structure and interpretation of texts and conversation. Graduate/Undergraduate Equivalency: ANTH 414. Mutually Exclusive: Credit cannot be earned for ANTH 614 and ANTH 414. Repeatable for Credit.

ANTH 615 - THEORIES OF MODERNITY/POSTMODERNITY  
**Short Title:** THEORIES OF MODERNITY/POSTMOD  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** An advanced course for graduate students and undergraduate majors with interests in the interdisciplinary field of cultural studies. Readings in the work of Marx, Weber, Durkheim, Saussure, Gadamer, Derrida, Bakhtin, Foucault, and others. Mutually Exclusive: Credit cannot be earned for ANTH 615 and ANTH 415.

ANTH 616 - CLASSICAL SOCIAL THEORY  
**Short Title:** CLASSICAL SOCIAL THEORY  
**Department:** Anthropology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This seminar explores the foundations of social and cultural analysis. It will address precursors, but will focus primarily on works that introduce and develop the concepts and epistemic apparatuses that inaugurated such disciplines as sociology, anthropology, religious studies, and political theory as we know them today.
ANTH 617 - ONTOLOTIES, VITALITIES, THINGS
Short Title: ONTOLOGIES, VITALITIES, THINGS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Description: Course focuses on emerging and established thematics in cultural anthropology that have been drawn from philosophical (and other) interventions concerning being, matter, vibrancy, vitality and objects and considers how these conceptual domains can be productively engaged in the empirical work of anthropology. Graduate/Undergraduate Equivalency: ANTH 417. Mutually Exclusive: Credit cannot be earned for ANTH 617 and ANTH 417.

ANTH 620 - ETHNOGRAPHY STUDIO
Short Title: ETHNOGRAPHY STUDIO
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Description: Students will read a selection of contemporary ethnographies deemed "exemplary" by diverse audiences paired with theoretical works that the authors claim in their arguments. The course will focus on how ethnographies are structured, the central issues they investigate, and how they go about doing this. The central task of the class is to analyze, critically but also productively, what rigor and creativity mean in the ethnographic investigation of contemporary and recurring questions and problems, relations between questions, theory and ethnography will also be explored through students’ own ethnographic writing. Graduate/Undergraduate Equivalency: ANTH 420. Mutually Exclusive: Credit cannot be earned for ANTH 620 and ANTH 420.

ANTH 622 - INFRASTRUCTURES AND POWER
Short Title: INFRASTRUCTURES AND POWER
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Description: This seminar course asks why "infrastructure" – that which enables other things to happen – has recently become such an important concept in the human sciences. After reviewing recent and classic theoretical approaches we explore recent anthropological studies of infrastructures-in-action ranging from information and media infrastructures to environmental and biotic infrastructures to infrastructures of governance and power. Graduate/Undergraduate Equivalency: ANTH 422. Mutually Exclusive: Credit cannot be earned for ANTH 622 and ANTH 422.

ANTH 625 - ADVANCED TOPICS IN ARCHAEOLOGY
Short Title: ADVANCED TOPICS IN ARCHAEOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Description: Seminar on selected topics in archaeological analysis and theory. The course will variously focus on ceramic analysis and classification, archaeological sampling in regional survey and excavation, and statistical approaches to data analysis and presentation. Please consult with the department for additional information. Graduate/Undergraduate Equivalency: ANTH 425. Mutually Exclusive: Credit cannot be earned for ANTH 625 and ANTH 425. Repeatable for Credit.

ANTH 629 - ACTIVISM AND SOCIAL MOVEMENTS
Short Title: ACTIVISM AND SOCIAL MOVEMENTS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Description: Movements to alleviate inequalities constitute important cultural and political interventions globally. This course examines advocacy practices to create and sustain social movements and political struggles. Cases included grassroots advocacy, NGOs, transnational and technological activism; environmental justice; human rights; gender, ethnic and sexual rights; consumption and globalization; democratization and neoliberalism. Graduate/Undergraduate Equivalency: ANTH 429. Mutually Exclusive: Credit cannot be earned for ANTH 629 and ANTH 429.

ANTH 642 - MUSEUMS: THEORY & PRACTICE
Short Title: MUSEUMS: THEORY & PRACTICE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Description: This course combines readings and lectures exploring the representation of anthropological and archaeological materials in museum exhibits with an internship at the Houston Museum of Natural Science. The Graduate-Level course will engage students at a more advanced theoretical level through additional reading assignments and an additional paper. Graduate/Undergraduate Equivalency: ANTH 429. Mutually Exclusive: Credit cannot be earned for ANTH 642 and ANTH 442.

ANTH 643 - ANTHROPOLOGY OF RACE, ETHNICITY AND HEALTH
Short Title: RACE ETHNICITY AND HEALTH
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Description: This course explores how human bodies and biomedical ‘facts’ are culturally constructed with respect to race and ethnicity, and examines how these constructs variably impact experiences of health, well-being and illness. Instructor Permission Required. Graduate/Undergraduate Equivalency: ANTH 443. Mutually Exclusive: Credit cannot be earned for ANTH 643 and ANTH 443.
ANTH 644 - CULTURE, PSYCHIATRY, AND MENTAL ILLNESS
Short Title: CULTURE AND MENTAL ILLNESS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar takes psychiatric practice as an object of anthropological investigation. It explores the ways in which emotional suffering and therapeutic systems are constituted within various social, cultural, and historical contexts. Topics include affect, anxiety, psychosis, and somatization in cross-cultural perspective; diagnostic standardization; the cultural history of psychiatry; institutionalization and deinstitutionalization; psychiatric professionalization; the globalization of Western psychiatric practice; and critical anti-psychiatry movements. Graduate/Undergraduate Equivalency: ANTH 444. Mutually Exclusive: Credit cannot be earned for ANTH 644 and ANTH 444.

ANTH 645 - EXPERTS AND CULTURES OF EXPERTISE
Short Title: EXPERTS/EXPERTISE
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Studies of experts and expert knowledge have recently become one of the most vibrant and promising areas of research in social-cultural anthropology today. This seminar reviews recent anthropological research on experts and their cultures of expertise and situates it in comparison to theoretical, sociological and historical engagements of expert cultures. Graduate/Undergraduate Equivalency: ANTH 445. Mutually Exclusive: Credit cannot be earned for ANTH 645 and ANTH 445.

ANTH 646 - ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY
Short Title: ADV BIOMEDICAL ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on contemporary research on the biomedical aspects of human health and disease. Includes topics from medical ecology and epidemiology. Cross-list: ENST 646. Graduate/Undergraduate Equivalency: ANTH 446. Recommended Prerequisite(s): ANTH 381 or ANTH 581. Mutually Exclusive: Credit cannot be earned for ANTH 646 and ANTH 446.

ANTH 647 - MODERN ETHNOGRAPHY AND THE ETHNOGRAPHY OF MODERNITY
Short Title: MODERN ETHNOGRAPHY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course explores the strategies of representation, the methodologies, and the diagnostic categories to which anthropologists have resorted in coming to terms with such phenomena as rationalization, economic and informational globalization, and the commodification of culture. Graduate/Undergraduate Equivalency: ANTH 447. Mutually Exclusive: Credit cannot be earned for ANTH 647 and ANTH 447.

ANTH 648 - PHENOMENOLOGICAL ANTHROPOLOGY
Short Title: PHENOMENOLOGICAL ANTHROPOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This advanced seminar explores phenomenological theory in the human sciences beginning with Hegel and Marx and examines its uptake in recent works of anthropological ethnography and theory. The course will focus especially upon questions of selfhood and alterity, affect and emotion, and the senses and knowledge. Graduate/Undergraduate Equivalency: ANTH 448. Mutually Exclusive: Credit cannot be earned for ANTH 648 and ANTH 448.

ANTH 649 - CULTURES OF SEXUALITY
Short Title: CULTURES OF SEXUALITY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: What is "sexuality" across cultural milieux? This course analyzes understandings and practices of sexuality from a global, comparative perspective, including different social configurations of gender and intimacy, reproduction, sensuality and the erotic. Case studies explore the complex relationships between sexuality and gender, ethnicity, nationalism, globalization, commodification, politics, media, health and medicine. Graduate/Undergraduate Equivalency: ANTH 449. Mutually Exclusive: Credit cannot be earned for ANTH 649 and ANTH 449.

ANTH 650 - PEDAGOGY
Short Title: PEDAGOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Training in the basic elements of teaching in anthropology to be taken in conjunction with applied graduate student teaching in ANTH 316. Recommended Prerequisite(s): Third year and above graduate students. Repeatable for Credit.
ANTH 651 - THE ANTHROPOLOGY OF WATER
Short Title: THE ANTHROPOLOGY OF WATER
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This class will offer students concepts and methodological resources to conduct their own research projects on water related issues from an anthropological perspective. It will include reading materials and fieldwork according to each student's project specificities. Mutually Exclusive: Credit cannot be earned for ANTH 651 and ANTH 451.

ANTH 652 - RESEARCH DESIGN
Short Title: RESEARCH DESIGN
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An exploration of the process of conceptualization and concrete design of dissertation-linked research. Recommended for third- or fourth-year graduate students.

ANTH 653 - COLLATERAL AFTERWORLDS
Short Title: COLLATERAL AFTERWORLDS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Drawing on ethnography and social theory, this course develops analytics attuned to the socialities, intimacies, temporalities, and forms of ethic that emerge in the precarious spaces of liberal and democratic violence and failure. In refugee camps or climate catastrophes, in a queer present or under enduring legacies, what happens if we think the social with hope and futurity in abeyance? Mutually Exclusive: Credit cannot be earned for ANTH 653 and ANTH 453. Repeatable for Credit.

ANTH 654 - HERITAGE MANAGEMENT
Short Title: HERITAGE MANAGEMENT
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the policies and politics of heritage management from a global perspective. We examine how different nations define, protect, and manage heritage resources. Case studies will present debates over the meaning and interpretation of cultural heritage and illustrate connections between heritage and such issues as nationalism and identity. The graduate level course will engage students at a more advanced theoretical level through additional reading assignments and an additional paper. Graduate/Undergraduate Equivalency: ANTH 456. Mutually Exclusive: Credit cannot be earned for ANTH 654 and ANTH 456.

ANTH 655 - ADVANCED ARCHAEOLOGICAL THEORY
Short Title: ADVANCED ARCHAEOLOGICAL THEORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ANTH 205
Description: History and analysis of the major currents of archaeological theory from the Encyclopaedist origins of positivism, through cultural evolutionism and historical particularism, to the New Archaeology and current trends. Graduate/Undergraduate Equivalency: ANTH 460. Mutually Exclusive: Credit cannot be earned for ANTH 660 and ANTH 460. Repeatable for Credit.

ANTH 658 - HUMAN OSTEOLOGY
Short Title: HUMAN OSTEOLOGY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the analysis of human skeletal material from archaeological sites. Instructor Permission Required. Graduate/Undergraduate Equivalency: ANTH 458. Mutually Exclusive: Credit cannot be earned for ANTH 658 and ANTH 458.

ANTH 660 - ADVANCED ARCHAEOLOGICAL THEORY
Short Title: ADVANCED ARCHAEOLOGICAL THEORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ANTH 205
Description: History and analysis of the major currents of archaeological theory from the Encyclopaedist origins of positivism, through cultural evolutionism and historical particularism, to the New Archaeology and current trends. Graduate/Undergraduate Equivalency: ANTH 460. Mutually Exclusive: Credit cannot be earned for ANTH 660 and ANTH 460. Repeatable for Credit.

ANTH 663 - WEST AFRICAN PREHISTORY
Short Title: WEST AFRICAN PREHISTORY
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar providing in-depth consideration of the later prehistoric archaeology (late Stone Age and Iron Age) of the West African subcontinent. Graduate/Undergraduate Equivalency: ANTH 463. Mutually Exclusive: Credit cannot be earned for ANTH 663 and ANTH 463.

ANTH 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.
ANTH 683 - DOCUMENTARY AND ETHNOGRAPHIC FILM
Short Title: DOCUMENTARY AND ETHNOGRAPHIC
Department: Anthropology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of the history of documentary and ethnographic cinema from a worldwide perspective. Includes both canonical and alternative films and film movements, with emphasis on the shifting and overlapping boundaries of fiction and nonfiction genres. Graduate/Undergraduate Equivalency: ANTH 483. Mutually Exclusive: Credit cannot be earned for ANTH 683 and ANTH 483.

ANTH 800 - RESEARCH AND THESIS
Short Title: RESEARCH AND THESIS
Department: Anthropology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

Applied Physics (APPL)

APPL 490 - RQI - REU SUMMER RESEARCH PROGRAM
Short Title: UNDERGRAD SUMMER RESEARCH-REU
Department: Applied Physics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Research experience under supervision of graduate students and faculty. Summer semester only. Department Permission Required.

APPL 800 - RESEARCH AND THESIS
Short Title: RESEARCH AND THESIS
Department: Applied Physics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Thesis research under the supervision of faculty. Repeatable for Credit.

Arabic (ARAB)

ARAB 141 - FIRST YEAR ARABIC I
Short Title: FIRST YEAR ARABIC I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Arabic (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Arabic. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Mutually Exclusive: Credit cannot be earned for ARAB 141 and ARAB 161.
Course URL: clicarabicblogs.rice.edu

ARAB 142 - FIRST YEAR ARABIC II
Short Title: FIRST YEAR ARABIC II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ARAB 141
Description: Continuation of ARAB 141. Development of interactional competence in Arabic (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Arabic. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for ARAB 142 and ARAB 262.
Course URL: clicarabicblogs.rice.edu

ARAB 222 - AP CREDIT IN ARABIC LANGUAGE
Short Title: AP/OTH CREDIT ARABIC LANGUAGE
Department: Cntr Lang & Intercultural Comm
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 4
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement and International Baccalaureate exams. This credit counts toward the total credit hours required for graduation. Credit may not be received for both ARAB 222 and ARAB 101. Does not receive distribution credit.
ARAB 263 - SECOND YEAR ARABIC I
Short Title: SECOND YEAR ARABIC I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ARAB 142
Description: Continuation of ARAB 142. Development of interactional competence in Arabic (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Arabic. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for ARAB 263 and ARAB 201.
Course URL: clicarabic.blogs.rice.edu

ARAB 264 - SECOND YEAR ARABIC II
Short Title: SECOND YEAR ARABIC II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ARAB 263
Description: Continuation of ARAB 263. Development of interactional competence in Arabic (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Arabic. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for ARAB 264 and ARAB 202.
Course URL: clicarabic.blogs.rice.edu

ARAB 301 - THIRD YEAR ARABIC I
Short Title: THIRD YEAR ARABIC I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARAB 264
Description: Continuation of ARAB 263. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.
Course URL: clicarabic.blogs.rice.edu

ARAB 302 - THIRD YEAR ARABIC II
Short Title: THIRD YEAR ARABIC II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARAB 301
Description: Continuation of ARAB 301. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.
Course URL: clicarabic.blogs.rice.edu

Architecture (ARCH)

ARCH 100 - LAUNCH - RICE SCHOOL OF ARCHITECTURE SUMMER PROGRAM: INTRODUCTORY DESIGN STUDIO
Short Title: (LAUNCH) RICE SUMMER ARCH
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Introduction to architectural design for current Rice students and summer visitors. Guided explorations introduce speculative ways of thinking about architecture and the city, using basic design tools and materials.

ARCH 101 - PRINCIPLES OF ARCHITECTURE I - ORDER
Short Title: PRINCIPLES OF ARCHITECTURE I
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This introductory studio frames architecture as a discipline through a set of short problems that examine the relationship between formal and spatial ordering, technical and material concepts, and issues of use and program, culminating in a small synthetic project. Permission Required by Director of Undergraduate Studies, Rice School of Architecture. Department Permission Required.

ARCH 102 - PRINCIPLES OF ARCHITECTURE II - REPRESENTATION
Short Title: PRINCIPLES OF ARCHITECTURE II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ARCH 101
Description: What is the role of information and representation within the design process? This studio introduces and explores the tools and concepts of notation and representation in architecture and how they serve as instruments of inquiry in a design processes. The use of precedents is a focus early in the semester, in which students analyze a project and its formal concepts that inform the design of a small architectural project in the second part of the course.
ARCH 105 - ENVIRONMENT, CULTURE AND SOCIETY
Short Title: ENVIRONMENT, CULTURE & SOCIETY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This introductory course in environmental studies helps students to better understand the complex interrelationship between human cultures and their social and physical environments. Lectures and assignments draw upon the methods and expertise of architecture, the humanities and the social sciences. This is a core course of Rice's Environmental Studies minor. Cross-list: ENST 100.

ARCH 110 - THE PARTHENON AND PERIKLEAN ATHENS
Short Title: THE PARTHENON
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: In this course, we will trace the history and mythology of the Parthenon. We begin with the dawn of sacred tradition on the Acropolis, then explore the classical recreation of the city, the conversion of the Parthenon into a church, its subsequent destruction and the current debate over restoration. This course is limited to first-year students only, any others will be removed from this course. Cross-list: CLAS 103, FSEM 113, HART 110.

ARCH 201 - PRINCIPLES OF ARCHITECTURE III - ORGANIZATION
Short Title: PRINCIPLES OF ARCHITECTURE III
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ARCH 102
Description: What is the relationship between diagrammatic organization systems and the tectonic systems of construction? What is the relationship between the internal organization of a building's program and its immediate external context? The potentials of different structural systems in relationship to programmatic diagrams are foregrounded to develop an architectural proposal for a public program of medium size.

ARCH 202 - PRINCIPLES OF ARCHITECTURE IV - EFFECTS
Short Title: PRINCIPLES OF ARCHITECTURE IV
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ARCH 201
Description: What is the relationship between material, technique and spatial or formal effects? This studio focuses on developing a student's understanding and experimentation with material and tectonic systems, building envelopes, and issues of sustainability.

ARCH 207 - TECHNOLOGY I
Short Title: TECHNOLOGY I
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The course will introduce students to historical and contemporary structures through multi-media presentations, computer-based visualizations, field trips, and hands-on experiments with materials of construction and physical models of structures. This course also addresses sustainability issues specific to structural systems such as embodied energy, life-cycle cost, and material recycling. This is the introductory course on the art and science of designing engineered structures and is the first of four required courses in the architectural technology sequence. It is intended for first or second year students interested in both civil engineering and architecture. Graduate/Undergraduate Equivalency: ARCH 507. Mutually Exclusive: Credit cannot be earned for ARCH 207 and ARCH 507.

ARCH 225 - HISTORY & THEORY I (INTRO)
Short Title: HISTORY & THEORY I (INTRO)
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This introductory course exposes student's issues and debates that have driven architects and theorists from the early twentieth century to the present. The course is structured around a sequence of fourteen themes that have recurrent as major issues throughout architectural history. Focusing on topics, ranging from representation, to media, to politics, urbanity, or the environment, teach theme is presented as a debate between differing viewpoints, in order to expose the positions that have motivated both theory and practice. In weekly discussion sections, we will be analyzing buildings and discussing canonical texts. These sections provide opportunities for students to develop their own positions on the issues debated, and to refine their ability to make arguments. Cross-list: HART 225. Graduate/Undergraduate Equivalency: ARCH 525. Mutually Exclusive: Credit cannot be earned for ARCH 225 and ARCH 525.

ARCH 235 - HISTORY OF ARCHITECTURAL THINKING I
Short Title: HISTORY OF ARCH THINKING I
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to architectural thought. Lectures and discussions focusing on ideas before 1850 that have exercised a significant influence on the subsequent discourse and production of architecture and urbanism. Graduate/Undergraduate Equivalency: ARCH 535. Mutually Exclusive: Credit cannot be earned for ARCH 235 and ARCH 345/ARCH 535/ARCH 645.
ARCH 301 - INTERMEDIATE PROBLEMS IN ARCHITECTURE I - SITUATION
Short Title: INTERMEDIATE PROBLEMS ARCH I
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARCH 202
Description: What is the relationship between the building and larger systems of the environment, constructed and natural, in which it sits and affects? This studio focuses on issues of architecture's relationship to site and landscape environmental considerations and the relationship between systems and processes across the scales of architecture, urban and infrastructure.

ARCH 302 - INTERMEDIATE PROBLEMS IN ARCHITECTURE II - LEGIBILITY
Short Title: INTERMEDIATE PROBLEMS ARCH II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARCH 301
Description: How do questions of legibility in architecture engage a global milieu? This typically travel focused studio develops a large and complex architectural project in an urban context, examining through design the relationship between a specific locale and culture on the one hand and on the other a global economy and discipline.

ARCH 303 - COHERENCE
Short Title: COHERENCE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will construct a conversation about coherence. The opening salvo in this conversation: architects traffic entirely in architectural project in an urban context, examining through design the relationship between a specific locale and culture on the one hand and on the other a global economy and discipline.

ARCH 305 - ARCHITECTURE FOR NON-ARCHITECTS
Short Title: ARCH FOR NON-ARCHITECTS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is designed to increase awareness and appreciation of broad range of architectural issues through lectures, comparative building studies, design exercises, readings, and discussion. Intended for non-majors in architecture, the course will provide students the opportunity to understand the architectural design process through hands-on experience. Enrollment limited to 15 and requires instructor permission. Instructor Permission Required.

ARCH 307 - INTRODUCTION TO LANDSCAPE ARCHITECTURE: HISTORY & METHOD
Short Title: INTRODUCTION TO LANDSCAPE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will provide an introduction to landscape architecture through a survey of its history, and through direct application to a studio project. From the historic gardens at Versailles to the current Millennium Park in Chicago, the direct manipulation and design of land has a long and complex set of rules, traditions and practices. The focus will be on the consideration of how architecture extends beyond the interior and its relationship to an equally important external fabric. The course is comprised of interactive lectures on landscape themes, and the application of specific concepts imparted into design exercises. Graduate/Undergraduate Equivalency: ARCH 607. Mutually Exclusive: Credit cannot be earned for ARCH 307 and ARCH 607.

ARCH 309 - TECHNOLOGY II
Short Title: TECHNOLOGY II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is the second part of the introduction to contemporary building structures. The topics covered are the design of concrete structures and design of specialized structures including tilt wall, long span, and high rise. Each structural type is explored in terms of overall performance, design of individual components, and the relation of structure to other building subsystems such as foundations, enclosure, and interiors. This course also addresses sustainability issues specific to structural systems and is the second of four required courses in the architectural technology sequence. Graduate/Undergraduate Equivalency: ARCH 509. Recommended Prerequisite(s): Prior completion of Technology I. Mutually Exclusive: Credit cannot be earned for ARCH 309 and ARCH 509.
ARCH 310 - VIRTUAL RECONSTRUCTION OF HISTORICAL CITIES  
**Short Title:** VIRTUAL RECONSTR HISTORICAL CITIES  
**Department:** Architecture  
**Grade Mode:** Standard Letter  
**Course Type:** Research  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course, part of the HRC’s Digital Humanities Initiative, is devoted to the virtual reconstruction of ancient urban landscapes with focus on individual buildings in their urban settings. All course activities will be based around interdisciplinary student teams who will work together through the semesters to complete a virtual reconstruction project. Instructor Permission Required. Cross-list: ANTH 346, COMP 316, HART 316.

ARCH 311 - HOUSTON ARCHITECTURE  
**Short Title:** HOUSTON ARCHITECTURE  
**Department:** Architecture  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course consists of a series of illustrated lectures and walking tours that describe and analyze the architecture of Houston from the city’s founding in 1836 to the present. Characteristic building types and exceptional works of architecture are identified; tours stimulate an awareness of the historical dimension of urban sites. Graduate/Undergraduate Equivalency: ARCH 611. Mutually Exclusive: Credit cannot be earned for ARCH 311 and ARCH 611.

ARCH 313 - CASE STUDIES IN SUSTAINABLE DESIGN  
**Short Title:** CASE STUDIES IN SUSTAINABLE DESIGN  
**Department:** Architecture  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course will explore sustainable design from initial sustainable facility concepts and team organizations, to enlisting community support and process assessment. The course will develop into details about sustainable design, lessons learned, processes and outcomes. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Cross-list: ENST 313. Graduate/Undergraduate Equivalency: ARCH 613. Mutually Exclusive: Credit cannot be earned for ARCH 313 and ARCH 613.

ARCH 314 - TECHNOLOGY III  
**Short Title:** TECHNOLOGY III  
**Department:** Architecture  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** The building envelope is the collection of material assemblies that separate a building’s interior from the exterior environment. This course examines the interaction of those assemblies with natural forces such as temperature, moisture, and solar radiation and the details of construction which have evolved to mitigate them. The subject matter includes both traditional building exterior wall and roof construction and newer technologies such as rainscreen, green roof, and building surface media systems. This course addresses sustainability issues related to enclosure systems through energy cost and carbon footprint analysis. It is the third of four required courses in the architectural technology sequence. Graduate/Undergraduate Equivalency: ARCH 514. Mutually Exclusive: Credit cannot be earned for ARCH 314 and ARCH 514.

**Short Title:** BRAZIL BUILT  
**Department:** Architecture  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** From Brazil Builds, MOMA’s 1943 celebrated exhibition to Brasilia, the supermodern capital created ex-nihilo in the middle of nowhere, to today’s worldwide attention on Brazil, this seminar examines the built environment - natural and architectural - as the main transmitter of modernism in Brazil. This is a seminar on Brazilian modernism and its discontents. Cross-list: HART 310. Graduate/Undergraduate Equivalency: ARCH 515. Mutually Exclusive: Credit cannot be earned for ARCH 315 and ARCH 515.

ARCH 316 - TECHNOLOGY IV  
**Short Title:** TECHNOLOGY IV  
**Department:** Architecture  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course addresses building environmental systems including power, water, and wastewater with an emphasis on air condition systems. Through multimedia presentations and fieldtrips, students are taught to analyze the thermal environment in a variety of building types and select equipment to meet these needs. Sustainability issues related to environmental systems such as energy conservational and life cycle costs are also addressed. This is the fourth required course in the architectural technology sequence. Graduate/Undergraduate Equivalency: ARCH 516. Mutually Exclusive: Credit cannot be earned for ARCH 316 and ARCH 516.
ARCH 317 - LANDSCAPE AND SITE STRATEGIES FOR HOUSTON
Short Title: LANDSCAPE & SITE STRAT HOUSTON
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: This course is a workshop in site planning, with Houston as its focus. It will allow students to gain practice assessing, cataloging, and communicating the many complex issues that go into plugging a building into a site. We will navigate the networks created by natural environments, the build and legal environments, and access. The final product of this course is a site plan. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 617. Mutually Exclusive: Credit cannot be earned for ARCH 317 and ARCH 617.

ARCH 318 - LIVING IN THE CITY IN THE OTTOMAN EMPIRE
Short Title: LIVING IN THE CITY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar combines primary and secondary sources to explore the urban experiences of Ottoman men and women in the 18th and early 19th centuries. Looking at several cities including Istanbul, Izmir, Salonika, Damascus, Aleppo and Alexandria, we will discuss such issues as neighborhood and community life, public spaces and recreational culture perceptions of space, urban institutions, Muslim and non-Muslim relations, migration and marginality, violence and death. Reading knowledge of French and/or Turkish helpful but not necessary. Cross-list: HART 308. Graduate/Undergraduate Equivalency: ARCH 518. Mutually Exclusive: Credit cannot be earned for ARCH 318 and ARCH 518.

ARCH 321 - CASE STUDIES IN SUSTAINABILITY: THE HIGH PERFORMANCE BUILDING
Short Title: SUSTAINABILITY CASE STUDIES
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The project-based seminar will provide a means by which all those with an interest in the building science entail in the design of commercial, institutional, and residential structures can investigate common issues, obtain information, discuss local strategies, and otherwise address subjects relating to building or campus performance over its lifecycle. To develop an approach of taking an existing Rice University building an optimizing its use via "repositioning" or redesign the class will create an interdisciplinary forum where students of architecture, engineering (structural, mechanical, etc.), and human sciences will potentially collaborate with professional building consultants, materials manufactures, contractors, developers, owners, and Rice campus facility managers Cross-list: ENST 321. Graduate/Undergraduate Equivalency: ARCH 621. Mutually Exclusive: Credit cannot be earned for ARCH 321 and ARCH 621.

ARCH 322 - CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISING RICE CAMPUS BU
Short Title: CASE STUDIES IN SUSTAINABILITY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: This course will explore application of high performance, sustainable design to specific Rice University campus and facility targets. In partnership with Rice University leadership, the team effort will develop "regenerative redesign" approaches based on investigation of other campuses' case study. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day of class by the individual instructor. Cross-list: ENST 322. Graduate/Undergraduate Equivalency: ARCH 622. Mutually Exclusive: Credit cannot be earned for ARCH 322 and ARCH 622.

ARCH 323 - SEMINAR IN ARCHITECTURE
Short Title: SEMINAR IN ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Small, focused, discussion, workshop and/or design based courses on topics of recent research in architecture, delivered by RSA full time or visiting faculty. Each section is a different seminar topic. This seminar series is open to RSA undergraduate and graduate students. Students from other departments may enroll in the course with instructor permission. See our website for more information: arch.rice.edu/courses. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 523. Repeatable for Credit.

ARCH 326 - MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN ANCIENT ROME
Short Title: MATERIAL, FORM, SPACE, TIME
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: "Architectural Revolution" has been tied to Le Corbusier, the Eiffel Tower, the Louvre, Brunelleschi and to towering Gothic cathedrals. At the foundation of all these endeavors is the Concrete Revolution in Roman Architecture. In this course we'll look at the four essential elements of this revolution from the fourth century BCE to the fifth century CE, and we'll investigate how shifts in application and experience created a background that informs design to this day. Cross-list: CLAS 326, HART 326. Graduate/Undergraduate Equivalency: ARCH 626. Mutually Exclusive: Credit cannot be earned for ARCH 326 and ARCH 626.
ARCH 327 - RICE BUILDING WORKSHOP
Short Title: RICE BUILDING WORKSHOP
Department: Architecture
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: The Rice Building Workshop involves graduate and undergraduate students in the design and construction of real projects at various scales. Elective courses and course sequences will be formatted to address the specific requirements of each project as required. Please consult postings for further information. Space is limited, and registration does not guarantee a space in this course. The final course roster is formulated on the first day of class by the individual instructor. Mutually Exclusive: Credit cannot be earned for ARCH 327 and ARCH 627. Repeatable for Credit.

ARCH 329 - STREETS AND URBAN LIFE: PARIS TO ISTANBUL
Short Title: STREETS AND URBAN LIFE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Exploration of the street as a focus of urban life in 18th and 19th century. We will look at ways streets functioned as spaces of livelihood, sociability, and transgression in cities such as London, Paris, Istanbul, Amsterdam & Cairo. Cross-list: HART 329, HIST 329. Graduate/Undergraduate Equivalency: ARCH 529. Mutually Exclusive: Credit cannot be earned for ARCH 329 and ARCH 529.

ARCH 330 - RICE BUILDING WORKSHOP SEMINAR II
Short Title: RICE BUILDING WORKSHOP II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: The Rice Building Workshop involves graduate and undergraduate students in the design and construction of real projects at various scales. Elective courses and course sequences will be formatted to address the specific requirements of each project as required. Please consult postings for further information. Space is limited, and registration does not guarantee a space in this course. The final roster is formulated on the first day of class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 630. Mutually Exclusive: Credit cannot be earned for ARCH 330 and ARCH 630. Repeatable for Credit.

ARCH 331 - IMPERIAL CITY: ISTANBUL 1453-1922
Short Title: ISTANBUL IMPERIAL CITY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This thematic seminar examines significant historical moments in the architectural and urban cultural of the Ottoman imperial capital from the moment it was conquered until the demise of the Ottoman empire. Weekly readings and discussions will cover a range of topics including building patronage, architectural decorum, the Byzantine legacy, artistic relations with Persia, India and Europe, cultural pluralism, neighborhood and public life, law and urban order, modernity and modernization. Cross-list: HART 321. Graduate/Undergraduate Equivalency: ARCH 521. Mutually Exclusive: Credit cannot be earned for ARCH 331 and ARCH 521.

ARCH 332 - JERUSALEM TO ISFAHAN
Short Title: JERUSALEM TO ISFAHAN
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A seminar on key topics of the study of visual cultures in the medieval and early modern Muslim world focused on specific works of art. Politics of architectural patronage, dissemination of visual languages, calligraphy, "ornament" and figural representation in Islam, cross-cultural exchanges and trans-religious iconographies are among the topics discussed. Cross-list: HART 322. Graduate/Undergraduate Equivalency: ARCH 522. Mutually Exclusive: Credit cannot be earned for ARCH 332 and ARCH 522.

ARCH 333 - BETWEEN INFORMATION AND SPACE
Short Title: BETWEEN INFORMATION AND SPACE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course situates contemporary graphic methods (of inquiry and presentation) in architecture through an historical overview of information management techniques used by a range of architectural practices, from post-war to the present. A digital collection of architectural graphic formats and their building counterparts will be used to identify the synthetic, elastic, and pragmatic relationships between techniques of spatializing 2d information and the development of an architectural project. The course will distinguish and catalogue the various format types - how they are structure, how they are read, the technologies that facilitate them, and how they shape design procedures and effects. Organized through lecture prompts, discussions of readings, case studies, and graphic projects, the course is intended to advance a student’s understanding of an ability to position their own architectural projects relative to an historic lineage of graphic procedures. Graduate/Undergraduate Equivalency: ARCH 533. Mutually Exclusive: Credit cannot be earned for ARCH 333 and ARCH 533.
ARCH 336 - HISTORY OF ARCHITECTURAL THINKING II
Short Title: HISTORY OF ARCH THINKING II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Lectures and discussions focusing on significant architectural and urban ideas formulated between 1850 and 1950. Graduate/Undergraduate Equivalency: ARCH 536. Mutually Exclusive: Credit cannot be earned for ARCH 336 and ARCH 346/ARCH 536/ARCH 646.

ARCH 337 - HISTORY OF ARCHITECTURE THINKING III
Short Title: HISTORY OF ARCH THINKING III
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Lectures and discussions focusing on significant architectural and urban ideas formulated between 1950 and 2000. Graduate/Undergraduate Equivalency: ARCH 537. Mutually Exclusive: Credit cannot be earned for ARCH 337 and ARCH 352/ARCH 537/ARCH 662.

ARCH 340 - LECTURE IN ARCHITECTURE
Short Title: LECTURE IN ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: Large, introductory-level course in lecture/discussion format on topics related to current research in architecture. Current offerings and enrollment eligibility are listed on the Rice Architecture website: www.arch.rice.edu. Repeatable for Credit.

ARCH 344 - CONSTRUCTION AND DESIGN
Short Title: CONSTRUCTION & DESIGN
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A seminar in which the relationship between the construction of an object and its usefulness is explored. The premise in the course is that the way things are made can be one credible point of departure for the architectural design process. Graduate/Undergraduate Equivalency: ARCH 644. Mutually Exclusive: Credit cannot be earned for ARCH 344 and ARCH 644.

ARCH 345 - HISTORY AND THEORY II - PRE 1890
Short Title: HISTORY & THEORY II - PRE 1890
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: An in-depth exploration as to why select monuments from Antiquity through the 19th century were 'canonized' in popular imagination and given referential status. Following a case study format, each week will focus on a particular building, built or unbuilt, from both Western and Eastern traditions. Cross-list: HART 345. Graduate/Undergraduate Equivalency: ARCH 645. Mutually Exclusive: Credit cannot be earned for ARCH 345 and ARCH 235/ARCH 535.

ARCH 346 - HISTORY AND THEORY III - 1890 to 1968
Short Title: HISTORY & THEORY III 1890-1968
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARCH 345 or ARCH 645 or HART 345 or HART 645
Description: This third course in the required History and Theory of Architecture sequence surveys the history and theory of architecture and urbanism between 1890 and 1968, tracing the critical shifts in architectural thought and practice that inaugurated, constituted, and questioned architectural modernism. Organized around a series of significant case studies considered particular designed responses to their material, intellectual, and sociopolitical context, the course elucidates the influence of contingent conditions on architectural design, but emphasizes the designer's efforts to reinforce, reform, or transform those conditions. While non-majors are welcome, availability is determined by the instructor. Graduate/Undergraduate Equivalency: ARCH 646. Mutually Exclusive: Credit cannot be earned for ARCH 346 and ARCH 336/ARCH 536.

ARCH 350 - INTRODUCTORY ARCHITECTURE SEMINAR
Short Title: INTRODUCTORY ARCHITECTURE SEM
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: Small, focused, introductory-level course in discussion, workshop and/or design-based format on topics related to current research in architecture. Current offerings and enrollment eligibility are listed on the Rice Architecture website: arch.rice.edu. Space is limited and registration does not guarantee a space in this course. Repeatable for Credit.
ARCH 352 - HISTORY AND THEORY IV - 1968 TO THE PRESENT
Short Title: HISTORY & THEORY IV 1968-PRES
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ARCH 225 or ARCH 525) and (ARCH 345 or ARCH 645) and (ARCH 346 or ARCH 646)
Description: This final course in the History and Theory of Architecture core sequence provides an overview of key projects and concepts of contemporary architecture and related fields. Lectures on case-studies drawn from around the world from the late 20th century through the present are complemented by weekly discussions. This course is required for students in the undergraduate an undergraduate architecture programs. Enrollment of other students is welcomed but may be limited based on availability and approval of the instructor. Graduate/Undergraduate Equivalency: ARCH 652. Mutually Exclusive: Credit cannot be earned for ARCH 352 and ARCH 337/ARCH 537.

ARCH 353 - PHOTOGRAPHY FOR ARCHITECTS
Short Title: PHOTO FOR ARCHITECTS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: Exploration of a variety of photographic techniques for architectural research, design, and presentation. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 653. Mutually Exclusive: Credit cannot be earned for ARCH 353 and ARCH 653.

ARCH 359 - CINEMAS OF URBAN ALIENATION
Short Title: CINEMAS OF URBAN ALIENATION
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar examines cinematic engagements with urban spaces and experiences around the world spanning the last two centuries. Particular attention will be paid to issues of migration, marginality, colonialism, war and post-war, nostalgia and memory, race and gender. Cities of focus include Berlin, Istanbul, Moscow, Algiers, Beirut and Paris. Our weekly discussions of individual films will be grounded in critical writings of the cities' histories and theories of space and film. Cross-list: FILM 359, HART 359. Graduate/Undergraduate Equivalency: ARCH 654. Mutually Exclusive: Credit cannot be earned for ARCH 359 and ARCH 654.

ARCH 362 - PROBLEMATIZING THE PRACTICE OF MODERN ARCHITECTURE
Short Title: PRACTICE MODERN ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Seminar examines the problematics of modern architectural practice in the United States in the second half of the twentieth century by focusing on the career of the Houston architect Howard Barnstone (1923-87). Students will perform original research in the Howard Barnstone architectural archive, readings and seminar discussions leading to individual research papers on aspects of modern architectural practice. Graduate/Undergraduate Equivalency: ARCH 662. Mutually Exclusive: Credit cannot be earned for ARCH 362 and ARCH 662.

ARCH 363 - ARCHITECTURAL FREEHAND DRAWING WORKSHOP
Short Title: ARCH FREEHAND DRAWING WKSHOP
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will look at concrete’s role as a facilitator of the conceptual and theoretical agendas of the architecture of the 20th century. Just as the Domino system enabled a new architecture at the beginning of the century, the current interests in topological and non-treated form are again arguing for concrete’s unique properties. Graduate/Undergraduate Equivalency: ARCH 658. Mutually Exclusive: Credit cannot be earned for ARCH 358 and ARCH 658.
ARCH 366 - RIO DE JANEIRO: A SOCIAL AND ARCHITECTURAL HISTORY
Short Title: RIO DE JANEIRO
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The development of Rio de Janeiro from a colonial capital to an Olympic host with emphasis on the peoples of the city and evolution of the urban panorama. Cross-list: HIST 366. Graduate/Undergraduate Equivalency: ARCH 666. Mutually Exclusive: Credit cannot be earned for ARCH 366 and ARCH 666.

ARCH 367 - SCULPTURE STUDIO
Short Title: SCULPTURE STUDIO
Department: Architecture
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 165
Description: Study of advanced problems in various sculptural media. Limited enrollment. The roster is formulated on the first day of class by the instructor, who may allow additional registration for majors and under-classmen. It is necessary to attend the first class meeting to confirm your place on the class roster. Cross-list: ARTS 366.

ARCH 370 - DESIGNING THE SOCIAL: ARCHITECTURE & COLLECTIVE ASSOC. - 'COMRADES,' 'THE DUDE,' AND BEYOND
Short Title: DESIGNING THE SOCIAL
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 165
Description: Although one can point to the New England town hall in Alexis de Tocqueville's "Democracy in America" (1835/40) or the bowling alley in connection with Robert D. Putnam's "Bowling Alone: The Collapse and Revival of American Community" (2000), architecture's social agency has been notoriously and productively difficult to pin down and architecture's relationship to the social sciences has been as tense as it has been constant. The course will focus its efforts on architecture's past and potential contribution to what has historically been called 'civic association' - the realm of social activity outside the market and purview of the state. Each class will focus on a particular architectural mode of social projection through the close reading of a single architectural work. In the major assignment for the course, students will be asked to conceive alternate architectural modes of social engagement and to speculate on their potential implications. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 670. Mutually Exclusive: Credit cannot be earned for ARCH 370 and ARCH 670.

ARCH 374 - THE JOY OF MATERIALS
Short Title: THE JOY OF MATERIALS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Senior.
Course Level: Undergraduate Upper-Level
Description: An investigation of how materials influence and inspire the making of works of architecture. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 674. Mutually Exclusive: Credit cannot be earned for ARCH 374 and ARCH 674.

ARCH 375 - LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN CITIES
Short Title: LATIN-EUROPE/LATIN-AMERICA
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course challenges our pre-conceived maps of the world, highlighting Latin America's place within our understanding of modernity as a product of transnational interconnections. Transversing the Atlantic, this course traces the interactions of capitalism and culture, science and aesthetics, and the ideologies that informed and formed the urban fabric and spatial politics of important cities in the modern Latin world - Paris, Rio de Janeiro, Rome, Buenos Aires, Barcelona, Havana, and Brasilia. Cross-list: HART 375. Graduate/Undergraduate Equivalency: ARCH 675. Mutually Exclusive: Credit cannot be earned for ARCH 375 and ARCH 675.

ARCH 376 - THE ARCHITECTURE OF BOOKS
Short Title: THE ARCHITECTURE OF BOOKS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course challenges our pre-conceived maps of the world, highlighting Latin America's place within our understanding of modernity as a product of transnational interconnections. Transversing the Atlantic, this course traces the interactions of capitalism and culture, science and aesthetics, and the ideologies that informed and formed the urban fabric and spatial politics of important cities in the modern Latin world - Paris, Rio de Janeiro, Rome, Buenos Aires, Barcelona, Havana, and Brasilia. Cross-list: HART 375. Graduate/Undergraduate Equivalency: ARCH 675. Mutually Exclusive: Credit cannot be earned for ARCH 375 and ARCH 675.

ARCH 377 - THE ARCHITECTURE OF BOOKS
Short Title: THE ARCHITECTURE OF BOOKS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Over the past decades, the conception of books has become an integral part of any architectural practice. This seminar aims to introduce students to the book as a means to think about the production of space, and as a critical vessel to discuss and disseminate architectural ideas. In the first part of the seminar students will engage in an in-depth analysis of seminal architectural publications, considering their historical background, conceptual background and introducing such topics as typography and layout- and in-class discussions of relevant literature. The second part will be dedicated to the actual "building" of a small architectural publication, which will reflect critical and editorial skills as well as the craft of bookmaking. Graduate/Undergraduate Equivalency: ARCH 676. Mutually Exclusive: Credit cannot be earned for ARCH 376 and ARCH 676.
ARCH 377 - ISLAND IRREDENTA: TAIWAN
Short Title: ISLAND IRREDENTA: TAIWAN
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar seeks to use Taiwan as a model to explore the implications of architectural engagement with a post-industrial operating across several scales, from the local to the global. The shift in Taiwan's industrial base has spurred massive investment in new infrastructure and a series of extra-large public architectural projects by global practices such as UN Studio, Toyo Ito, Richard Rogers, OMA and RUR. Added to this economic re-alignment are Taiwan's ambiguous, "unredeemed" international status and its island geography, which uniquely suit of restuddying the role of architecture to simultaneously crate a global identity and serve an splintered local constituency. The insistence on the architectural project situated in an increasingly precarious context will form sphere and better definitions of architecture's relationship to post-industrial infrastructure. The seminar is structured around weekly discussions of reading material paired with case studies of Taiwan's infrastructural development and recent large-scale architectural interventions. Graduate/Undergraduate Equivalency: ARCH 673. Mutually Exclusive: Credit cannot be earned for ARCH 377 and ARCH 673. Repeatable for Credit.

ARCH 401 - ADVANCED TOPICS IN ARCHITECTURE - THE METROPOLIS
Short Title: ADVANCED TOPICS ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARCH 302
Description: What is the agency of the architect as a public figure and the contributions of architecture to the emerging and existing public realms? This studio focuses on a very large building program or urban scaled design, engaging the complexity of the communities and shared spaces of the emerging metropolis/megalopolis.

ARCH 402 - ADVANCED TOPICS IN ARCHITECTURE - WILLIAM WARD WATKIN
Short Title: ADVANCED TOPICS ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 6
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARCH 401 and ARCH 403
Description: The final design studio of the four year BA in Architecture is conducted as design research studio in which students pursue a topic and develop a brief under a conceptual umbrella provided by the instructor. The studio is linked to the ARCH 403 design research seminar taken the semester prior to the studio.

ARCH 403 - DEGREE PROJECT SEMINAR
Short Title: DEGREE PROJECT SEMINAR
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: A special-topics seminar establishing the intellectual/design foundation for the spring Watkin Studio (ARCH 402). Texts, case studies, and design methods will be used to investigate focused subjects of particular contemporary relevance as established by the instructor. Assignments can consist of written papers, analytical projects, elaborations of design techniques, and other forms of investigation. Students are approved for section and topic, taking their preference into account. Students enrolled in each section will continue to work with the same instructor in the spring studio. Instructor Permission Required.

ARCH 412 - ADVANCED SEMINAR IN ARCHITECTURE
Short Title: ADV SEMINAR IN ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: Small, focused, advanced discussion, workshop and/or design based courses on topics of recent research in architecture, delivered by RSA full time or visiting faculty. This seminar is open to RSA undergraduate students junior-level and above, and RSA graduate students. Students from other departments may enroll in the course with instructor permission. See the RSA website for more information: arch.rice.edu/courses. Cross-list: HART 412. Graduate/Undergraduate Equivalency: ARCH 612. Mutually Exclusive: Credit cannot be earned for ARCH 412 and ARCH 612. Repeatable for Credit.

ARCH 416 - INNOVATION IN DESIGN AND CONSTRUCTION INDUSTRY
Short Title: INNOV.DESIGN & CONST. INDUSTRY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Process innovation in the design and construction industries is far too rare. Even with access to powerful tools such as CADD and the Internet, many opportunities for process improvement are overlooked and problems are repeatedly ignored. Within this course, cross-discipline project teams will use contemporary business tools to evaluate longstanding industry practices and develop ideas for process innovation. At the end of the semester, students will present innovation concepts to members of the Project Delivery Innovation Forum, a group of industry leaders that may select student ideas for further research on real projects. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 616. Mutually Exclusive: Credit cannot be earned for ARCH 416 and ARCH 616.
ARCH 418 - ADVANCED TECHNOLOGY SEMINAR IN ARCHITECTURE
Short Title: ADVANCED TECHNOLOGY SEMINAR
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course is an advance seminar in specialized area of architectural technology (Structures, Acoustics, Lighting, Materials, and Energy) taught by RSA full-time or visiting faculty. This seminar series is open to RSA undergraduate students junior-level and above and RSA graduate students. Students from other departments may enroll in the course with instructor permission. Topics vary from semester to semester. See our website for more information. Space is limited, and registration does not guarantee a space in this course. The final course roster is formulated on the first day of class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 618. Mutually Exclusive: Credit cannot be earned for ARCH 418 and ARCH 618. Repeatable for Credit.
Course URL: arch.rice.edu/courses

ARCH 423 - PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL PRACTICE
Short Title: PROF&MGMT IN ARCH PRACTICE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARCH 302
Description: This course is required for the completion of the Bachelor of Architecture professional degree; students may take the course in their fourth year of architectural study in the BA program or in their final year of study in the BArch program. Graduate/Undergraduate Equivalency: ARCH 623. Mutually Exclusive: Credit cannot be earned for ARCH 423 and ARCH 623.

ARCH 431 - URBANISM: ARCHITECTURE AND THE CITY
Short Title: URBANISM. ARCH & THE CITY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The intention of a course on urbanism is to view architecture in light of the city. An assembly of theoretical considerations serves to construct a perspective that allows us to critically assess modern urbanization. The goal is to help students form their own perspective on the practice of architecture and to broaden their understanding of the relentless urbanization that dominates the modern world. Students are expected to read extensively, to be prepared to discuss topics of urbanism in class, to form two-person teams to read selected texts to be presented in class and to shape a term project that may take the form of a final paper or a design proposal dealing with suburban issues. Grades are based on class participation, the reading project and the term project. Graduate/Undergraduate Equivalency: ARCH 631. Mutually Exclusive: Credit cannot be earned for ARCH 431 and ARCH 631.

ARCH 433 - THE CULLINAN SEMINAR
Short Title: THE CULLINAN SEMINAR
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar for advanced undergraduate students and graduate students will focus on the writings and practice of the semester's four RSA Cullinan visitors: art historian David Joselit (Yale), architect Michael Maltzan (L.A.), architect Alejandro Zaera-Polo (London), and art historian Neil Levine (Harvard). The seminar will be a platform for researching these four topics, including additional background references, other writings by these four figures as well as writings about them and their own work. Additionally, the seminar will feature one seminar session each with the four speakers. Graduate/Undergraduate Equivalency: ARCH 633. Mutually Exclusive: Credit cannot be earned for ARCH 433 and ARCH 633. Repeatable for Credit.

ARCH 435 - PRACTICES OF ARCHITECTURAL THINKING I
Short Title: PRACTICES OF ARCH THINKING I
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Architecture. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Presentations, workshops, and discussions on the interrelationship of history, theory, and design, focusing on significant modern and contemporary practices.

ARCH 436 - PRACTICES OF ARCHITECTURAL THINKING II
Short Title: PRACTICES OF ARCH THINKING II
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Presentations, workshops, and discussions on the interrelationship of history, theory, and design, focusing on significant modern and contemporary practices.

ARCH 437 - PRACTICES OF ARCHITECTURAL THINKING III
Short Title: PRACTICES OF ARCH THINKING III
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Presentations, workshops, and discussions on the interrelationship of history, theory, and design, focusing on the intentions and methods of architectural analysis.
ARCH 442 - WHOLE WORLDS
Short Title: WHOLE WORLDS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The seminar aims to conceptualize and project on the idea of architectural world-making, i.e. constructing alternative worlds through architecture. During the last two decades, architectural world-making has mostly been speculated as a social (participation) or a systemic (infrastructure) phenomenon, judged on the basis of its inclusiveness and performance within larger contingencies. On the other hand, the question of disciplinary specificity has by and large been limited to self-referential attributes of exclusive singularity. As part of outlining new directions in relation to these questions, the seminar will speculate and project on an alternative framework of architectural world-making, which both aims multiplicity and singularity while projecting unconventional associations between the two. Through focusing on a particular lineage of architectural ideas, projects and texts, the seminar aims to instigate further interplay between critical thinking and speculative work for future architectures. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 642. Mutually Exclusive: Credit cannot be earned for ARCH 442 and ARCH 642.

ARCH 450 - INTERMEDIATE ARCHITECTURE SEMINAR
Short Title: INTERMEDIATE ARCH SEMINAR
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: Small, focused, intermediate-level course in discussion, workshop and/or design-based format on topics related to current research in architecture. Current offerings and enrollment eligibility are listed on the Rice Architecture website: arch.rice.edu. Space is limited and registration does not guarantee a space in this course. Repeatable for Credit.

ARCH 452 - PRACTICING UTOPIA: ARCHITECTURE, EUGENICS AND THE MODERN LATIN CITY
Short Title: PRACTICING UTOPIA
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar will explore the alliance between aesthetics, science, and ideology at the core of French and Latin American modernism. Focusing on an ongoing interest in the book as a physical object, to the exploration of its potentials expanding into a four-dimensional digital realm, to rapidly changing demands for the storage and retrieval of knowledge, this master class will provide a platform to engage experts from various disciplines in a debate on the shifting futures of the book. Instructor Permission Required. Cross-list: HURC 408. Graduate/Undergraduate Equivalency: ARCH 656. Mutually Exclusive: Credit cannot be earned for ARCH 456 and ARCH 656.

ARCH 455 - HOUSING AND URBAN PROGRAMS: ISSUES IN POLICY
Short Title: HOUSE&URBAN PROG:ISSUES POLICY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Research
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: From an ongoing interest in the book as a physical object, to the exploration of its potentials expanding into a four-dimensional digital realm, to rapidly changing demands for the storage and retrieval of knowledge, this master class will provide a platform to engage experts from various disciplines in a debate on the shifting futures of the book. Instructor Permission Required. Cross-list: HURC 408. Graduate/Undergraduate Equivalency: ARCH 656. Mutually Exclusive: Credit cannot be earned for ARCH 456 and ARCH 656.

ARCH 461 - SPECIAL PROJECTS
Short Title: SPECIAL PROJECTS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-9
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Independent research or design arranged in consultation with a faculty member. Subject to approval of faculty advisor and director or undergraduate studies. Instructor Permission Required. Repeatable for Credit.

ARCH 462 - NATURE IN-VITRO: BODIES, GARDENS AND BUILT FORMS
Short Title: NATURE IN-VITRO
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This seminar considers theories and narratives of nature in the crafting of modern and contemporary art and architecture in the Americas. We will travel from Humboldt’s re-imagined geographies, Jean-Baptiste Lamarck’s re-formulated notions of milieu, and Xavier Bichat’s re-conceptualized human body to 20th century earthworks and current obsessions with ecology and sustainability. Cross-list: HART 467.
ARCH 469 - CASE STUDY IN URBAN DESIGN: BRASILIA
Short Title: CASE STDY URBN DESIGN:BRASILIA
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Starting with two principal documents describing the city of Brasilia, the original hand drawn competition entry in 1957 and a digital survey of 1997, this seminar will study modern urban design in relation to the 1950’s project for a new Brazilian capital. The project of Brasilia, and its inevitable transformation over time, will be looked at historically, politically, culturally, formally and esthetically. Graduate/Undergraduate Equivalency: ARCH 669. Mutually Exclusive: Credit cannot be earned for ARCH 469 and ARCH 669.

ARCH 480 - INTRODUCTION TO BUILDING INFORMATION MANAGEMENT
Short Title: INTRODUCTION TO BIM
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This is an introductory course in the use of Building Information Management (BIM) software. The course will utilize "Revit Architecture" by Autodesk, which is now installed on the PC’s in RAVL. Students will produce a complete drawing package including architectural, mechanical and structural drawings of a building they have previously designed in studio or a structure developed specifically for this exercise. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 680. Mutually Exclusive: Credit cannot be earned for ARCH 480 and ARCH 680.

ARCH 489 - ARCHITECTURE EXPANDED: CONTEXT, SCALE, AGENCY
Short Title: ARCHITECTURE EXPANDED
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: For more than 2 decades, new scales of context have been a pervasive paradigm for Architecture. Suggesting infrastructural, ecological or political scale shifts for design, this paradigm has sparked a prevalent interest in emergent urban conditions, larger territories as well as interdisciplinary juxtapositions. In parallel, however, of paramount importance has been the accumulation of new questions in relation to architectural agency, disciplinary specificity and form. In an attempt to explore this proposition further, the seminar will concentrate on an alternative reading for the ideas of context and agency within 20th century architecture & urbanism. Graduate/Undergraduate Equivalency: ARCH 689. Mutually Exclusive: Credit cannot be earned for ARCH 489 and ARCH 689.

ARCH 491 - REAL ESTATE LAB: DEVELOP, DESIGN AND CONSTRUCTION
Short Title: RE LAB:DEVELOP DESIGN CONSTR
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: . Graduate/Undergraduate Equivalency: ARCH 691. Mutually Exclusive: Credit cannot be earned for ARCH 491 and ARCH 691.
Repeatable for Credit.

ARCH 500 - PRECEPTORSHIP PROGRAM
Short Title: PRECEPTORSHIP PROGRAM
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 1-15
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Full time internship for nine to twelve months under guidance of appointed preceptor. Required for all students enrolled in the Bachelor or Architecture degree program. Instructor Permission Required. Repeatable for Credit.

ARCH 501 - CORE DESIGN STUDIO I
Short Title: CORE DESIGN STUDIO I
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 10
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: The first in a sequence of four studios that foregrounds the relationship between form and program. By underscoring this pairing, the studio suggests that program and form amplify one another (rather than one superseding the other). The studio establishes a foundation in visual culture through examples in architecture and other design disciplines, art, and art history, as well as exercises in visual/spatial discrimination. The studio stresses the importance of iteration throughout the semester: individual projects emphasize a production/critique/refinement cycle, as does the overall sequence of projects that make up the entire studio.

ARCH 502 - CORE DESIGN STUDIO II
Short Title: CORE DESIGN STUDIO II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 10
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: The second in a sequence of four studios that foregrounds the relationship between form, program, and technology.

ARCH 503 - CORE DESIGN STUDIO III
Short Title: CORE DESIGN STUDIO III
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 10
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: The third in a sequence of four studios that foregrounds the relationship between form, program, and technology.
ARCH 504 - CORE DESIGN STUDIO IV  
Short Title: CORE DESIGN STUDIO IV  
Department: Architecture  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 10  
Restrictions: Undergraduate level students may not enroll.  
Course Level: Graduate  
Description: The fourth in a sequence of four studios that foregrounds the relationship between form, program, and technology.  

ARCH 507 - TECHNOLOGY I  
Short Title: TECHNOLOGY I  
Department: Architecture  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Undergraduate level students may not enroll.  
Course Level: Graduate  
Description: The course will introduce students to historical and contemporary structures through multi-media presentations, computer-based visualizations, field trips, and hands-on experiments with materials of construction and physical models of structures. This course also addresses sustainability issues specific to structural systems such as embodied energy, life-cycle cost, and material recycling. This is the introductory course on the art and science of designing engineered structures and is the first of four required courses in the architectural technology sequence. It is intended for first year graduate students in architecture. Graduate/Undergraduate Equivalency: ARCH 207. Mutually Exclusive: Credit cannot be earned for ARCH 507 and ARCH 207.  

ARCH 509 - TECHNOLOGY II  
Short Title: TECHNOLOGY II  
Department: Architecture  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Undergraduate level students may not enroll.  
Course Level: Graduate  
Description: This course is the second part of the introduction to contemporary building structures. The topics covered are the design of concrete structures and design of specialized structures including tilt wall, long span, and high rise. Each structural type is explored in terms of overall performance, design of individual components, and the relation of structure to other building subsystems such as foundations, enclosure, and interiors. This course also addresses sustainability issues specific to structural systems and is the second of four required courses in the architectural technology sequence. Graduate/Undergraduate Equivalency: ARCH 309. Recommended Prerequisite(s): Prior completion of Technology I. Mutually Exclusive: Credit cannot be earned for ARCH 509 and ARCH 309.  

ARCH 514 - TECHNOLOGY III  
Short Title: TECHNOLOGY III  
Department: Architecture  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Undergraduate level students may not enroll.  
Course Level: Graduate  
Description: The building envelope is the collection of material assemblies that separate a building's interior from the exterior environment. This course examines the interaction of those assemblies with natural forces such as temperature, moisture, and solar radiation and the details of construction which have evolved to mitigate them. The subject matter includes both traditional building exterior wall and roof construction and newer technologies such as rainscreen, green roof, and building surface media systems. This course addresses sustainability issues related to enclosure systems through energy cost and carbon footprint analysis. It is the third of four required courses in the architectural technology sequence. Graduate/Undergraduate Equivalency: ARCH 314. Mutually Exclusive: Credit cannot be earned for ARCH 514 and ARCH 314.  

ARCH 515 - BRAZIL BUILT: THE CLINIC, THE TROPICAL AND THE AESTHETIC  
Short Title: BRAZIL BUILT  
Department: Architecture  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Undergraduate level students may not enroll.  
Course Level: Graduate  
Description: From Brazil Builds, MOMA's 1943 celebrated exhibition to Brasilia, the supermodern capital created ex-nihilo in the middle of nowhere, to today's worldwide attention on Brazil, this seminar examines the built environment - natural and architectural - as the main transmitter of modernism in Brazil. This is a seminar on Brazilian modernism and its discontents. Cross-list: HART 526. Graduate/Undergraduate Equivalency: ARCH 315. Mutually Exclusive: Credit cannot be earned for ARCH 515 and ARCH 315.  

ARCH 516 - TECHNOLOGY IV  
Short Title: TECHNOLOGY IV  
Department: Architecture  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Undergraduate level students may not enroll.  
Course Level: Graduate  
Description: This course addresses building environmental systems including power, water, and wastewater with an emphasis on air condition systems. Through multimedia presentations and fieldtrips, students are taught to analyze the thermal environment in a variety of building types and select equipment to meet these needs. Sustainability issues related to environmental systems such as energy conservational and life cycle costs are also addressed. This is the fourth required course in the architectural technology sequence. Graduate/Undergraduate Equivalency: ARCH 316. Mutually Exclusive: Credit cannot be earned for ARCH 516 and ARCH 316.
ARCH 518 - LIVING IN THE CITY IN THE OTTOMAN EMPIRE
Short Title: LIVING IN THE CITY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Seminar combines primary and secondary sources to explore the urban experiences of Ottoman men and women in the 18th and early 19th centuries. Looking at several cities including Istanbul, Izmir, Salonika, Damascus, Aleppo and Alexandria, we will discuss such issues as neighborhood and community life, public spaces and recreational culture perceptions of space, urban institutions, Muslim and non-Muslim relations, migration and marginality, violence and death. Reading knowledge of French and/or Turkish helpful but not necessary. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: HART 508. Graduate/Undergraduate Equivalency: ARCH 318.
Mutually Exclusive: Credit cannot be earned for ARCH 518 and ARCH 318.

ARCH 520 - INSTANBUL - IMPERIAL CITY
Short Title: ISTANBUL: IMPERIAL CITY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Graduate Equivalent of ARCH 220. Additional requirements will include 3 - 7 to 8 page papers. These will include limited research, based on bibliography. The 3 papers will be in lieu of the 1-hour midterm and 1 hour final tests required for the 200 level class. Cross-list: HART 520.

ARCH 521 - IMPERIAL CITY: ISTANBUL 1453-1922
Short Title: ISTANBUL IMPERIAL CITY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This thematic seminar examines significant historical moments in the architectural and urban cultural of the Ottoman imperial capital from the moment it was conquered until the demise of the Ottoman Empire. Weekly readings and discussions will cover a range of topics including building patronage, architectural decorum, the Byzantine legacy, artistic relations with Persia, India and Europe, cultural pluralism, neighborhood and public life, law and urban order, modernity and modernization. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: HART 521. Graduate/Undergraduate Equivalency: ARCH 331.
Mutually Exclusive: Credit cannot be earned for ARCH 521 and ARCH 331.

ARCH 522 - JERUSALEM TO ISFAHAN
Short Title: JERUSALEM TO ISFAHAN
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: A seminar on key topics of the study of visual cultures in the medieval and early modern Muslim world focused on specific works of art. Politics of architectural patronage, dissemination of visual languages, calligraphy, "ornament" and figural representation in Islam, cross-cultural exchanges and trans-religious iconographies are among the topics discussed. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these reading to be turned in at the end of the semester. We will meet at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: HART 522. Graduate/Undergraduate Equivalency: ARCH 332.
Mutually Exclusive: Credit cannot be earned for ARCH 522 and ARCH 332.
ARCH 523 - SEMINAR IN ARCHITECTURE
Short Title: SEMINAR IN ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Small, focused, discussion, workshop and/or design based courses on topics of recent research in architecture, delivered by RSA full time or visiting faculty. This seminar series is open to RSA undergraduate and graduate students. Students from other departments may enroll in the course with instructor permission. "See our website for more information: arch.rice.edu/courses". Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 323. Repeatable for Credit.

ARCH 525 - HISTORY & THEORY I (INTRODUCTION)
Short Title: HISTORY & THEORY I (INTRO)
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This introductory course exposes students issues and debates that have driven architects and theorists from the early twentieth century to the present. The course is structured around a sequence of fourteen themes that have recurred as major issues throughout architectural history. Focusing on topics, ranging from representation, to media, to politics, urbanity, or the environment, teach theme is presented as a debate between differing viewpoints, in order to expose the positions that have motivated both theory and practice. In weekly discussion sections, we will be analyzing buildings and discussing canonical texts. These sections provide opportunities for students to develop their own positions on the issues debated, and to refine their ability to make arguments. Cross-list: HART 545. Graduate/Undergraduate Equivalency: ARCH 225. Mutually Exclusive: Credit cannot be earned for ARCH 525 and ARCH 225.

ARCH 528 - MIDDLE EASTERN CITIES - SPACE, MODERNITY AND MEMORY (1840-1945)
Short Title: MIDDLE EASTERN CITIES
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This seminar engages in debates about urban modernity focusing on three cities Istanbul, Cairo and Beirut. We examine these cities during the period of rapid modernization brought about by the Ottoman reforms of the 1840s and their post-Ottoman period. We will explore innovative methodologies to the study of Mediterranean cities by reflecting on the everyday life, the multiplicity of processes inherent to the shaping of urban space, questions of identities and concepts of citizenry, and the tensions playing out in the making of a modern urban order. Cross-list: HART 528.

ARCH 529 - STREETS AND URBAN LIFE: PARIS TO ISTANBUL
Short Title: STREETS AND URBAN LIFE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: HART 529. Graduate/Undergraduate Equivalency: ARCH 329. Mutually Exclusive: Credit cannot be earned for ARCH 529 and ARCH 329.

ARCH 533 - BETWEEN INFORMATION AND SPACE
Short Title: BETWEEN INFORMATION AND SPACE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This course situates contemporary graphic methods (of inquiry and presentation) in architecture through an historical overview of information management techniques used by a range of architectural practices, from post-war to the present. A digital collection of architectural graphic formats and their building counterparts will be used to identify the synthetic, elastic, and pragmatic relationships between techniques of spatializing 2d information and the development of an architectural project. The course will distinguish and catalogue the various format types - how they are structure, how they are read, the technologies that facilitate them, and how they shape design procedures and effects. Organized through lecture prompts, discussions of readings, case studies, and graphic projects, the course is intended to advance a student's understanding of an ability to position their own architectural projects relative to an historic lineage of graphic procedures. Graduate/Undergraduate Equivalency: ARCH 333. Mutually Exclusive: Credit cannot be earned for ARCH 533 and ARCH 333.

ARCH 535 - HISTORY OF ARCHITECTURAL THINKING I
Short Title: HISTORY OF ARCH THINKING I
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Introduction to architectural thought. Lectures and discussions focusing on ideas before 1850 that have exercised a significant influence on the subsequent discourse and production of architecture and urbanism. Graduate/Undergraduate Equivalency: ARCH 235. Mutually Exclusive: Credit cannot be earned for ARCH 535 and ARCH 235/ARCH 345/ARCH 645.
ARCH 536 - HISTORY OF ARCHITECTURAL THINKING II
Short Title: HISTORY OF ARCH THINKING II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Lectures and discussions focusing on significant architectural and urban ideas formulated between 1850 and 1950. Graduate/Undergraduate Equivalency: ARCH 336. Mutually Exclusive: Credit cannot be earned for ARCH 536 and ARCH 336/ARCH 346/ARCH 646.

ARCH 537 - HISTORY OF ARCHITECTURE THINKING III
Short Title: HISTORY OF ARCH THINKING III
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Lectures and discussions focusing on significant architectural and urban ideas formulated between 1950 and 2000. Graduate/Undergraduate Equivalency: ARCH 337. Mutually Exclusive: Credit cannot be earned for ARCH 537 and ARCH 337/ARCH 352/ARCH 652.

ARCH 550 - INTERMEDIATE/ADVANCED ARCHITECTUER SEMINAR
Short Title: INTER/ADVANCED ARCH SEMINAR
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Graduate
Description: Small, focused, intermediate/advanced-level course in discussion, workshop and/or design-based format on topics related to current research in architecture. Current offerings and enrollment eligibility are listed on the Rice Architecture website: arch.rice.edu. Space is limited and registration does not guarantee a space in this course. Repeatable for Credit.

ARCH 600 - M. ARCH. I INTERNSHIP
Short Title: M. ARCH. I INTERNSHIP
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 1-15
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Practical work experience for students who have completed at least four semesters in the Option I Program prior to their entrance into the regular Master of Architecture studio sequence. Instructor Permission Required. Repeatable for Credit.

ARCH 601 - ARCHITECTURAL PROBLEMS: STUDIO
Short Title: ARCHITECTURAL PROBLEMS:STUDIO
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 10
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Emphasis on abstract thought and design capabilities relevant to systematic processes of designing specific buildings and facilities. Note: there are three separate sections for this course. The course is coordinated by RSA faculty Troy Schaum and Will Cannady. Repeatable for Credit.

ARCH 602 - ARCHITECTURAL PROBLEMS
Short Title: ARCHITECTURAL PROBLEMS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 10,12
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Emphasis on abstract thought and design capabilities relevant to systematic processes of designing specific buildings and facilities. Repeatable for Credit.

ARCH 603 - COHERENCE
Short Title: COHERENCE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This seminar will construct a conversation about coherence. The opening salvo in this conversation: architects traffic entirely in greater or lesser degrees of coherence. A series of questions will start our discussion: How so? What structures underlie coherence in architecture? Is coherence necessarily overt? Latent? How is coherence fruitful today? Graduate/Undergraduate Equivalency: ARCH 303. Mutually Exclusive: Credit cannot be earned for ARCH 603 and ARCH 303.

ARCH 605 - ARCHITECTURE FOR NON-ARCHITECTS INSTRUCTION
Short Title: NON-ARCHITECTS INSTRUCTION
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: For selected graduate students only, this course will provide the opportunity for hands-on teaching experience by involvement in syllabus design and preparation of lectures, discussions, design exercises and other teaching methods, under the supervision of the course instructors. Enrollment limited to 6 and by permission only. Instructor Permission Required. Repeatable for Credit.
ARCH 607 - INTRODUCTION TO LANDSCAPE ARCHITECTURE: HISTORY & METHOD
Short Title: INTRODUCTION TO LANDSCAPE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This course will provide an introduction to landscape architecture through a survey of its history, and through direct application to a studio project. From the historic gardens at Versailles to the current Millennium Park in Chicago, the direct manipulation and design of land has a long and complex set of rules, traditions and practices. The focus will be on the consideration of how architecture extends beyond the interior and its relationship to an equally important external fabric. The course is comprised of interactive lectures on landscape themes, and the application of specific concepts imparted into design exercises. Graduate/Undergraduate Equivalency: ARCH 307. Mutually Exclusive: Credit cannot be earned for ARCH 607 and ARCH 307.

ARCH 610 - HISTORY, THEORY AND STRUCTURE/ PARIS PROGRAM (RSAP)
Short Title: HIST, THEORY & STRUCTR: PARIS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 6
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Seminar, comprised of separate modules, each addressing different issues of urban theory, historical evolution and structure of greater Paris, through lectures, discussions, research and site visits.

ARCH 611 - HOUSTON ARCHITECTURE
Short Title: HOUSTON ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: ARCH 311. Mutually Exclusive: Credit cannot be earned for ARCH 611 and ARCH 311.

ARCH 612 - ADVANCED SEMINAR IN ARCHITECTURE
Short Title: ADV SEMINAR IN ARCHITECTURE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Small, focused, advanced discussion, workshop and/or design based courses on topics of recent research in architecture, delivered by RSA full time or visiting faculty. This seminar is open to RSA undergraduate students junior-level and above, and RSA graduate students. Students from other departments may enroll in the course with instructor permission. See the RSA website for more information: arch.rice.edu/courses. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Cross-list: HART 612. Graduate/Undergraduate Equivalency: ARCH 412. Mutually Exclusive: Credit cannot be earned for ARCH 612 and ARCH 412. Repeatable for Credit.

ARCH 613 - CASE STUDIES IN SUSTAINABLE DESIGN
Short Title: SUSTAINABLE DESIGN
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Cross-list: ENST 613. Graduate/Undergraduate Equivalency: ARCH 313. Mutually Exclusive: Credit cannot be earned for ARCH 613 and ARCH 313.

ARCH 615 - WOODSHOP SAFETY
Short Title: WOODSHOP SAFETY
Department: Architecture
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hour: 1
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This course will cover all safety concerns in the model shop. Students will learn the proper set up and maintenance of the stationary tools as well as how to do basic fabrication. Students will learn basic material layout and produce objects using the tools as we cover them. Repeatable for Credit.
ARCH 616 - INNOVATION IN DESIGN AND CONSTRUCTION INDUSTRY
Short Title: INNOV.DESIGN & CONST. INDUSTRY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Process innovation in the design and construction industries is far too rare. Even with access to powerful tools such as CADD and the Internet, many opportunities for process improvement are overlooked and problems are repeatedly ignored. Within this course, cross-discipline project teams will use contemporary business tools to evaluate long-standing industry practices and develop ideas for process innovation. At the end of the semester, students will present innovation concepts to members of the Project Delivery Innovation Forum, a group of industry leaders that may select student ideas for further research on real projects. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day of class by the individual instructor. Cross-list: MGMT 716. Graduate/Undergraduate Equivalency: ARCH 416. Mutually Exclusive: Credit cannot be earned for ARCH 616 and ARCH 416.

ARCH 617 - LANDSCAPE AND SITE STRATEGIES FOR HOUSTON
Short Title: LANDSCAPE & SITE STRAT HOUSTON
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This course is a workshop in site planning, with Houston as its focus. It will allow students to gain practice assessing, cataloging, and communicating the many complex issues that go into plugging a building into a site. We will navigate the networks created by natural environments, the build and legal environments, and access. The final product of this course is a site plan. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day of class by the individual instructor. Cross-list: MGMT 716. Graduate/Undergraduate Equivalency: ARCH 416. Mutually Exclusive: Credit cannot be earned for ARCH 617 and ARCH 416.

ARCH 620 - ARCHITECTURAL PROBLEMS: STUDIO/PARIS PROGRAM (RSAP)
Short Title: ARCHITECTURAL PROBLEMS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 10
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Advanced issues in building design and urban infrastructure using greater Paris as context. Emphasis on abstract thought and design capabilities relevant to systematic processes of designing specific architectural interventions in the urban context.

ARCH 621 - CASE STUDIES IN SUSTAINABILITY: THE HIGH PERFORMANCE BUILDING
Short Title: SUSTAINABILITY CASE STUDIES
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: The project-based seminar will provide a means by which all those with an interest in the building science entailed in the design of commercial, institutional, and residential structures can investigate common issues, obtain information, discuss local strategies, and otherwise address subjects relating to building or campus performance over its lifecycle. To develop an approach of taking an existing Rice University building an optimizing its use via "repositioning" or redesign the class will create an interdisciplinary forum where students of architecture, engineering (structural, mechanical, etc.), and human sciences will potentially collaborate with professional building consultants, materials manufactures, contractors, developers, owners, and Rice campus facility managers Cross-list: ENST 621. Graduate/Undergraduate Equivalency: ARCH 321. Mutually Exclusive: Credit cannot be earned for ARCH 621 and ARCH 321.

ARCH 622 - CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISING RICE CAMPUS BU
Short Title: CASE STUDIES IN SUSTAINABILITY
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This course will explore application of high performance, sustainable design to specific Rice University campus and facility targets. In partnership with Rice University leadership, the team effort will develop "regenerative redesign" approaches based on investigation of other campuses' case study. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day of class by the individual instructor. Cross-list: ENST 622. Graduate/Undergraduate Equivalency: ARCH 322. Mutually Exclusive: Credit cannot be earned for ARCH 622 and ARCH 322.
ARCH 623 - PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL PRACTICE
Short Title: PROF&MGMT IN ARCH PRACTICE
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.

ARCH 626 - MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN ANCIENT ROME
Short Title: MATERIAL, FORM, SPACE, TIME
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.

ARCH 630 - RICE BUILDING WORKSHOP II
Short Title: RICE BUILDING WORKSHOP II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Undergraduate level students may not enroll.

ARCH 631 - URBANISM I: THE CITY THEORETICALLY CONSIDERED
Short Title: URBANISM I
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.

ARCH 633 - THE CULLINAN SEMINAR
Short Title: THE CULLINAN SEMINAR
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.

ARCH 638 - HISTORY OF ARCHITECTURAL THINKING IV
Short Title: HISTORY OF ARCH THINKING IV
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.

Description: The architectural revolution has been tied to Le Corbusier, the Eiffel Tower, the Louvre, Brunelleschi and to towering Gothic cathedrals. At the foundation of all these endeavors is the Concrete Revolution in Roman Architecture. In this course we’ll look at the four essential elements of this revolution from the fourth century BCE to the fifth century CE, and we’ll investigate how shifts in application and experience created a background that informs design to this day. Cross-list: HART 626. Graduate/Undergraduate Equivalency: ARCH 326. Mutually Exclusive: Credit cannot be earned for ARCH 626 and ARCH 426.

ARCH 631 and ARCH 431. Repeatable for Credit.

Description: This seminar for advanced undergraduate students and graduate students will focus on the writings and practice of the semester’s four RSA Cullinan visitors: art historian David Joselit (Yale), architect Michael Maltzan (L.A.), architect Alejandro Zaera-Polo (London), and art historian Neil Levine (Harvard). The seminar will be a platform for researching these four topics, including additional background references, other writings by these four figures as well as writings about them and their own work. Additionally, the seminar will feature one seminar session each with the four speakers. Graduate/Undergraduate Equivalency: ARCH 433. Mutually Exclusive: Credit cannot be earned for ARCH 633 and ARCH 433. Repeatable for Credit.

Description: Lectures and discussions focusing on issues and approaches central to current discourse and practice. Mutually Exclusive: Credit cannot be earned for ARCH 638 and ARCH 702.
ARCH 642 - WHOLE WORLDS
Short Title: WHOLE WORLDS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: The seminar aims to conceptualize and project on the idea of architectural world-making, i.e. constructing alternative worlds through architecture. During the last two decades, architectural world-making has mostly been speculated as a social (participation) or systemic (infrastructure) phenomenon, judged on the basis of its inclusiveness and performance within larger contingencies. On the other hand, the question of disciplinary specificity has by and large been limited to self-referential attributes of exclusive singularity. As part of outlining new directions in relation to these questions, the seminar will speculate and project on an alternative framework of architectural world-making, which both aims multiplicity and singularity while projecting unconventional associations between the two. Through focusing on a particular lineage of architectural ideas, projects and texts, the seminar aims to instigate further interplay between critical thinking and speculative work for future architectures. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 442. Mutually Exclusive: Credit cannot be earned for ARCH 642 and ARCH 442.

ARCH 644 - CONSTRUCTION AND DESIGN
Short Title: CONSTRUCTION & DESIGN
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: ARCH 344. Mutually Exclusive: Credit cannot be earned for ARCH 644 and ARCH 344.

ARCH 645 - HISTORY AND THEORY II - PRE 1890
Short Title: HISTORY & THEORY II - PRE 1890
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This course will trace the development of Renaissance and Baroque architecture in Italy and France with reference to the dialectic of license and rule. The first part, which covers the period from 1400-1600, will focus on the civil, domestic, and ecclesiastical architecture of the chief protagonists of the Italian Renaissance: Brunelleschi, Alberti, Bramante, Giulio Romano, Michelangelo and Palladio. Their buildings and urban initiatives will be interpreted in terms of continuities & discontinuities between an emerging theoretical tradition and the demands of actual practice. Cross-list: HART 645. Graduate/Undergraduate Equivalency: ARCH 345. Mutually Exclusive: Credit cannot be earned for ARCH 645 and ARCH 235/ARCH 535.

ARCH 646 - HISTORY AND THEORY III - 1890-1968
Short Title: HISTORY & THEORY III 1890-1968
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Prerequisite(s): ARCH 345 or ARCH 645 or HART 345 or HART 645
Description: This third course in the required History and Theory of Architecture sequence surveys the history and theory of architecture and urbanism between 1890 and 1968, tracing the critical shifts in architectural thought and practice that inaugurated, constituted, and questioned architectural modernism. Organized around a series of significant case studies considered particular designed responses to their material, intellectual, and sociopolitical context, the course elucidates the influence of contingent conditions on architectural design, but emphasizes the designer’s efforts to reinforce, reform, or transform those conditions. While non-majors are welcome, availability is determined by the instructor. Cross-list: HART 506. Graduate/Undergraduate Equivalency: ARCH 346. Mutually Exclusive: Credit cannot be earned for ARCH 646 and ARCH 336/ARCH 536.

ARCH 650 - ADVANCED ARCHITECTURE SEMINAR
Short Title: ADVANCED ARCH SEMINAR
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Graduate
Description: Small, focused, advanced-level course in discussion, workshop and/or design-based format on topics related to current research in architecture. Current offerings and enrollment eligibility are listed on the Rice Architecture website: arch.rice.edu. Space is limited and registration does not guarantee a space in this course. Repeatable for Credit.

ARCH 651 - PRESENT FUTURE SEMINAR
Short Title: PRESENT FUTURE SEMINAR
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: The present Future seminar will examine the history of future projection as it came to dominate modern architecture and urbanism in the period of 1914-2014. The realization of such a large number of future projections over the preceding century allows us to examine their effects as they have now come to constitute our present. Focusing on modern urbanism, will trace both the historical and the contemporary effects of the future as it was imagined so long ago. Given the volatile historical moment that we are presently passing through, an effort will be made to understand the logic as well as the remaining potential of future projection as a design strategy today.
ARCH 652 - HISTORY AND THEORY IV - 1968 TO PRESENT  
Short Title: HISTORY & THEORY IV 1968-PRES  
Department: Architecture  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Undergraduate level students may not enroll.  
Course Level: Graduate  
Prerequisite(s): (ARCH 225 or ARCH 525) and (ARCH 345 or ARCH 645) and (ARCH 346 or ARCH 646)  
Description: This final course in the History and Theory of Architecture core sequence provides an overview of key projects and concepts of contemporary architecture and related fields. Lectures on case-studies drawn from around the world from the late 20th century through the present are complimented by weekly discussions. This course is required for students in the undergraduate an undergraduate architecture programs. Enrollment of other students is welcomed but may be limited based on availability and approval of the instructor. Graduate/Undergraduate Equivalency: ARCH 352. Mutually Exclusive: Credit cannot be earned for ARCH 652 and ARCH 537.  

ARCH 653 - PHOTOGRAPHY FOR ARCHITECTS  
Short Title: PHOTO FOR ARCHITECTS  
Department: Architecture  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Undergraduate level students may not enroll.  
Course Level: Graduate  
Description: Exploration of a variety of photographic techniques for architectural research, design, and presentation. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 352. Mutually Exclusive: Credit cannot be earned for ARCH 653 and ARCH 353.  

ARCH 654 - CINEMAS OF URBAN ALIENATION  
Short Title: CINEMAS OF URBAN ALIENATION  
Department: Architecture  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 4  
Restrictions: Undergraduate level students may not enroll.  
Course Level: Graduate  
Description: This seminar examines cinematic engagements with urban spaces and experiences around the world spanning the last two centuries. Particular attention will be paid to issues of migration, marginality, colonialism, war and post-war, nostalgia and memory, race and gender. Cities of focus include Berlin, Istanbul, Moscow, Algiers, Beirut and Paris. Our weekly discussions of individual films will be grounded in critical writings of the cities’ histories and theories of space and film. Cross-list: HART 659. Graduate/Undergraduate Equivalency: ARCH 359. Mutually Exclusive: Credit cannot be earned for ARCH 654 and ARCH 359.  

ARCH 656 - FUTURES OF THE BOOK  
Short Title: FUTURES OF THE BOOK  
Department: Architecture  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Undergraduate level students may not enroll.  
Course Level: Graduate  
Description: From an ongoing interest in the book as a physical object, to the exploration of its potentials expanding into a four-dimensional digital realm, to rapidly changing demands for the storage and retrieval of knowledge, this master class will provide a platform to engage experts from various disciplines in a debate on the shifting futures of the book. Instructor Permission Required. Cross-list: HURC 608. Graduate/Undergraduate Equivalency: ARCH 456. Mutually Exclusive: Credit cannot be earned for ARCH 656 and ARCH 456.  

ARCH 658 - CAST MODERNITY  
Short Title: CAST MODERNITY  
Department: Architecture  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Undergraduate level students may not enroll.  
Course Level: Graduate  
Description: . Graduate/Undergraduate Equivalency: ARCH 358. Mutually Exclusive: Credit cannot be earned for ARCH 658 and ARCH 358.  

ARCH 662 - PROBLEMATIZING THE PRACTICE OF MODERN ARCHITECTURE  
Short Title: PRACTICE MODERN ARCHITECTURE  
Department: Architecture  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Undergraduate level students may not enroll.  
Course Level: Graduate  
Description: . Graduate/Undergraduate Equivalency: ARCH 362. Mutually Exclusive: Credit cannot be earned for ARCH 662 and ARCH 337/ARCH 362.  

ARCH 663 - ARCHITECTURAL REPRESENTATION  
Short Title: ARCH FREEHAND DRAWING WKSHOP  
Department: Architecture  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Undergraduate level students may not enroll.  
Course Level: Graduate  
Description: The object of this workshop is to explore, practice and develop a series of drawing methods and techniques in the context of the architectural design process. Emphasis will be on the development of free-hand drawing skills that will enhance the ability the ability of the design in communicating conceptual ideas. The course will consist of a combination of lectures/demonstrations, in-class drawing exercises, and out-of-class assignments. Two sketch books (one at mid-term and one at the end of the semester) will also be required. Attendance is critical. Please come to the first class prepared to draw with pen and an 8 1/2 x 11 or 9 x 12 sketch pad. Graduate/Undergraduate Equivalency: ARCH 363. Mutually Exclusive: Credit cannot be earned for ARCH 663 and ARCH 363. Repeatable for Credit.
ARCH 666 - RIO DE JANEIRO
Short Title: RIO DE JANEIRO
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This course seeks to use Taiwan as a model to explore the implications of architectural engagement with a post-industrial operating across several scales, from the local to the global. The shift in Taiwan's industrial base has spurred massive investment in new infrastructure and a series of extra-large public architectural projects by global practices such as UN Studio, Toyo Ito, Richard Rogers, OMA and RUR. Added to this economic re-alignment are Taiwan's ambiguous, "unredeemed" international status and its island geography, which uniquely suit of restudying the role of architecture to simultaneously create a global identity and serve an splintered local constituency. The insistence on the architectural project situated in an increasingly precarious context will form sphere and better definitions of architecture's relationship to post-industrial infrastructure. The seminar is structured around weekly discussions of reading material paired with case studies of Taiwan's infrastructural development and recent large-scale architectural interventions. Graduate/Undergraduate Equivalency: ARCH 377. Mutually Exclusive: Credit cannot be earned for ARCH 673 and ARCH 377. Repeatable for Credit.

ARCH 669 - CASE STUDY IN URBAN DESIGN: BRASILIA
Short Title: CASE STDY URBN DESIGN:BRASILIA
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Although one can point to the New England town hall in Alexis de Tocqueville's "Democracy in America" (1835/40) or the bowling alley in connection with Robert D. Putnam's "Bowling Alone: The Collapse and Revival of American Community" (2000), architecture's social agency has been notoriously and productively difficult to pin down and architecture's relationship to the social sciences has been as tense as it has been constant. The course will focus its efforts on architecture's past and potential contribution to what has historically been called 'civic association' - the realm of social activity outside the market and purview of the state. Each class will focus on a particular architectural mode of social projection through the close reading of a single architectural work. In the major assignment for the course, students will be asked to conceive alternate architectural modes of social engagement and to speculate on their potential implications. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 337. Mutually Exclusive: Credit cannot be earned for ARCH 6710 and ARCH 337.

ARCH 670 - DESIGNING THE SOCIAL: ARCHITECTURE & COLLECTIVE ASSOC. - 'COMRADES,' 'THE DUDE,' AND BEYOND
Short Title: DESIGNING THE SOCIAL
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: An investigation of how materials influence and inspire the making of works of architecture. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 374. Mutually Exclusive: Credit cannot be earned for ARCH 674 and ARCH 374.

ARCH 673 - ISLAND IRREDENTA: TAIWAN
Short Title: ISLAND IRREDENTA: TAIWAN
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This seminar seeks to use Taiwan as a model to explore the implications of architectural engagement with a post-industrial operating across several scales, from the local to the global. The shift in Taiwan's industrial base has spurred massive investment in new infrastructure and a series of extra-large public architectural projects by global practices such as UN Studio, Toyo Ito, Richard Rogers, OMA and RUR. Added to this economic re-alignment are Taiwan's ambiguous, "unredeemed" international status and its island geography, which uniquely suit of restudying the role of architecture to simultaneously create a global identity and serve an splintered local constituency. The insistence on the architectural project situated in an increasingly precarious context will form sphere and better definitions of architecture's relationship to post-industrial infrastructure. The seminar is structured around weekly discussions of reading material paired with case studies of Taiwan's infrastructural development and recent large-scale architectural interventions. Graduate/Undergraduate Equivalency: ARCH 377. Mutually Exclusive: Credit cannot be earned for ARCH 673 and ARCH 377. Repeatable for Credit.

ARCH 674 - THE JOY OF MATERIALS
Short Title: THE JOY OF MATERIALS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: An investigation of how materials influence and inspire the making of works of architecture. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 374. Mutually Exclusive: Credit cannot be earned for ARCH 674 and ARCH 374.

ARCH 675 - LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN CITIES
Short Title: LATIN-EUROPE/LATIN-AMERICA
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This course challenges our pre-conceived maps of the world, highlighting Latin America's place within our understanding of modernity as a product of transnational interconnections. Transversing the Atlantic, this course traces the interactions of capitalism and culture, science and aesthetics, and the ideologies that informed and formed the urban fabric and spatial politics of important cities in the modern Latin world - Paris, Rio de Janeiro, Rome, Buenos Aires, Barcelona, Havana, and Brasilia. Cross-list: HART 675. Graduate/Undergraduate Equivalency: ARCH 375. Mutually Exclusive: Credit cannot be earned for ARCH 675 and ARCH 375.
ARCH 676 - THE ARCHITECTURE OF BOOKS
Short Title: THE ARCHITECTURE OF BOOKS
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Over the past decades, the conception of books has become an integral part of any architectural practice. This seminar aims to introduce students to the book as a means to think about the production of space, and as a critical vessel to discuss and disseminate architectural ideas. In the first part of the seminar students will engage in an in-depth analysis of seminal architectural publications, considering their historical background, conceptual background and introducing such topics as typography and layout-and in-class discussions of relevant literature. The second part will be dedicated to the actual "building" of a small architectural publication, which will reflect critical and editorial skills as well as the craft of bookmaking. Graduate/Undergraduate Equivalency: ARCH 376. Mutually Exclusive: Credit cannot be earned for ARCH 676 and ARCH 376.

ARCH 680 - INTRODUCTION TO BUILDING INFORMATION MANAGEMENT
Short Title: INTRODUCTION TO BIM
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: This is an introductory course in the use of Building Information Management (BIM) software. The course will utilize "Revit Architecture" by Autodesk, which is now installed on the PC's in RAVL. Students will produce a complete drawing package including architectural, mechanical and structural drawings of a building they have previously designed in studio or a structure developed specifically for this exercise. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Graduate/Undergraduate Equivalency: ARCH 480. Mutually Exclusive: Credit cannot be earned for ARCH 680 and ARCH 480.

ARCH 688 - NONLINEAR HISTORY AND THE EVOLUTION OF CITIES
Short Title: NONLINEAR HISTORY & EVOLUTION
Department: Architecture
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: Using Manuel DeLanda's "A Thousand Years of Nonlinear History" as the framework the seminar will explore the evolution of three types of cities from three different times. The intent is to use DeLanda's work diachronically while looking at the cities synchronically.

ARCH 689 - ARCHITECTURE EXPANDED: CONTEXT, SCALE, AGENCY
Short Title: ARCHITECTURE EXPANDED
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Course Level: Graduate
Description: For more than 2 decades, new scales of context have emerged as the engine of badly needed reforms in Megalopolis today. That space in the natural world. Driven by a powerful organic ideal, space emerges as the engine of badly needed reforms in Megalopolis today.
**ARCH 696 - RETHINKING SUBURBAN LIVING**

*Short Title:* RETHINKING SUBURBAN LIVING  
*Department:* Architecture  
*Grade Mode:* Standard Letter  
*Course Type:* Seminar  
*Credit Hours:* 3  
*Restrictions:* Undergraduate level students may not enroll.  
*Course Level:* Graduate  
*Description:* A major portion of urbanized America is in areas loosely referred to as sprawl. Here the subdivision is the dominant living unit. Although New Urbanism has provided adjustments to this common model, few truly innovative models of suburban living exist. The reason for this conservatism is manifold. This seminar will challenge the status quo through a series of unusual strategies, motivated by a series of assumptions drawn from the French philosopher Alain Badiou's "The Century" - a highly polemical view of the 20th century. Registration limited to graduate and 5th year Architecture students. Repeatable for Credit.

**ARCH 700 - PRACTICUM**

*Short Title:* PRACTICUM  
*Department:* Architecture  
*Grade Mode:* Satisfactory/Unsatisfactory  
*Course Type:* Internship/Practicum  
*Credit Hours:* 3  
*Restrictions:* Undergraduate level students may not enroll.  
*Course Level:* Graduate  
*Description:* Full-time internship service in approved local offices under interdisciplinary supervision. Emphasis on real world design, planning, or research experiences. Special tuition. May be taken in any semester or in summer. Instructor Permission Required. Repeatable for Credit.

**ARCH 702 - PRE-THESIS PREPARATION**

*Short Title:* PRE-THESIS PREPARATION  
*Department:* Architecture  
*Grade Mode:* Standard Letter  
*Course Type:* Research  
*Credit Hours:* 3  
*Restrictions:* Undergraduate level students may not enroll.  
*Course Level:* Graduate  
*Description:* The aim of this course is to locate potential thesis topics and hone those topics by situating them within a lineage of architectural and urban paradigms. The aim is also to develop and rehearse a focused argument for your particular approach to the topic. The thesis design project tests this approach in a project, the underpinnings of which seek a synthesis of intellectual and design objectives. Thesis concludes with a public final review, where the project is evaluated both on its own terms and within the broader field of contemporary architectural discourse. Mutually Exclusive: Credit cannot be earned for ARCH 702 and ARCH 638.

**ARCH 703 - DESIGN THESIS STUDIO**

*Short Title:* DESIGN THESIS STUDIO  
*Department:* Architecture  
*Grade Mode:* Satisfactory/Unsatisfactory  
*Course Type:* Lecture  
*Credit Hours:* 10  
*Restrictions:* Undergraduate level students may not enroll.  
*Course Level:* Graduate

**ARCH 711 - SPECIAL PROJECTS**

*Short Title:* SPECIAL PROJECTS  
*Department:* Architecture  
*Grade Mode:* Satisfactory/Unsatisfactory  
*Course Type:* Research  
*Credit Hours:* 1-9  
*Restrictions:* Undergraduate level students may not enroll.  
*Course Level:* Graduate  
*Description:* Independent research or design arranged in consultation with a faculty member subject to approval of the student's faculty advisor and director. Repeatable for Credit.

**ARCH 714 - INDEPENDENT DESIGN PROJECTS**

*Short Title:* INDEPENDENT DESIGN PROJECTS  
*Department:* Architecture  
*Grade Mode:* Satisfactory/Unsatisfactory  
*Course Type:* Independent Study  
*Credit Hours:* 3  
*Restrictions:* Undergraduate level students may not enroll.  
*Course Level:* Graduate  
*Description:* Independent research or design arranged in consultation with a faculty member subject to approval of the student’s faculty advisor and director. Repeatable for Credit.

**ARCH 729 - THESIS WRITTEN DOCUMENT (FALL)**

*Short Title:* FALL WRITTEN THESIS  
*Department:* Architecture  
*Grade Mode:* Satisfactory/Unsatisfactory  
*Course Type:* Independent Study  
*Credit Hours:* 3  
*Restrictions:* Undergraduate level students may not enroll.  
*Course Level:* Graduate  
*Description:* All architecture thesis students are required to provide a written document to the university on completion of their thesis as a requirement for graduation. This document, prepared in consultation with the thesis director and the director of the thesis program, should include a written and graphic description of the project and conform to the university requirements for thesis documents.

**ARCH 730 - THESIS WRITTEN DOCUMENT (SPRING)**

*Short Title:* SPRING WRITTEN THESIS  
*Department:* Architecture  
*Grade Mode:* Satisfactory/Unsatisfactory  
*Course Type:* Independent Study  
*Credit Hours:* 3  
*Restrictions:* Undergraduate level students may not enroll.  
*Course Level:* Graduate  
*Description:* All architecture thesis students are required to provide a written document to the university on completion of their thesis as a requirement for graduation. This document, prepared in consultation with the thesis director and the director of the thesis program, should include a written and graphic description of the project and conform to the university requirements for thesis documents.

**ARCH 738 - PRACTICES OF ARCHITECTURAL THINKING IV**

*Short Title:* PRACTICES OF ARCH THINK IV  
*Department:* Architecture  
*Grade Mode:* Satisfactory/Unsatisfactory  
*Course Type:* Seminar  
*Credit Hour:* 1  
*Restrictions:* Undergraduate level students may not enroll.  
*Course Level:* Graduate  
*Description:* Presentations, workshops, and discussions on the interrelationship of history, theory, and design, focusing on metacritical and methodological issues in the formation of design theses.
ARCH 751 - PRESENT FUTURE II
Short Title: PRESENT FUTURE II
Department: Architecture
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Undergraduate level students may not enroll.
Description: ARCH 751 is the third core course of the Master of Arts degree program. It is the concluding semester of the three semester research project, the subject of which changes with each class. The purpose of the semester is to draw the conclusions of the project and produce and package the results. The formats vary with each project.

Art History (HART)

HART 100 - AP/OTH CREDIT IN ART HISTORY
Short Title: AP/OTH CREDIT IN ART HISTORY
Department: Art History
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement Exams. This credit counts toward the total credit hours required for graduation, but does not count toward total credit hours required for the Art History Major.

HART 101 - INTRODUCTION TO THE HISTORY OF WESTERN ART I: ANTIQUITY TO GOTHIC
Short Title: INTRO TO HIST OF WESTERN ART I
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A survey of painting, sculpture, and architecture from Antiquity through the 15th century. Students will also attend a one-hour weekly tutorial with a teaching assistant. Cross-list: CLAS 102, MDEM 111.

HART 102 - INTRODUCTION TO THE HISTORY OF WESTERN ART II: RENAISSANCE TO PRESENT
Short Title: INTRO HIST OF WESTERN ART II
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A survey of painting, sculpture, and architecture from the Renaissance through the 20th century.

HART 103 - INTRODUCTION TO THE HISTORY OF ASIAN ART
Short Title: INTRO TO THE HIST OF ASIAN ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of Asian art from the Neolithic period to the present.

HART 105 - KEY MONUMENTS AND ARTISTS OF WESTERN ART
Short Title: KEY MONUMENTS & ARTISTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An in-depth look at important moments in the history of European and American art, from the Renaissance to the 20th century. Rather than being a comprehensive survey, the course will focus on a limited number of works by leading artists in the fields of painting, sculpture, and architecture.

HART 110 - THE PARTHENON AND PERIKLEAN ATHENS
Short Title: THE PARTHENON
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, we will trace the history and mythology of the Parthenon. We begin with the dawn of sacred tradition on the Acropolis, then explore the classical recreation of the city, the conversion of the Parthenon into a church, its subsequent destruction and the current debate over restoration. This course is limited to first-year students only, any others will be removed from this course. Cross-list: ARCH 110, CLAS 103, FSEM 113.

HART 117 - FROM FREUD TO LE CORBUSIER: PSYCHOANALYSIS, ART AND ARCHITECTURE
Short Title: FROM FREUD TO LE CORBUSIER
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This seminar presents a selected range of key psychoanalytic concepts, which have been used by artists and architects to develop their practices and by theoreticians and critics to explain the production or experience of art and architecture. A typical week pairs a theoretical text with a work of art or architecture. This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 117.
HART 120 - CINEMA AND MODERNITY
Short Title: CINEMA AND MODERNITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class focuses on cinema as a primary cultural product of industrial capitalism, whose processes of mechanization and urbanization fundamentally changed everyday life. Classes will focus on films by Chaplin, Lang, Eisenstein, Hitchcock, and others, and encompass issues of technology and representation, shock and trauma, and crime and the city. This course is limited to first-year students only. Cross-list: FSEM 181.

HART 179 - ROMAN VS GREEK: QUESTIONING THE DEFINITION OF ART IN THE ANCIENT MEDITERRANEAN WORLD
Short Title: ROMAN VS GREEK
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: What's in a name? Apparently a lot. For 500 years—since the Renaissance—scholars have cleaved Roman and Greek art from one another and this division has defined how we think about art in antiquity. In this freshman seminar, we will question this paradigm. Looking at art from around the Mediterranean and reading the very scholarship that has both created these definitions and questioned them, we will work toward a new way of conceiving the art of the Ancient Mediterranean world. This course is limited to first-year students only, any others will be removed from this course. Cross-list: CLAS 179, FSEM 179.

HART 180 - 14 FILMS YOU SHOULD SEE BEFORE YOU GRADUATE FROM RICE UNIVERSITY
Short Title: 14 FILMS BEFORE YOU GRADUATE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Featuring the important, but less familiar works of American and European directors from the 1930s - 1960s. This class represents an ideal mixture of modernist auteur cinema and shameless viewing pleasure. Cross-list: FILM 180.

HART 201 - ART OF ANCIENT ROME
Short Title: ART OF ANCIENT ROME
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, you'll learn about the history of Ancient Roman art, which spans a period of more than 1500 years and saw the conquest of Alexander the Great, Aristotelian philosophy, the birth of republican government and the religion of Christianity, and myriad humanistic revolutions that shaped the world.

HART 202 - AVANT-GARDE AND AFTER: MODERN ART IN EUROPE, 1900-1945
Short Title: MODERN ART IN EUROPE, 1900-1945
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class surveys European art from roughly 1900-1945, paying particular attention to the social contexts in which this work emerged and the interpretive strategies that have been used to understand it. Among the topics to be considered are Cubism, Futurism, Constructivism, Dada, and Surrealism, as well as the reaction against these by emergent authoritarian regimes of the 1930s. Students cannot receive credit for HART 202 and HART 305. Mutually Exclusive: Credit cannot be earned for HART 202 and HART 305.

HART 205 - ART SINCE 1945
Short Title: ART SINCE 1945
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course introduces the major developments, figures, and works of late modernism beginning with the shift, during the 1940s, from Paris to New York as the cultural center of avant-garde. The class charts the rise of Abstract Expressionism in the 1940s and 50s and follows its divided legacies in the 1960s and 70s. We will examine the post-modern debates of the 1980s and the 90s and conclude with a look at trends in contemporary art.
HART 207 - FOURTEEN ARTWORKS AT THE MFAH
Short Title: FOURTEEN ARTWORKS AT THE MFAH
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course is designed to provide students with no previous background in art history with an introduction to the discipline through the "in situ" study of 14 works from the permanent collection of The Museum of Fine Arts, Houston. Some of the topics to be addressed include British aristocratic portraiture, French Impressionist painting, the aesthetic dialogues of Matisse and Picasso, the abstracted sculptures of Brancusi and Calder, and the site-specific installation of Turrell's light tunnel.

HART 209 - BEGINNING DIGITAL PHOTOGRAPHY
Short Title: BEGINNING DIGITAL PHOTOGRAPHY
Department: Art History
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to digital photography through exploration of light, camera, and computer. Assignments include looking, taking, discussing, adjusting, printing and writing about photographs. The class is a balance of visual awareness, technical skills and meaning in the context of photography's continuing history. Primary software application is Adobe Lightroom which is provided on computer in the VADA Digital Lab in the Rice Media Center; students must provide their own digital camera. Instructor Permission Required. Cross-list: FOTO 210.

HART 211 - INTRODUCTION TO ASIAN CIVILIZATIONS
Short Title: INTRO TO ASIAN CIVILIZATIONS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A team-taught interdisciplinary course focusing on certain major philosophical, religious and artistic traditions of pre-modern Asia, with an emphasis on the historical processes by which ideas, people, products, technologies and skills circulated within and beyond state boundaries. Cross-list: ASIA 211, HIST 206.

HART 214 - ART AND POLITICS IN ANCIENT ROME
Short Title: ART & POLITICS IN ANCIENT ROME
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, you will learn to navigate the testy waters of artistic and political design in ancient Rome, when monumental architecture and exquisite art was often created for personal gain. Throughout the semester we will explore how would-be rulers used visual culture for professional self-aggrandizement. Cross-list: CLAS 236.

HART 216 - CITIES, SANCTUARIES, CIVILIZATIONS: INTRODUCTION TO GREEK ART AND ARCHAEOLOGY
Short Title: GREEK ART AND ARCHAEOLOGY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to the art and archaeology of the ancient Greek world. Artistic media, such as sculpture and vase painting will be examined in a broad range of the material culture ancient Greeks created and used. Consideration of these materials within their cultural, social and religious contexts will be discussed. Cross-list: CLAS 218.

HART 225 - HISTORY & THEORY I (INTRO)
Short Title: HISTORY & THEORY I (INTRO)
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This introductory course exposes student’s issues and debates that have driven architects and theorists from the early twentieth century to the present. The course is structured around a sequence of fourteen themes that have recurred as major issues throughout architectural history. Focusing on topics, ranging from representation, to media, to politics, urbanity, or the environment, teach theme is presented as a debate between differing viewpoints, in order to expose the positions that have motivated both theory and practice. In weekly discussion sections, we will be analyzing buildings and discussing canonical texts. These sections provide opportunities for students to develop their own positions on the issues debated, and to refine their ability to make arguments. Cross-list: ARCH 225. Graduate/Undergraduate Equivalency: HART 545. Mutually Exclusive: Credit cannot be earned for HART 225 and HART 545.

HART 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Art History
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.
HART 240 - ART IN CONTEXT: LATE MEDIEVAL AND RENAISSANCE CULTURE
Short Title: LATE MEDIEVAL & RENAISSANCE
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will be concerned with the art, architecture, and history of the late Middle Ages and Renaissance. We will employ historical texts, literature, and illustrations of works of art, showing how historical documents and sources can illuminate the cultural context of art and architecture. Cross-list: HUMA 108, MDEM 108.

HART 250 - CONTEMPORARY EUROPEAN CINEMA
Short Title: CONTEMPORARY EUROPEAN CINEMA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class examines trends in European cinema of the last fifteen years. Particular attention will be given to the issues of history, memory and national identity in Europe's shifting geopolitical climate, and to the formal and aesthetic concerns with which filmmakers responded to these shifts. The discussion will include films by Michael Haneke, Fatih Akin, Christian Mingiu and others. Cross-list: FILM 250.

HART 263 - EPISODES IN THE HISTORY OF PHOTOGRAPHY: FROM INVENTION TO THE PRESENT
Short Title: HISTORY OF PHOTOGRAPHY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class aims to examine the history of photography in the nineteenth century as it develops within a number of specific thematics, from medium's conception in the late eighteenth-century through to debates in the twentieth century about photography's relationship to artistic and social issues. Instructor Permission Required. Cross-list: FOTO 263. Mutually Exclusive: Credit cannot be earned for HART 263 and HART 363.

HART 265 - A VISUAL CULTURE TRAVELOGUE: ART AND POLITICS IN MODERN LATIN AMERICA
Short Title: ART/ POLITICS MOD LATIN AMER
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Providing an alternative understanding of modernity and its artistic partner, modernism, this survey course traverses the political, social and cultural landscapes that informed and formed the art and architecture of Latin America, from the early twentieth century to the present. Graduate/Undergraduate Equivalency: HART 665. Mutually Exclusive: Credit cannot be earned for HART 265 and HART 665.

HART 280 - HISTORY AND AESTHETICS OF FILM
Short Title: HISTORY & AESTHETICS OF FILM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the art and aesthetics of film as an artifact produced within certain social contexts. Includes style, narration, mise-en-scene, editing, sound, and ideology in classical Hollywood cinema, as well as in independent, alternative, nonfiction, and Third World cinemas. Cross-list: ARTS 280, FILM 280.

HART 281 - THE BEGINNINGS OF CINEMA
Short Title: THE BEGINNINGS OF CINEMA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class studies the emergence of cinema in the context of cultural developments at the turn of the 20th century. Early films will be examined together with such contemporaneous issues as technologies of vision, modern mass culture, urban expansion and consumerism. Cross-list: FILM 281.
HART 283 - AUTEUR FILM: CASE STUDIES OF THREE AUTEURS
Short Title: AUTEUR FILM
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will explore the tradition of auteur filmmaking, with an emphasis on how this particular artistic mode situates itself within the evolving system of Hollywood institutional film. The auteur, in contrast to other filmmakers, exhibits unparalleled control over the production and post-production processes and is uniquely identifiable through the notable conventions of aesthetics, style, theme, content, atmosphere, etc. FILM 485/HART 481 (4 Credit Hours) will require completion of additional coursework for the additional credit than the FILM 285/HART 283 (3 Credit Hours). Credit may not be received for more than one of FILM 285 or FILM 485 or Hart 283 or HART 481. Cross-list: FILM 285. Equivalency: HART 481. Mutually Exclusive: Credit cannot be earned for HART 283 and HART 481.

HART 284 - NONFICTION FILM
Short Title: NONFICTION FILM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the history and aesthetics of nonfiction film as both a social artifact and as a work of art. Includes discussions of actualities, the city film, the social documentary, surrealist cinema, propaganda, ethnography, the essay film, and the contemporary nonfiction film from around the world. Cross-list: FILM 284.

HART 285 - FILM CRITICISM
Short Title: FILM CRITICISM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course focuses on the concepts and techniques necessary to write film criticism and interpretation. Each two-week section will concentrate on a film, sample critical essays on that film and writing about the film to develop their skills, analytic techniques, and strategies for effective critical contribution. This course will draw on films in Hollywood, avant-garde, contemporary and international cinema. Cross-list: ENGL 275, FILM 273.

HART 286 - CLASSICAL AND CONTEMPORARY FILM AND THEORY
Short Title: CLASSICAL & CONTEMPORARY FILM
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A course focusing on contexts such as movies and ads, familiar plots and conventions define their significance. Cross-list: ENGL 286.
Course URL: www.english.rice.edu

HART 288 - SPECIAL TOPICS IN FILM AND MEDIA STUDIES
Short Title: SPECIAL TOPICS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Special topics and new course in film and media studies, not necessarily repeated. May be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.

HART 297 - SPECIAL TOPICS IN MUSEUM CURATORIAL STUDIES
Short Title: SPECIAL TOPICS: MUSEUM STUDIES
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Special Topics class taught by visiting Curators from the MFAH. FA 2016: Intro to Islamic Art at the MFAH: This course explores the dynamic, multifaceted character of Islamic art and architecture across the globe. Travel from Spain to India studying original art at the Museum of Fine Arts. Gain understanding of the historical, religious, social, craft, and visual contexts of the art. Graduate/Undergraduate Equivalency: HART 597. Mutually Exclusive: Credit cannot be earned for HART 297 and HART 597.

HART 298 - SPECIAL TOPICS IN ART THEORY AND CRITICISM
Short Title: SPECIAL TOPICS
Department: Art History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Independent study, reading, or special research in art history. Instructor Permission Required. Repeatable for Credit.

HART 299 - INDEPENDENT STUDY IN ART THEORY AND CRITICISM
Short Title: INDEPENDENT STUDY
Department: Art History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Independent study, reading, or special research in art history. Instructor Permission Required. Repeatable for Credit.
HART 300 - MUSEUM INTERNSHIP I  
**Short Title:** MUSEUM INTERNSHIP I  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** The aim of this course is to provide select students a practicum in museum work accompanied by an introduction to a history of museums, including the varieties of museums, their role in society and significant issues in museums today. Instructor Permission Required.

HART 301 - MUSEUM INTERNSHIP II  
**Short Title:** MUSEUM INTERNSHIP II  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum  
**Credit Hours:** 1-6  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** The aim of this course is to provide select students a practicum in museum work accompanied by an introduction to a history of museums, including the varieties of museums, their role in society and significant issues in museums today. Instructor Permission Required.

HART 302 - FROM THE SUBLIME TO THE SUSTAINABLE: ART, ARCHITECTURE AND NATURE  
**Short Title:** ART, ARCHITECTURE AND NATURE  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This seminar considers theories and narratives of nature in the crafting of modern and contemporary art and architecture in the Americas. Artists and architects will include Maria Fernanda Cardoso, Rogelio Salmona (Colombia); Ana Mendieta, Ricardo Porro (Cuba); Ana Maria Tavaraes, Lina Bo Bardi (Brazil); Mark Dion and Buckminster Fuller (USA). Graduate/Undergraduate Equivalency: HART 568. Mutually Exclusive: Credit cannot be earned for HART 302 and HART 568.

HART 303 - INDEPENDENT STUDY  
**Short Title:** INDEPENDENT STUDY  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Independent Study in Art History. Instructor Permission Required.

HART 304 - A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE  
**Short Title:** TRENDS IN CUBAN CULTURE  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This seminar considers theories and narratives of nature in the crafting of modern and contemporary art and architecture in the Americas. Artists and architects will include Maria Fernanda Cardoso, Rogelio Salmona (Colombia); Ana Mendieta, Ricardo Porro (Cuba); Ana Maria Tavaraes, Lina Bo Bardi (Brazil); Mark Dion and Buckminster Fuller (USA). Graduate/Undergraduate Equivalency: HART 568. Mutually Exclusive: Credit cannot be earned for HART 304 and HART 568.

HART 307 - TECHNICAL ART HISTORY: STUDYING THE TECHNIQUES OF WESTERN PAINTING, 13TH-20TH CENTURIES  
**Short Title:** TECHNICAL ART HISTORY  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This seminar considers theories and narratives of nature in the crafting of modern and contemporary art and architecture in the Americas. Artists and architects will include Maria Fernanda Cardoso, Rogelio Salmona (Colombia); Ana Mendieta, Ricardo Porro (Cuba); Ana Maria Tavaraes, Lina Bo Bardi (Brazil); Mark Dion and Buckminster Fuller (USA). Graduate/Undergraduate Equivalency: HART 568. Mutually Exclusive: Credit cannot be earned for HART 302 and HART 568.

HART 308 - LIVING IN THE CITY IN THE OTTOMAN EMPIRE  
**Short Title:** LIVING IN THE CITY  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This seminar combines primary and secondary sources to explore the urban experiences of Ottoman men and women in the 18th and early 19th centuries. Looking at several cities including Istanbul, Izmir, Salonika, Damascus, Aleppo and Alexandria, we will discuss such issues as neighborhood and community life, public spaces and recreational culture perceptions of space, urban institutions, Muslim and non-Muslim relations, migration and marginality, violence and death. Reading knowledge of French and/or Turkish helpful but not necessary. Cross-list: ARCH 318. Graduate/Undergraduate Equivalency: HART 508. Mutually Exclusive: Credit cannot be earned for HART 308 and HART 508.
Short Title: THE DAWN OF ROME
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this course you will uncover the roots of the Eternal City, Rome. Through analysis of archaeological remains, art historical methodologies and theories of social space, intentionality, structuration and agency, you will question how and why Rome became a city and a culture that reshaped the world. The course will focus on the first 500 years of Roman art and society, ca. 800-300 BCE, looking closely at the kingship of Rome, the genesis of the Roman Republic, and the ability to understand a distant culture through artistic manufacture, materiality and philosophical shift. Cross-list: CLAS 309. Graduate/Undergraduate Equivalency: HART 509. Mutually Exclusive: Credit cannot be earned for HART 309 and HART 509.

HART 310 - BRAZIL BUILT: THE CLINIC, THE TROPICAL, AND THE AESTHETIC
Short Title: BRAZIL BUILT
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: From Brazil Builds, MOMA’s 1943 celebrated exhibition to Brasilia, the supermodern capital created ex-nihilo in the middle of nowhere, to today’s worldwide attention on Brail, this seminar examines the built environment - natural and architectural - as the main transmitter of modernism in Brazil. This is a seminar on Brazilian modernism and its discontents. Cross-list: ARCH 315. Graduate/Undergraduate Equivalency: HART 526. Mutually Exclusive: Credit cannot be earned for HART 310 and HART 526.

HART 311 - ART AND ARCHAEOLOGY OF THE ANCIENT NEAR EAST
Short Title: ANCIENT NEAR EAST
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An in-depth examination of the art and archaeology of ancient Mesopotamia, Syria, Anatolia and Persia. Beginning in The Neolithic period, we will examine the development of Near Eastern art and architecture through the study of ancient sites and their associated material culture. Cross-list: ANTH 331. Graduate/Undergraduate Equivalency: HART 511. Mutually Exclusive: Credit cannot be earned for HART 311 and HART 511.

HART 312 - ADVANCED STUDY IN MUSEUMS AND HERITAGE: ARTS OF ANCIENT MEDITERRANEAN AT THE MENIL COLLECTION
Short Title: ADV STUDY IN MUSEUMS/HERITAGE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to advanced ethical, legal and practical issues facing museums as they acquire and maintain collections from areas prone to looting and destruction, especially the Ancient Mediterranean. We will examine the civic engagement and operation of the Menil Collection through close, on-site archival and object study. Cross-list: HURC 308. Graduate/Undergraduate Equivalency: HART 540. Mutually Exclusive: Credit cannot be earned for HART 312 and HART 540.

HART 314 - POLITICS OF CULTURAL HERITAGE IN THE MODERN MIDDLE EAST, 1800 TO THE PRESENT
Short Title: POLITICS OF CULTURAL HERITAGE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar will examine the history of the concept of "cultural heritage" in the modern Middle East. We will explore the emergence of concerns for archaeological sites and architectural monuments, and the ability of cultural heritage to shore up contested claims of identity, ideology, and political legitimacy.

HART 316 - VIRTUAL RECONSTRUCTION OF HISTORICAL CITIES
Short Title: VIRT RECONSTR HISTORCL CITIES
Department: Art History
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course, part of the HRC’s Digital Humanities Initiative, is devoted to the virtual reconstruction of ancient urban landscapes with focus on individual buildings in their urban settings. All course activities will be based around interdisciplinary student teams who will work together through the semesters to complete a virtual reconstruction project. Instructor Permission Required. Cross-list: ANTH 346, ARCH 310, COMP 316.

HART 318 - SPECIAL TOPICS IN ANCIENT ART
Short Title: ROME: THE ETERNAL CITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will introduce you to the major monuments of Rome, Pompeii, and Herculaneum. We will focus not only on the history and functions of these monuments in antiquity but also on how their meaning and representation has changed and evolved in the post-classical world. Instructor Permission Required. Cross-list: CLAS 321. Repeatable for Credit.
HART 320 - EIGHTEENTH CENTURY EUROPEAN ART
Short Title: 18TH CENTURY EUROPEAN ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course considers the painting, sculpture, architecture, decorative and graphic arts of the 1700s in relation to important social and ideological developments of the period. These include the decline of traditional patronage, the rising idea of an art public, and the spread of skeptical attitudes about received authority. Graduate/Undergraduate Equivalency: HART 550. Mutually Exclusive: Credit cannot be earned for HART 320 and HART 550.

HART 321 - IMPERIAL CITY: ISTANBUL 1453-1922
Short Title: ISTANBUL IMPERIAL CITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This thematic seminar examines significant historical moments in the architectural and urban cultural of the Ottoman imperial capital from the moment it was conquered until the demise of the Ottoman empire. Weekly readings and discussions will cover a range of topics including building patronage, architectural decorum, the Byzantine legacy, artistic relations with Persia, India and Europe, cultural pluralism, neighborhood and public life, law and urban order, modernity and modernization. Cross-list: ARCH 331. Graduate/Undergraduate Equivalency: HART 521. Mutually Exclusive: Credit cannot be earned for HART 321 and HART 521.

HART 322 - JERUSALEM TO ISFAHAN
Short Title: JERUSALEM TO ISFAHAN
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A seminar on key topics of the study of visual cultures in the medieval and early modern Muslim world focused on specific works of art. Politics of architectural patronage, dissemination of visual languages, calligraphy, "ornament" and figural representation in Islam, cross-cultural exchanges and trans-religious iconographies are among the topics discussed. Cross-list: ARCH 332. Graduate/Undergraduate Equivalency: HART 522. Mutually Exclusive: Credit cannot be earned for HART 322 and HART 522.

HART 323 - RELIGIOUS VISUAL CULTURES IN TRADITIONAL CHINA
Short Title: CHINESE RELIGIOUS ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the visual materials and their context that shed light on pre-modern China's Buddhist, Daoist, funeral, and other diverse religious and ritual practices. Topics of discussion include iconic and aniconic traditions; breathing, meditation, and visualization; paradise and hell; body; ritual performance; patronage; Buddhist grottoes; tombs; multi-ethnic; printing. Cross-list: ASIA 323, MDEM 323. Graduate/Undergraduate Equivalency: HART 623. Mutually Exclusive: Credit cannot be earned for HART 323 and HART 623.

HART 326 - MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN ANCIENT ROME
Short Title: MATERIAL, FORM, SPACE, TIME
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: "Architectural Revolution" has been tied to Le Corbusier, the Eiffel Tower, the Louvre, Brunelleschi and to towering Gothic cathedrals. At the foundation of all these endeavors is the Concrete Revolution in Roman Architecture. In this course we'll look at the four essential elements of this revolution from the fourth century BCE to the fifth century CE, and we'll investigate how shifts in application and experience created a background that informs design to this day. Cross-list: ARCH 326, CLAS 326. Graduate/Undergraduate Equivalency: HART 626. Mutually Exclusive: Credit cannot be earned for HART 326 and HART 626.

HART 327 - THE GENESIS OF ROMAN ART
Short Title: THE GENESIS OF ROMAN ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores the roots of the art and architecture of ancient Rome (ca. 600-200 BCE). In it we will examine the earliest vestiges of sculpture, painting and architecture from the Archaic and Classical periods to the twisted forms of Hellenistic conquest. You will grapple with the questions of cultural agency, connoisseurship, cultural interaction, network and object theories and spatial imagination to question standard narratives that divide Rome in this time from neighboring Greek polities. Cross-list: CLAS 324. Graduate/Undergraduate Equivalency: HART 627. Mutually Exclusive: Credit cannot be earned for HART 327 and HART 627.
HART 328 - EPIPHANIES: SEEING IN A NEW LIGHT AND RECOGNIZING THE RADIANCE
Short Title: EPIPHANIES
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Upper-Level
Description: Epiphanies are events or objects that can note a striking appearance or manifestation, just as an epiphanic experience contains a significant moment of revelation. This course examines expressions of epiphanies in modernist art, literature, film, sacred experience, and in the mundane details of life itself. Cross-list: RELI 375.

HART 329 - STREETS AND URBAN LIFE: PARIS TO ISTANBUL
Short Title: STREETS AND URBAN LIFE
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Upper-Level
Description: Exploration of the street as a focus of urban life in 18th and 19th century. We will look at streets and spaces of livelihood, sociability, and transgression in cities such as London, Paris, Istanbul, Amsterdam and Cairo. Cross-list: ARCH 329, HIST 329. Graduate/Undergraduate Equivalency: HART 529. Mutually Exclusive: Credit cannot be earned for HART 329 and HART 529.

HART 330 - EARLY MEDIEVAL ART
Short Title: EARLY MEDIEVAL ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Upper-Level
Description: Early Medieval Art from the 5th Century to the Romanesque period. This course begins with a study of the art and architecture of the Ostrogoths, Visigoths, Lombards, Celts, Anglo-Saxons, Franks, and Merovingians, and the transformation of the Roman World through new Germanic, Barbarian, and Christian forces. The second part of the course considers the cultural Renaissance of the Carolingian and Ottonian Periods under rulers such as Charlemagne and Otto III. The last third of the course focuses on themes of pilgrimage, relics, crusades and the emergence of new monumental tradition in art and architecture during the Romanesque Period. Cross-list: MDEM 330. Graduate/Undergraduate Equivalency: HART 530. Mutually Exclusive: Credit cannot be earned for HART 330 and HART 530.

HART 331 - GOTHIC ART
Short Title: GOTHIC ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Upper-Level
Description: Examination of the full array of sacred art and architecture produced in the early and high gothic periods in northern Europe. Includes cathedral architecture, sculpture, stained glass, manuscripts, and metalwork studies in relationship to the expansion of royal and Episcopal power. Cross-list: MDEM 331. Graduate/Undergraduate Equivalency: HART 531. Mutually Exclusive: Credit cannot be earned for HART 331 and HART 531.

HART 332 - ART OF THE COURTS
Short Title: ART OF THE COURTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Upper-Level
Description: Examination of art and architecture produced in the late gothic period within three distinct settings—the court, the city, and the church. Includes private, public, and religious life as expressed in the objects, architecture, and decoration of the castle and palace, the house, the city hall and hospital, and the chapel and parish church. Cross-list: MDEM 332. Graduate/Undergraduate Equivalency: HART 532. Mutually Exclusive: Credit cannot be earned for HART 332 and HART 532.

HART 333 - LOOKING AT EUROPEAN PRINTS 1400-1700
Short Title: LOOKING AT PRINTS 1400-1700
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Upper-Level
Description: The class has several goals: to gain a thorough historical understanding of prints by major masters as Schongauer, Mantegna, Düer, and Rembrandt as well as more popular prints, explore key issues in the study of prints, such as how they revolutionized European culture, their patronage, markets, functions, and techniques; and to examine the prints first-hand. Graduate/Undergraduate Equivalency: HART 525. Mutually Exclusive: Credit cannot be earned for HART 333 and HART 525.
HART 334 - PICASSO, POLLOCK, WARHOL
Short Title: PICASSO, POLLOCK, WARHOL
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar will look in detail at three of the twentieth century’s most important artists: Pablo Picasso, Jackson Pollock, and Andy Warhol. Our central focus in doing so will be painting, in particular, the means by which these three artists tested, expanded or even “destroyed” the medium. What did it mean to make (or reject) painting in 1910, 1950, and 1965? Special attention will be paid to recent scholarly literature and close looking at works in local collections. Graduate/Undergraduate Equivalency: HART 546. Mutually Exclusive: Credit cannot be earned for HART 334 and HART 546.

HART 336 - CINEMA AND THE CITY
Short Title: CINEMA AND THE CITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class explores representations of the city in 20th and 21st century world cinema. Central concerns will include the city as cinematic protagonist, parallels between urban and cinematic space and the intertwined histories of both film and urban design over the last century. Cross-list: ASIA 355, FILM 336. Graduate/Undergraduate Equivalency: HART 536. Mutually Exclusive: Credit cannot be earned for HART 336 and HART 536.

HART 339 - AMERICAN ART AND ARCHITECTURE I: 1620-1800
Short Title: AMERICAN ART: 1620-1800
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the works of the greatest painters and sculptors in Europe during the Baroque period. Includes a study of mannerism, the stylish art produced after the first quarter of the 16th century. Graduate/Undergraduate Equivalency: HART 539. Mutually Exclusive: Credit cannot be earned for HART 339 and HART 539.

HART 340 - NORTHERN RENAISSANCE ART
Short Title: NORTHERN RENAISSANCE ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the High Renaissance, with emphasis on its leading masters (e.g., Leonardo, Raphael, Bramante, Michelangelo, and Titian). Includes a study of mannerism, the stylish art produced after the first quarter of the 16th century. Graduate/Undergraduate Equivalency: HART 541. Mutually Exclusive: Credit cannot be earned for HART 341 and HART 541.

HART 341 - EARLY RENAISSANCE ART IN ITALY
Short Title: EARLY RENAISSANCE ART IN ITALY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of Italian art and architecture from Giotto to Botticelli, with emphasis on painting and sculpture in the 15th century. Graduate/Undergraduate Equivalency: HART 541. Mutually Exclusive: Credit cannot be earned for HART 341 and HART 541.

HART 342 - THE HIGH RENAISSANCE AND MANNERISM IN ITALY
Short Title: HIGH RENAISSN&MANNERISM ITALY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the High Renaissance, with emphasis on its leading masters (e.g., Leonardo, Raphael, Bramante, Michelangelo, and Titian). Includes a study of mannerism, the stylish art produced after the first quarter of the 16th century. Graduate/Undergraduate Equivalency: HART 542. Mutually Exclusive: Credit cannot be earned for HART 342 and HART 542.

HART 343 - MASTERS OF THE BAROQUE ERA
Short Title: MASTERS OF THE BAROQUE ERA
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the works of the greatest painters and sculptors in Europe during the Baroque period. Includes Rembrandt, Rubens, Caravaggio, Poussin, Claude, and Velázquez. Cross-list: MDEM 343. Graduate/Undergraduate Equivalency: HART 543. Mutually Exclusive: Credit cannot be earned for HART 343 and HART 543.
HART 344 - CAPITALISM AND CULTURE  
**Short Title:** CAPITALISM AND CULTURE  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This seminar will examine the way European culture, especially art, was shaped by the rise of the monetary economy and capitalism, beginning in the late Middle Ages and continuing into modern times. Graduate/Undergraduate Equivalency: HART 344. Mutually Exclusive: Credit cannot be earned for HART 344 and HART 544.  

HART 345 - HISTORY AND THEORY II - PRE 1890  
**Short Title:** HISTORY & THEORY II - PRE 1890  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** An in-depth exploration as to why select monuments from Antiquity through the 19th century were 'canonized' in popular imagination and given referential status. Following a case study format, each week will focus on a particular building, built or unbuilt, from both Western and Eastern traditions. Cross-list: ARCH 345.  

HART 346 - SEMINAR ON LOVE: MAKING LOVE IN MODERN ART AND THOUGHT  
**Short Title:** MAKING LOVE IN MODERN ART  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This seminar explores various conceptions of love from the classical era to our postmodern age. Ranging from eros to philia to agape, we will examine literary, philosophical, and artistic expressions of love in painting, cinema, literature, psychoanalysis, philosophy, religion, and culture. Cross-list: SWGS 346.  

HART 347 - SEMINAR ON LOVE  
**Short Title:** SEMINAR ON LOVE  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This seminar explores the themes of love, sex, and spirit from the classical era through the postmodern age. We will examine literary, philosophical, and artistic expressions in painting, sculpture, cinema, novels, poetry, psychoanalysis, religion, and culture. Cross-list: RELI 343.  

HART 348 - A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE  
**Short Title:** TRENDS IN CUBAN CULTURE  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Research  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This research seminar will explore contemporary trends in Cuban culture through literary texts, films, music and works of art. We will examine the ways in which politics and the practices of artistic representation intersect in post-revolutionary Cuba. A research trip to Cuba has been organized as part of this seminar. This course is taught in Spanish. Graduate students will be required to complete all the requirements for the course in addition to writing a substantial research paper at the end of the semester. This is the credit for the actual trip to Cuba. Graduate/Undergraduate Equivalency: HART 548. Mutually Exclusive: Credit cannot be earned for HART 348 and HART 548.  

HART 349 - TRENDS IN CONTEMPORARY ART  
**Short Title:** TRENDS IN CONTEMPORARY ART  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This seminar will map the terrain of contemporary art as it has developed in the wake of political and theoretical engagements of the 1990’s. For many critics, Contemporary Art practice has given way to the worst aspects of spectacular culture losing sight of the political, theoretical, and artistic rigor that characterized the historical and neo-avant-garde. Graduate/Undergraduate Equivalency: HART 570. Mutually Exclusive: Credit cannot be earned for HART 349 and HART 570.  

HART 350 - SCIENCE AND MEDICINE IN MEDIEVAL VISUAL CULTURE  
**Short Title:** MEDIEVAL SCIENCE AND MEDICINE  
**Department:** Art History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course will examine the diverse and often unexpected forms of medieval representation that intersect with science, medicine, and natural history: maps, diagrams, images from health and surgery guides, encyclopedic compendia of animals and plants, astrolabes. Optics and theories of vision, and the ideals of naturalism and perspective, will be examined alongside issues such as function, cultural exchange, and intellectual authority. Cross-list: MDEM 352. Graduate/Undergraduate Equivalency: HART 650. Mutually Exclusive: Credit cannot be earned for HART 350 and HART 650.
HART 351 - ART, REVOLUTION, WAR: MODERN ART IN VIOLENT TIMES  
Short Title: ART, REVOLUTION, WAR  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This seminar examines the ambition (or lack thereof) of modern art to play an active role during periods of violent conflict. From the French Revolution to the recent disastrous American engagements in the Middle East wars to the never-ending war on terror, artists have produced images that attempt to actively engage in these conflicts. This class will examine the relative successes and failures of art during times of violent revolution and war within the modern era. Graduate/Undergraduate Equivalency: HART 651. Mutually Exclusive: Credit cannot be earned for HART 351 and HART 651.

HART 353 - ART AND EMOTION  
Short Title: ART AND EMOTION  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This seminar will examine the role played by emotion in our response to works of art. What is the relationship of emotion to the specific formal properties of a given work of art, such as color, texture, shape, line quality, sound, and so on? What role does our cognitive faculties play in determining our emotional response to art? Are there political stakes to emotional affect? These and other questions will be examined. Graduate/Undergraduate Equivalency: HART 653. Mutually Exclusive: Credit cannot be earned for HART 353 and HART 653.

HART 354 - AGE OF ROMANTICISM IN EUROPE  
Short Title: AGE OF ROMANTICISM IN EUROPE  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course will consider the emergence and flourishing of Romanticism in the visual arts in Europe. We will consider artists from France, Germany and Britain, including Eugene Delacroix, J.M.W. Turner, John Constable and Caspar David Friedrich. We will combine study of paintings with readings of contemporaneous philosophers and writers, including Hegel and Byron. Graduate/Undergraduate Equivalency: HART 554. Mutually Exclusive: Credit cannot be earned for HART 354 and HART 554.

HART 355 - JACQUES-LOUIS DAVID: REVOLUTION  
Short Title: JACQUES-LOUIS DAVID: REVOLUTION  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This class will consider the painting of Jacques-Louis David with particular reference to the ideas of revolution. This seminar will combine close reading and looking, using primary and secondary readings to explore issues of classicism, politics, eroticism, and aesthetics in the work of this central figure in art history. Graduate/Undergraduate Equivalency: HART 655. Mutually Exclusive: Credit cannot be earned for HART 355 and HART 555.

HART 357 - CONSTABLE AND TURNER  
Short Title: CONSTABLE AND TURNER  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This seminar will explore critical issues surrounding the careers of John Constable and J.M.W. Turner, arguably the greatest landscape painters of the early 19th century. We will look at both similarities and differences in the work of these two rivals, while considering their work in the context of great historical change in England. Graduate/Undergraduate Equivalency: HART 547. Mutually Exclusive: Credit cannot be earned for HART 357 and HART 547.

HART 358 - IMPRESSIONISM AND POST-IMPRESSIONISM  
Short Title: IMPRESSIONISM/POST-IMP  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This class will explore painting in France from approximately 1865 to 1900. Mixing lectures and classroom discussion, we will focus on individual artists including Claude Monet, Edgar Degas, Mary Cassatt, Georges Seurat, Vincent van Gogh, and Paul Czanne. We will also consider and discuss a set of critical issues surrounding these painters, including the politics of gender and class within the changing urban setting of Paris. Graduate/Undergraduate Equivalency: HART 558. Mutually Exclusive: Credit cannot be earned for HART 358 and HART 558.
HART 359 - CINEMAS OF URBAN ALIENATION
Short Title: CINEMAS OF URBAN ALIENATION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar examines cinematic engagements with urban spaces and experiences around the world spanning the last two centuries. Particular attention will be paid to issues of migration, marginality, colonialism, war and post-war, nostalgia and memory, race and gender. Cities of focus include Berlin, Istanbul, Moscow, Algiers, Beirut and Paris. Our weekly discussions of individual films will be grounded in critical writings of the cities’ histories and theories of space and film. Cross-list: ARCH 359, FILM 359. Graduate/Undergraduate Equivalency: HART 659. Mutually Exclusive: Credit cannot be earned for HART 359 and HART 659.

HART 360 - AMERICAN ARCHITECTURE AND DECORATIVE ARTS BEFORE 1900
Short Title: AMER ARCH & DECOR ARTS 1900
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Major topics will include the furniture styles of early America, the architecture of colonial cities, the life, thought, and architectural ideas of Thomas Jefferson, urban design and building projects in Washington, D.C., and other U.S. cities, and domestic life and interior design in 19th century America. Cross-list: ARCH 360. Graduate/Undergraduate Equivalency: HART 560. Mutually Exclusive: Credit cannot be earned for HART 360 and HART 560.

HART 361 - WHAT IS CINEMA? CLASSIC READINGS OF CLASSIC FILMS
Short Title: WHAT IS CINEMA?
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Using a variety of readings now considered classics as our guide, this class will look closely at a broad range of films and film movements discussed by critics and theorists such as Rudolf Amheim, Jean Epstein, Sergei Fisenstein, Walter Benjamin and Andre Bazin. Cross-list: FILM 361. Graduate/Undergraduate Equivalency: HART 561. Mutually Exclusive: Credit cannot be earned for HART 361 and HART 561.

HART 362 - UPCYCLING: MEANINGFUL REUSE IN ART AND MONUMENTS FROM ANTIQUITY TO TODAY
Short Title: UPCYCLING
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this seminar, we will explore the phenomenon of upcycling - intentionally meaningful reuse - by investigating the intersection of reuse and memory in the art and monuments of many different times, places, and people, from prehistory to the modern art that surrounds us on the Rice campus. Mutually Exclusive: Credit cannot be earned for HART 362 and HART 562.

HART 364 - THE RISE OF CAPITALISM AND LATE MEDIEVAL AND EARLY MODERN ART
Short Title: CAPITALISM & ART, 1300-1700
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will explore how the rise of capitalism affected late medieval and early modern art. It will explore depictions of avarice, charity, and poverty, representations of shopping; how the rise of the art market affected art production; images of different socio-economic classes, and the material culture of money. Cross-list: MDEM 363. Graduate/Undergraduate Equivalency: HART 584. Mutually Exclusive: Credit cannot be earned for HART 364 and HART 584.

HART 365 - ART BETWEEN THE WARS: EUROPEAN MODERNISM, 1918-1940
Short Title: ART BETWEEN THE WARS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Beginning in the aftermath of the First World War, a conflict that devastated the physical and psychological landscape of Europe, and ending with the rise of various totalitarian regimes (Fascism, Stalinism) this seminar will examine European art of the interwar period, from 1918-1940. Potential topics will include Surrealism, The Russian avant-garde, the return to order, Esprit-Nouveau, the machine aesthetic, De Stijl, avant-garde cinema, etc. Graduate/Undergraduate Equivalency: HART 575. Mutually Exclusive: Credit cannot be earned for HART 365 and HART 575.
HART 367 - MODERN AND CONTEMPORARY ART: FROM POLLOCK TO THE PRESENT
Short Title: MODERN AND CONTEMPORARY ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine a range of topics in American and European art from the 1950s to the present. Our subjects will include Abstract Expressionism, Pop art, body and performance art, deconstruction, postmodernism, minimalism, and art in the digital age.

HART 369 - (RE)DEFINING (CLASSICAL) ART HISTORY: DIVISION, CONNECTIVITY AND SHIFT IN THE ANCIENT MEDITERRANEAN
Short Title: REDEFining CLASSical ART HIST
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: For 500 years scholars have cleaved Roman and Greek art from one another in order to define the heart of antiquity. The scholarship that created such division is the very scholarship that created the discipline of Art History and redefined it through iconographical, social historical and broadly theoretical analysis. Windelmann, Droysen, Brendel, Deleuze, Gell. In this seminar, we will question the disciplinary paradigm. Looking at art from around the Mediterranean and reading the very scholarship that has both created these definitions and questioned them, we will work toward a new way of conceiving the art of the Ancient Mediterranean world. Cross-list: CLAS 323. Graduate/Undergraduate Equivalency: HART 569. Mutually Exclusive: Credit cannot be earned for HART 369 and HART 569.

HART 370 - CHINESE PAINTING
Short Title: CHINESE PAINTING
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines Chinese painting from ancient times to the early twentieth century. Issues of examination include themes, styles, and functions of Chinese painting; the interrelationship between paintings and the intended viewers; regionalism; images and words; foreign elements in Chinese painting. Cross-list: ASIA 371. Graduate/Undergraduate Equivalency: HART 571. Mutually Exclusive: Credit cannot be earned for HART 371 and HART 571.

HART 371 - CHINESE ART AND VISUAL CULTURE
Short Title: CHINESE ART AND VISUAL CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores the question of how words and images intersect in the visual arts. Readings of some key texts on the subject will be followed by a series of case studies concerning specific artistic genres and issues. Topics include: narrative in painting; the frame and the caption; character and face in portraiture; the word as image in calligraphy; and sound and image in film. Through its readings and cases, the course will provide students a focused introduction to art historical theories and methods.

HART 372 - LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN CITIES
Short Title: LATIN-EUROPE/LATIN-AMERICA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course challenges our pre-conceived maps of the world, highlighting Latin America’s place within our understanding of modernity as a product of transnational interconnections. Transversing the Atlantic, this course traces the interactions of capitalism and culture, science and aesthetics, and the ideologies that informed and formed the urban fabric and spatial politics of important cities in the modern Latin world - Paris, Rio de Janeiro, Rome, Buenos Aires, Barcelona, Havana, and Brasilia. Cross-list: ARCH 375. Graduate/Undergraduate Equivalency: HART 675. Mutually Exclusive: Credit cannot be earned for HART 375 and HART 675.
HART 376 - EAST & WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND NORTHERN EUROPE
Short Title: EAST AND WEST
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores a series of issues that are critically important for the medieval art of both China and northern Europe. Topics include materials and techniques; public and private art: commerce, technology and prints; art and motion; archaeology; paradise and hell; maps and space; the gaze; erotica; patronage; and multiculturalism. Cross-list: ASIA 376, MDEM 376. Graduate/Undergraduate Equivalency: HART 576. Mutually Exclusive: Credit cannot be earned for HART 376 and HART 576.

HART 377 - MEDIEVAL MANUSCRIPTS
Short Title: MEDIEVAL MANUSCRIPTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar explores illuminated European manuscripts from late antiquity through the early sixteenth century. It examines manuscripts' functions, patrons, makers, and materials and technique, as well as such issues as the relationship between text and image and the manuscript's ideological stance. Students have the opportunity to study original medieval illuminations. Cross-list: MDEM 377. Graduate/Undergraduate Equivalency: HART 577. Mutually Exclusive: Credit cannot be earned for HART 377 and HART 577.

HART 378 - DUTCH ART IN THE AGE OF REMBRANDT
Short Title: DUTCH ART IN AGE OF REMBRANDT
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine Dutch and Flemish seventeenth-century art, including major masters, such as Rembrandt, Rubens, and Vermeer, and major developments, such as the rise of still life, genre, and landscape painting. Cross-list: MDEM 378. Graduate/Undergraduate Equivalency: HART 578. Mutually Exclusive: Credit cannot be earned for HART 378 and HART 578.

HART 380 - SURVEY OF AMERICAN FILM AND CULTURE
Short Title: SURVEY OF AMER FILM & CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine the centrality of collage to the development of the 20th century art and film. Beginning with the seminal achievements of Picasso and Braque, we will examine works across geographical and medium boundaries, including Dada photomontage, early avant-garde film, 1960s happenings, and the reformulation of collage aesthetics in 1980s postmodernism. Graduate/Undergraduate Equivalency: HART 581. Mutually Exclusive: Credit cannot be earned for HART 381 and HART 581.

HART 382 - MODALITIES OF CINEMA
Short Title: MODALITIES OF CINEMA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this course we will survey the range of organizing principles in cinema - the differing and combative ways cinema arranges its images and sounds. We will look at classicism, modernism, postmodernism and many other modes. The films will range from early silent pictures, to experimental shorts, to commercial blockbusters. Cross-list: FILM 382.

HART 383 - GLOBAL CINEMA
Short Title: GLOBAL CINEMA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to cinema as a global enterprise. It explores the relationship between nations, identities, races, concepts, and genres. It inquires into the question of globalization as it relates to the motion picture audience, corporations, and the commerce of ideas. Cross-list: FILM 383.
HART 385 - EUROPEAN WOMEN FILMMAKERS
Short Title: EUROPEAN WOMEN FILMMAKERS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Filmmaking has celebrated its first hundred years. Women's contributions were significant and deserve to widen the film canon for all filmgoers. This course will concentrate on films by European women directors, taking into account aesthetic particularities, gender commitment, and post-feminist attempts. Importance will also be given to the contexts and conditions of women's film production. All films subtitled in English. Taught in English. Cross-list: GERM 321, HUMA 321, SWGS 358.

HART 386 - DADA
Short Title: DADA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Inaugurated against the calamitous backdrop of the First World War, "Dada," the artist Francis Picabia claimed, "smells of nothing, it is nothing, nothing, nothing." This seminar will examine the aesthetics of shock and nihilism (literally, 'nothingness'), developed by Dada in six cities: Zurich, Berlin, Colgne, Hannover, New York, and Paris. Graduate/Undergraduate Equivalency: HART 586. Mutually Exclusive: Credit cannot be earned for HART 386 and HART 586.

HART 387 - HOLOCAUST MEMORY IN MODERN GERMANY
Short Title: HOLOCAUST MEMORY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course traces and examines forms of Holocaust memory and memorialization in film, literature, art, architecture, city planning, museums, and memorials in Germany. For an additional credit hour, students will participate in a week-long trip to Berlin. Instructor Permission Required. Cross-list: GERM 351.

HART 388 - POST WAR EUROPEAN CINEMA
Short Title: POST WAR EUROPEAN CINEMA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class surveys major developments in European cinema from the late 1940s to the late 1960s. Our study will include such movements as Italian Neorealism, German Rubble Films, French New Wave, and Soviet cinema in the Thaw. Particular attention will be paid to such issues as cinema and post-war reconstruction, memory and nation, and body and space. Cross-list: FILM 388. Graduate/Undergraduate Equivalency: HART 588. Mutually Exclusive: Credit cannot be earned for HART 388 and HART 588.

HART 389 - FILM MELODRAMA
Short Title: FILM MELODRAMA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Melodrama - the genre of tears, sensationalism and excess - has long been the focus of critical debates. Initially dismissed as mere escapism, melodrama films have begun to generate nuanced studies about their engagement with issues of gender, sexuality, class, and race. This seminar examines aesthetic, socio-political, and psychological dimensions of film melodrama, including historical works by Vidor, Sirk, Godard, and Fassbinder, as well as more recent projects by Haynes and Almodovar. Cross-list: FILM 389. Mutually Exclusive: Credit cannot be earned for HART 389 and HART 589.

HART 390 - THEORETICAL PERSPECTIVES ON THE VISUAL ARTS
Short Title: THEORIES OF VISUAL ARTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Exploration of overlapping themes central in the history of art, using texts from Plato to post-modernism. Includes the use of biography, style, connoisseurship, quality, the social basis of art, theories of change in the arts, psychology, iconography, and the modernist canon and post-modern challenges to that canon, as well as race, gender, class, authorship, and audience.
HART 391 - PLACE AND MEMORY IN MIDDLE EASTERN AND EUROPEAN CINEMA
Short Title: MEMORY AND PLACE IN CINEMA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Focuses on cinematic explorations of and preoccupations with the notion of place. Screenings include iconic and lesser-known films from Europe and the Middle East that offer diverse lenses and contexts (love, family, landscapes, borders, trauma, exile) through which we will examine questions of real and imagined place and the politics of memory. Cross-list: ANTH 378, FILM 378. Graduate/Undergraduate Equivalency: HART 691. Mutually Exclusive: Credit cannot be earned for HART 391 and HART 691.

HART 392 - LATIN AMERICAN ART AND CINEMA SINCE 1960
Short Title: LAT AMER ART/CINEMA SINCE 1960
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the relationships between art and cinema in Latin America, providing an overview of key artists, movements, and films from Argentina, Brazil, Cuba, and Mexico from 1960 to present. Sessions include weekly film screenings and focus on research and discussions about topics including globalization, mass media, reception, and the social, economic, and political contexts around artistic production. Graduate/Undergraduate Equivalency: HART 592. Mutually Exclusive: Credit cannot be earned for HART 392 and HART 592.

HART 394 - THE SACRED ARTS OF SECULAR MODERNISM
Short Title: SACRED ARTS SECULAR MODERNISM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines various representations of spirituality and the sacred in modernist & post modernist aesthetics, and their corresponding expressions in historical and contemporary museum practices. Special emphasis will be placed on the outstanding collections of the adjacent museum district, the Menil Collection and the Museum of Fine Arts, Houston. Cross-list: RELI 394.

HART 395 - ROMAN ARCHAEOLOGY: FIELD SCHOOL
Short Title: ROMAN ARCHAEOLOGY FIELD SCHOOL
Department: Art History
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This is a traditional archaeological field course, taught in the Roman Forum. Techniques and advanced technologies for processing, conserving, and recording archeological materials are emphasized. Students will become familiar with procedures for ceramics, metals, plant and animal remains and building materials. Course work include lectures, hands-on excavation, and informal discussion. Instructor Permission Required. Recommended Prerequisite(s): HART 201 or ANTH 205 or ANTH 303. Mutually Exclusive: Credit cannot be earned for HART 395 and HART 695.

HART 396 - MEDICAL HUMANITIES VISUAL CULTURE
Short Title: MED HUMANITIES VISUAL CULTURES
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this course we will examine literal and symbolic representations of the human body in order to explore the relations between the visuality of medicine, corporeality, subjectivity, and healing. Repeatable for Credit.

HART 397 - SPECIAL TOPICS: HART IN THE WORLD
Short Title: SPECIAL TOPICS - FIELD STUDY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Art History. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Through lectures, seminar discussions, museum visits, architectural itineraries, and field trips, this course will explore the complex political, social, and cultural histories of each country visited; locations are Brazil (2017), London (2018), Berlin (2019), China (2020). More information available at http://arthistory.rice.edu/hart-world. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 697. Mutually Exclusive: Credit cannot be earned for HART 397 and HART 697.
Course URL: arthistory.rice.edu/hart-world
HART 398 - FROM EXPRESSIONISM TO FASCISM: ART AND FILM IN GERMANY
Short Title: FROM EXPRESSIONISM TO FASCISM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Focusing on the tumultuous years of the Weimar Republic, this class will examine art and film in Germany from the birth of Expressionism through the end of the Nazi dictatorship. Topics covered will include Expressionism, Dada, the Bauhaus, and Fascist aesthetics. Particular attention will be paid to the relations between aesthetics and politics and art and everyday life, all central concerns of the art and criticism of the period. Cross-list: GERM 339. Graduate/Undergraduate Equivalency: HART 596. Mutually Exclusive: Credit cannot be earned for HART 398 and HART 596.

HART 399 - EXHIBITING SEXUALITIES
Short Title: EXHIBITING SEXUALITIES
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class investigates how sexuality has been constructed, avoided, celebrated, and suppressed in museums. In addition to studying a genealogy of sexual display and spectatorship in museums, students will also do the work of collectors, curators, and critics of artistic, historical, and scientific displays of sex and sexuality. Cross-list: SWGS 321.

HART 400 - BAYOU BEND UNDERGRADUATE INTERNSHIP I
Short Title: BAYOU BEND UG INTERNSHIP I
Department: Art History
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Undergraduate Internship at Bayou Bend, the American Decorative Arts Center of the Museum of Fine Arts, Houston. Must be a Jameson Fellowship recipient to enroll. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 603.Mutually Exclusive: Credit cannot be earned for HART 400 and HART 603.

HART 401 - BAYOU BEND UNDERGRADUATE INTERNSHIP II
Short Title: BAYOU BEND UG INTERNSHIP II
Department: Art History
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Undergraduate Internship at Bayou Bend and The American Decorative Arts Center of the Museum of Fine Arts, Houston. Must be a Jameson Fellowship recipient to enroll. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 604. Mutually Exclusive: Credit cannot be earned for HART 401 and HART 604.

HART 402 - HONORS THESIS
Short Title: HONORS THESIS
Department: Art History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Honors thesis project in art history. Students must receive permission of the department faculty prior to enrolling. For additional information, please see Honors Program in the Rice University General Announcements. Instructor Permission Required.

HART 403 - HONORS THESIS
Short Title: HONORS THESIS
Department: Art History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Honors thesis project in art history. Students must receive permission of the department faculty prior to enrolling. For additional information, please see Honors Program in the Rice University General Announcements. Instructor Permission Required.

HART 406 - ICONOCLASMS: THE DESTRUCTION OF IMAGES
Short Title: ICONOCLASMS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: With a focus on the modern period, this seminar will examine iconoclastic theory and practice from antiquity to the present. Why, we will ask, have people so incessantly felt compelled to ban or destroy images, and what can this compulsion tell us about the nature of visual representation itself? Graduate/Undergraduate Equivalency: HART 606. Mutually Exclusive: Credit cannot be earned for HART 406 and HART 606.

HART 407 - POP ART
Short Title: POP ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar will examine the history and significance of Pop art by looking in detail at three or four primary figures associated with the term; likely subjects include Andy Warhol, Gerhard Richter, Ed Ruscha, Richard Hamilton, and others. Visits to local museum collections and attention to theoretical writings on art and mass culture are planned. Graduate/Undergraduate Equivalency: HART 607. Mutually Exclusive: Credit cannot be earned for HART 407 and HART 607.
HART 410 - ARCHITECTURE AND DYNASTIC ASPIRATION IN THE EARLY ROMAN EMPIRE
Short Title: ARCH AND DYNASTIC ASPIRATIONS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Nero is often remembered as the tyrannical emperor who let the city burn and gorged on ill-gotten luxury; his successors are conceived as good emperors who built the Coliseum, Imperial Palace and the vast majority of Rome’s remaining monuments. In this course you will question whether things were so straightforward. Cross-list: CLAS 417. Graduate/Undergraduate Equivalency: HART 510. Mutually Exclusive: Credit cannot be earned for HART 410 and HART 510.

HART 412 - ADVANCED SEMINAR IN ARCHITECTURE
Short Title: ADV SEMINAR IN ARCHITECTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Small, focused, advanced discussion, workshop and/or design based courses on topics of recent research in architecture, delivered by RSA full time or visiting faculty. This seminar is open to RSA undergraduate students junior-level and above, and RSA graduate students. Students from other departments may enroll in the course with instructor permission. See the RSA website for more information: arch.rice.edu/courses. Cross-list: ARCH 412. Graduate/Undergraduate Equivalency: HART 612. Mutually Exclusive: Credit cannot be earned for HART 412 and HART 612. Repeatable for Credit.

HART 413 - MURDER AND MODERNISM
Short Title: MURDER AND MODERNISM
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: "Murder, George Orwell lamented in his 1946 essay "Decline of the English Murder," isn’t what it used to be. Unlike what he calls "our great period in murder" - roughly 1850 to the beginning of the Second World War - contemporary murder has lost its aesthetic appeal. "There is," he writes, "no depth of feeling in it." This class will examine the modernist fascination with murder, asking not only why it became a topic of such particular interest to artists, writers, and filmmakers during this time, but what it can tell us about modernist aesthetics more broadly." Graduate/Undergraduate Equivalency: HART 507. Mutually Exclusive: Credit cannot be earned for HART 413 and HART 507.

HART 420 - ARTISTIC ENCOUNTERS: EUROPE AND THE ISLAMIC WORLD IN THE EARLY MODERN AND MODERN PERIODS
Short Title: EUROPE & THE ISLAMIC WORLD
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar aims to assess the mutual impact of the visual cultures of Europe and the Islamic world through history. Focusing on 15th-19th-century material including architecture, painting, photography, textiles, and sartorial fashion, it examines channels of interaction, forms of influence, and modes of representation in aesthetic, cultural, philosophical, and political terms, and in light of concurrent theoretical debates.

HART 427 - VISUAL CULATURE OF MEDIEVAL PILGRIMAGE
Short Title: MEDIEVAL PILGRIMAGE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the rich visual culture associated with Medieval pilgrimage between the fourth and fifteenth centuries. The experience of pilgrimage was shaped by symbols, images, and places encountered along the routes to sites of sacred significance, especially the roads to Jerusalem, Rome, Santiago, and Canterbury. We will examine the theological, practical, visual, and experiential aspects of pilgrimage in Western Europe and the Holy Land as understood through visual culture and contemporary texts. Instructor Permission Required. Mutually Exclusive: Credit cannot be earned for HART 427 and HART 527.

HART 430 - THE GROTESQUE
Short Title: THE GROTESQUE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the grotesque in literature and art. It covers a variety of textual and visual sources across periods; theoretical materials will include works from literary studies, visual culture, art history, critical theory and aesthetics. Cross-list: ENGL 438.
Course URL: www.english.rice.edu
HART 431 - ARCHITECTURE OF THE GOTHIC CATHEDRAL FROM THE MIDDLE AGES TO THE TWENTIETH CENTURY
Short Title: ARCH OF GOTHIC CATHEDRAL
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will focus on one of the most important contributions to the history of western architecture—the Gothic cathedral. The course will approach the material from a number of different perspectives—the formal and technical development of Gothic architecture; the Medieval architect and the design of Gothic buildings, the social, economic, and political history of "big church" building in the Middle Ages; Gothic architecture as experience and metaphor; and the afterlife of the Gothic cathedral from Vasari to the National Cathedral in Washington, D.C. Cross-list: MDEM 431.

HART 434 - SEEING SEX IN EUROPEAN ART, 1400-1700
Short Title: SEEING SEX IN EUROPEAN ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine the visual history of sexuality from 1400-1700. It will explore how imagery structured sexual desire; the role of erotic sacred art; the rise of pornography; the intersection of spatial topography and sexuality; the linkage of licit and illicit sexualities; and the sexuality of artist and patrons. Cross-list: MDEM 434, SWGS 434. Graduate/Undergraduate Equivalency: HART 534. Mutually Exclusive: Credit cannot be earned for HART 434 and HART 534.

HART 437 - VISUAL CULTURE OF MEDIEVAL PILGRIMAGE
Short Title: MEDIEVAL PILGRIMAGE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores the rich visual culture associated with medieval pilgrimage between the 4th and 15th centuries. The experience of pilgrimage was shaped by symbols, images, and places encountered along the routes to sites of sacred significance, especially the Jerusalem, Rome, Santiago, and Canterbury. We will examine the theological, practical, visual, and experiential aspects of pilgrimage in Western Europe and the Holy Land as understood through material culture. Instructor Permission Required. Cross-list: FREN 437, MDEM 437. Graduate/Undergraduate Equivalency: HART 537. Recommended Prerequisite(s): Completion of one 300-level course or Permission of Instructor. Mutually Exclusive: Credit cannot be earned for HART 437 and HART 537.

HART 440 - ISSUES IN THE HISTORY OF PRINTS, PRE-MODERN TO PRESENT
Short Title: ISSUES IN HISTORY OF PRINTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: With their distinctive technical, social, and commercial associations, prints are often sidelined in traditional art histories. This course will introduce recent scholarship on the multiple image from the late middle ages to the present, with stress on the transformations of printmaking from the development of photography into our digital age. Graduate/Undergraduate Equivalency: HART 640. Mutually Exclusive: Credit cannot be earned for HART 440 and HART 640.

HART 450 - EARLY MODERN ART
Short Title: EARLY MODERN ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The art of Europe was never the product of a single culture working in isolation. This seminar will explore the multicultural aspects of medieval and early modern Europe by focusing on the visual culture of groups who defined themselves or are today defined by nationality, race, or religion. Cross-list: HIST 443, MDEM 435. Graduate/Undergraduate Equivalency: HART 535. Mutually Exclusive: Credit cannot be earned for HART 435 and HART 535.
HART 451 - MODELS OF ABSTRACTION
Short Title: MODELS OF ABSTRACTION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine a range of different models of abstract painting and sculpture as they appear throughout the twentieth century. Looking closely at the historical contexts that gave rise to abstraction particular attention will be paid to how apparently similar forms of abstraction can denote very different kinds of meaning. Graduate/Undergraduate Equivalency: HART 551. Mutually Exclusive: Credit cannot be earned for HART 451 and HART 551.

HART 452 - MANET(S) AND MODERNISM(S)
Short Title: MANET(S) AND MODERNISM(S)
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar considers the pivotal figure of Edouard Manet. Combining a study of paintings from throughout his career, with close readings of primary sources, we will assess the key aspects of his style and subject matter. We will also consider art historical to his work and relationship to modernity. Graduate/Undergraduate Equivalency: HART 552. Mutually Exclusive: Credit cannot be earned for HART 452 and HART 552.

HART 454 - THE ARTIST AS ETHNOGRAPHER - THE ETHNOGRAPHER AS ARTIST
Short Title: THE ETHNOGRAPHER AS ARTIST
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine the intersections between the historical avant-garde, contemporary art, and anthropology. Developing on the so-called "ethnographic turn" within contemporary art - what Hal Foster has famously termed "the artist as ethnographer" - we will look at the way that this tendency within artistic production has doubled back onto the field of anthropology, leading to what could be called "the ethnographer as artist." Particular attention will be paid to the role of the art museum and international art exhibitions. Cross-list: ANTH 454.

HART 457 - VIDEO AND EXPANDED CINEMA
Short Title: VIDEO AND EXPANDED CINEMA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the emergence of video and "expanded cinema" as a primary field of artistic practice over the course of the 1960s and 1970s. We will examine seminal works by artists including Andy Warhol, Dan Graham, and Robert Whitman as well as the shifting aesthetic, political, and media landscapes in which this work emerged. Cross-list: FILM 455. Graduate/Undergraduate Equivalency: HART 557. Mutually Exclusive: Credit cannot be earned for HART 457 and HART 557.

HART 460 - MASS CULTURE & THE AVANT-GARDE
Short Title: MASS CULTURE & THE AVANT-GARDE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar will explore the close relationship between mass culture and avant-garde art from the mid-nineteenth century to the present day. In particular, we will examine how artists have both borrowed from and reacted against mass cultural forms—from comic books to television—as a means to renew their practice. Artists to be considered include Gustave Courbet, Pablo Picasso, Kurt Schwitters, Andy Warhol, Cindy Sherman and others. Graduate/Undergraduate Equivalency: HART 564. Mutually Exclusive: Credit cannot be earned for HART 460 and HART 564.

HART 461 - ART OF THE 60s AND 70s
Short Title: ART OF THE 60s AND 70s
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: By all accounts the 1960s and 1970s marked one of the most vibrant, experimental, audacious, and - above all - contentious periods in the history of avant-garde modernism. This seminar will examine the momentous shift from the international dominance of American Abstract Expressionism in the 1950s to a wide array of global counter-movements in the 1960s and 70s. Possible topics include: Happenings, Minimalism, Fluxus, Conceptualism, Nouveau Realisme, Body Art, Structuralist Film, Gutai, Light and Space, Noeconretism, Arte Povera, The Situationist International, etc. Graduate/Undergraduate Equivalency: HART 559. Mutually Exclusive: Credit cannot be earned for HART 461 and HART 559.
HART 463 - PRACTICING UTOPIA: ARCHITECTURE, EUGENICS AND THE MODERN LATIN CITY
Short Title: PRACTICING UTOPIA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar will explore the alliance between aesthetics, science, and ideology at the core of French and Latin American modernism. Focusing on early twentieth-century scientific and cultural dialogues between France and Latin America, this seminar will have as main territories of exploration: Paris, Rio de Janeiro, Buenos Aires, Havana, and Caracas. Cross-list: ARCH 452. Graduate/Undergraduate Equivalency: HART 563. Mutually Exclusive: Credit cannot be earned for HART 463 and HART 563.

HART 465 - LATIN AMERICAN BODIES: ON MODERNISM
Short Title: LATIN AMER BODIES:ON MODERNISM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar will examine theories and practices of modernism and modernization within Latin America-Europe Dialogues. Designed as a laboratory of ideas and forms, this seminar will probe critical perspectives on art and architecture’s relation to society and science. Each week, we will examine a theorist, an artist, and an architect. Graduate/Undergraduate Equivalency: HART 566. Mutually Exclusive: Credit cannot be earned for HART 465 and HART 566.

HART 467 - NATURE IN-VITRO: BODIES, GARDENS AND BUILT FORMS
Short Title: NATURE IN-VITRO
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar considers theories and narratives of nature in the crafting of modern and contemporary art and architecture in the Americas. We will travel from Humboldt’s re-imagined geographies, Jean-Baptiste Lamarck’s re-formulated notions of milieu, and Xavier Bichat’s re-conceptualized human body to 20th century earthworks and current obsessions with ecology and sustainability. Cross-list: ARCH 462. Graduate/Undergraduate Equivalency: HART 567. Mutually Exclusive: Credit cannot be earned for HART 467 and HART 567.

HART 481 - AUTEUR FILM: CASE STUDIES OF THREE AUTEURS
Short Title: AUTEUR FILM
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will explore the tradition of auteur filmmaking, with an emphasis on how this particular artistic mode situates itself within the evolving system of Hollywood institutional film. The auteur, in contrast to other filmmakers, exhibits unparalleled control over the production and post-production processes and is uniquely identifiable through the notable conventions of aesthetics, style, theme, content, atmosphere, etc. FILM 485/HART 481 (4 Credit Hours) will require completion of additional coursework for the additional credit than the FILM 285/HART 283 (3 Credit Hours). Credit may not be received for more than one of FILM 285 or FILM 485 or Hart 283 or HART 481. Cross-list: FILM 485. Equivalency: HART 283. Mutually Exclusive: Credit cannot be earned for HART 481 and HART 283.

HART 482 - CAESAR'S PALACE: AUTHOR(ITY) AND MEANING IN THE ROMAN IMPERIAL RESIDENCE
Short Title: CAESAR'S PALACE
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Described as both a “Hall of Despotism” and a “Citadel of Majesty,” the palace of the Roman emperors is one of the great enigmas of antiquity. Its vast remains (larger than Versailles) are relatively well preserved, but it is poorly understood as part of the concept of emperors. In this course we will examine the palace within the context of Imperial Roman art and politics; then we will dissect its meaning(s), the intentions of those who created it, and generally deconstruct it, brick by brick, to question agency and spatial experience from a macro-historical perspective. Cross-list: CLAS 482. Graduate/Undergraduate Equivalency: HART 582. Mutually Exclusive: Credit cannot be earned for HART 482 and HART 582.

HART 485 - GENDER AND HOLLYWOOD CINEMA IN THE 1950'S
Short Title: GENDER AND HOLLYWOOD 1950'S
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines representations of gendered subjectivity in Hollywood cinema during the 1950s. Some of the topics to be addressed include the uneasy relationship between normative domesticity and heterosexual masculinity, issues of voyeurism, and eroticism, and the ongoing conflict between liberated individualism and social conformity in corporate culture and bourgeois society. Cross-list: SWGS 485.
HART 486 - STUDIES IN FILM  
Short Title: STUDIES IN FILM  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Topics will vary from year to year.

HART 487 - LITERATURE, ART AND COLONIALITY  
Short Title: LITERATURE, ART & COLONIALITY  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This is the undergraduate senior version of the graduate level seminar FREN/HART 587. Both the course's reading list and the length of the research are adjusted to accommodate undergraduate needs. How do concepts like coloniality, exoticism, primitivism, the modern baroque apply to texts and artifacts produced at the crossroads of (post)colonial and transnational encounters? Focus on Orientalists, Matisse, Djebar, Simon, Boudjedra, Borduas, Atlan, Khadda, and Glissant. Taught in English. Choice of reading materials and assignments in either English or French. Cross-list: FREN 487. Mutually Exclusive: Credit cannot be earned for HART 487 and HART 587.

HART 493 - WALTER BENJAMIN, MEDIA & MODERNITY  
Short Title: WALTER BENJAMIN  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This seminar will examine the key theoretical writings on media and modernity by Walter Benjamin, one of the first twentieth-century critics to place new forms of visual experience and technology at the center of his understanding of modern life. The course will pay particular attention to Benjamin's writings on urbanism, film and photography, and the ways in which these relate to avant-garde practices such as Dada, Surrealism, and New Objectivity (Neue Sachlichkeit). Taught in English. Graduate/Undergraduate Equivalency: HART 593. Mutually Exclusive: Credit cannot be earned for HART 493 and HART 593.

HART 498 - SPECIAL TOPICS IN ART THEORY AND CRITICISM  
Short Title: SPECIAL TOPICS  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 1-6  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Independent study, reading, or special research in art history. Instructor Permission Required. Repeatable for Credit.

HART 500 - INTERNSHIP PROGRAM I  
Short Title: INTERNSHIP PROGRAM I  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 1-15  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate level course that will provide select students a practicum in museum work accompanied by an introduction to a history of museums, including varieties of museums, their role in society, and significant issues in museums today. Instructor Permission Required.

HART 501 - INTERNSHIP PROGRAM II  
Short Title: MUSEUM INTERNSHIP  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 1-4  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate credit for work as museum intern at a variety of museums. Instructor Permission Required. Repeatable for Credit.

HART 503 - INDEPENDENT STUDY (SPRING)  
Short Title: INDEPENDENT STUDY (SPRING)  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate research paper. Must take HART 502 and HART 503 to receive credit.

HART 504 - INDEPENDENT STUDY  
Short Title: INDEPENDENT STUDY  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 3-6  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate independent study, reading and research on variable topics. Instructor Permission Required. Repeatable for Credit.
HART 506 - HISTORY AND THEORY III - 1890-1968  
Short Title: HISTORY & THEORY III 1890-1968  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): ARCH 345 or HART 345 or ARCH 645 or HART 645  
Description: This course surveys the history and theory of architecture and urbanism between 1890 and 1968, tracing the critical shifts in architectural thought and practice that inaugurated, constituted, and questioned architectural modernism. In particular, the course considers the development of architectural knowledge as the field engaged and contributed to the great social, political, cultural, and technological changes of the period. Organized around a series of significant case studies considered particular designed responses to their material, intellectual, and sociopolitical context, the course elucidates the influence of contingent conditions on architectural design, but emphasizes the designer’s efforts to reinforce, reform, or transform those conditions. The course charts the ongoing attempt to account for this activity historically and theoretically and the operative role of these accounts both during the period and subsequently. Cross-list: ARCH 646.

HART 507 - MURDER AND MODERNISM  
Short Title: MURDER AND MODERNISM  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: “Murder, George Orwell lamented in his 1946 essay "Decline of the English Murder," isn’t what it used to be. Unlike what he calls “our great period in murder” - roughly 1850 to the beginning of the Second World War - contemporary murder has lost it aesthetic appeal. “There is,” he writes, “no depth of feeling in it.” This class will examine the modernist fascination with murder, asking not only why it became a topic of such particular interest to artists, writers, and filmmakers during this time, but what it can tell us about modernist aesthetics more broadly.” Graduate/Undergraduate Equivalency: HART 413. Mutually Exclusive: Credit cannot be earned for HART 507 and HART 413.

HART 508 - LIVING IN THE CITY IN THE OTTOMAN EMPIRE  
Short Title: LIVING IN THE CITY  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Seminar combines primary and secondary sources to explore the urban experiences of Ottoman men and women in the 18th and early 19th centuries. Looking at several cities including Istanbul, Izmir, Salonika, Damascus, Aleppo and Alexandria, we will discuss such issues as neighborhood and community life, public spaces and recreational culture perceptions of space, urban institutions, Muslim and non-Muslim relations, migration and marginality, violence and death. Reading knowledge of French and/or Turkish helpful but not necessary. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: ARCH 518. Graduate/Undergraduate Equivalency: HART 308. Mutually Exclusive: Credit cannot be earned for HART 508 and HART 308.

HART 509 - THE DAWN OF ROME: GENERATING THE URBAN, SOCIAL AND POLITICAL LIFE OF THE ETERNAL CITY  
Short Title: THE DAWN OF ROME  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: In this course you will uncover the roots of the Eternal City, Rome. Through analysis of archaeological remains, art historical methodologies and theories of social space, intentionality, structuration and agency, you will question how and why Rome became a city and a culture the reshaped the world. The course will focus on the first 500 years of Roman art and society, ca. 800-300 BCE, looking closely at the kingship of Rome, the genesis of the Roman Republic, and the ability to understand a distant culture through artistic manufacture, materiality and philosophical shift. Graduate students will be expected to complete all the requirements of this class in addition to writing a substantial research paper at the end of the semester. Graduate/Undergraduate Equivalency: HART 309. Mutually Exclusive: Credit cannot be earned for HART 509 and HART 309.
HART 510 - ARCHITECTURE AND DYNASTIC ASPIRATION IN THE EARLY ROMAN EMPIRE
Short Title: ARCH AND DYNASTIC ASPIRATIONS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Nero is often remembered as the tyrannical emperor who let the city burn and gorged on ill-gotten luxury; his successors conceived as good emperors who built the Coliseum, Imperial Palace and the vast majority of Rome's remaining monuments. In this course you will question whether things were so straightforward. Graduate students will be expected to complete additional readings and write a substantial research paper, due at the end of the semester. Graduate/Undergraduate Equivalency: HART 410. Mutually Exclusive: Credit cannot be earned for HART 510 and HART 410.

HART 511 - ART AND ARCHAEOLOGY OF THE ANCIENT NEAR EAST
Short Title: ANCIENT NEAR EAST
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An in-depth examination of the art and archaeology of ancient Mesopotamia, Syria, Anatolia and Persia. Beginning in the Neolithic period, we will examine the development of Near Eastern art and architecture through the study of ancient sites and their associated material culture. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 311. Mutually Exclusive: Credit cannot be earned for HART 511 and HART 311.

HART 513 - THE HELLENISTIC AGE: ALEXANDER TO AUGUSTUS
Short Title: THE HELLENISTIC AGE
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We examine the art, architecture, and cultural history of the Hellenistic Age, from Alexander the Great (d. 323 BC) until the death of Cleopatra (31 BC). During this period a brilliant Greek-based culture developed from the Mediterranean to the Indus Valley, transforming Greeks, Persians, Jews, Romans and many others. Graduate students will be assigned additional readings and a research paper will be due at the end of the semester.

HART 515 - OTTOMAN EMPIRE
Short Title: OTTOMAN EMPIRE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This graduate seminar examines different approaches to study of modernity and modernization in the Ottoman Empire from the onset of the Tanzimat reforms in 1839 until after WWI and the empire’s demise. By engaging equally the social and spatial dimensions of the major societies, including Istanbul, Damascus, Beirut, Cairo, and Izmir we will explore the various meanings of modernity and modernization as these reflect at the urban architectural scales, in urban life, in localized discourses on the city, through such emerging institutions as the museum, and the context of expanding migration and global works.

HART 516 - CITY & FESTIVAL: CULT PRACTICES & THE ARCHITECTURAL PRODUCTION IN THE ANCIENT GRECO-ROMAN WORLD
Short Title: CITY AND FESTIVAL
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How do social events, festivals, cult practices, public spectacles shape a city? The course will explore what makes a city in the first place, and attempt to make sense of the fragmentary archaeological evidence from the ancient Greco-Roman world in understanding, reconstructing cities. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester.

HART 518 - LITERATURE AND VISUAL ART
Short Title: LITERATURE AND VISUAL ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the relationship between literature and visual art. It covers a variety of textual and visual sources; theoretical materials will include works from literary studies, visual culture, art history, critical theory and aesthetics. Cross-list: ENGL 525. Repeatable for Credit.
Course URL: www.english.rice.edu
HART 520 - ISTANBUL - LIFE OF AN IMPERIAL CITY
Short Title: ISTANBUL - IMPERIAL CITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate Equivalent of HART 220. Additional requirements will include 3 - 7 to 8 page papers. These will include limited research, based on bibliography. The 3 papers will be in lieu of the 1 hours midterm and 1 hour final tests required for the 200 class. Cross-list: ARCH 520.

HART 521 - IMPERIAL CITY: ISTANBUL 1453-1922
Short Title: ISTANBUL IMPERIAL CITY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This thematic seminar examines significant historical moments in the architectural and urban cultural of the Ottoman imperial capital from the moment it was conquered until the demise of the Ottoman Empire. Weekly readings and discussions will cover a range of topics including building patronage, architectural decorum, the Byzantine legacy, artistic relations with Persia, India and Europe, cultural pluralism, neighborhood and public life, law and urban order, modernity and modernization. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these reading to be turned in at the end of the semester. We will meet at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 321. Mutually Exclusive: Credit cannot be earned for HART 521 and HART 321.

HART 522 - JERUSALEM TO ISFAHAN
Short Title: JERUSALEM TO ISFAHAN
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A seminar on key topics of the study of visual cultures in the medieval and early modern Muslim world focused on specific works of art. Politics of architectural patronage, dissemination of visual languages, calligraphy, "ornament" and figural representation in Islam, cross-cultural exchanges and trans-religious iconographies are among the topics discussed. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these reading to be turned in at the end of the semester. We will meet at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: ARCH 522. Graduate/Undergraduate Equivalency: HART 322. Mutually Exclusive: Credit cannot be earned for HART 522 and HART 322.

HART 523 - THE MEDITERRANEAN WORLD
Short Title: THE MEDITERRANEAN WORLD
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar focused on significant moments of the history of cultural exchanges around the Mediterranean. Explores questions of reception, adoption and adaptation of artistic and architectural vocabularies, shifting secular and religious iconographic meanings, circulation of aesthetics and channels of exchange form the vantage point of medieval and early modern Muslim empires.

HART 525 - LOOKING AT PRINTS 1400-1700
Short Title: LOOKING AT PRINTS 1400-1700
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The class has several goals: to gain a thorough historical understanding of prints by major masters as Schongauer, Mantegna, Durer, and Rembrandt as well as more popular prints, explore key issues in the study of prints, such as how they revolutionized European culture, their patronage, markets, functions, and techniques; and to examine the prints first-hand. Graduate students are expected to complete all the requirements in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 333. Mutually Exclusive: Credit cannot be earned for HART 525 and HART 333.

HART 526 - BRAZIL BUILT: THE CLINIC, THE TROPICAL AND THE AESTHETIC
Short Title: BRAZIL BUILT
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: From Brazil Builds, MOMA's 1943 celebrated exhibition to Brasilia, the supermodern capital created ex-nihilo in the middle of nowhere, to today's worldwide attention on Brail, this seminar examines the built environment - natural and architectural - as the main transmitter of modernism in Brazil. This is a seminar on Brazilian modernism and its discontents. Cross-list: ARCH 515. Graduate/Undergraduate Equivalency: HART 310. Mutually Exclusive: Credit cannot be earned for HART 526 and HART 310.
HART 527 - VISUAL CULTURE OF MEDIEVAL PILGRIMAGE
Short Title: MEDIEVAL PILGRIMAGE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar explores the rich visual culture associated with Medieval pilgrimage between the fourth and fifteenth centuries. The experience of pilgrimage was shaped by symbols, images, and places encountered along the routes to sites of sacred significance, especially the roads to Jerusalem, Rome, Santiago, and Canterbury. We will examine the theological, practical, visual, and experiential aspects of pilgrimage in Western Europe and the Holy Land as understood through visual culture and contemporary texts. Graduate students will meet with the professor every other week to discuss 16 additional recommended readings - beyond those assigned to the undergraduates - and to discuss the progress of their 20-25 page research paper. Instructor Permission Required. Mutually Exclusive: Credit cannot be earned for HART 527 and HART 427.

HART 528 - MIDDLE EASTERN CITIES - SPACE, MODERNITY AND MEMORY (1840-1945)
Short Title: MIDDLE EASTERN CITIES
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar engages in debates about urban modernity focusing on three cities Istanbul, Cairo and Beirut. We examine these cities during the period of rapid modernization brought about by the Ottoman reforms of the 1840s and their post-Ottoman period. We will explore innovative methodologies to the study of Mediterranean cities by reflecting on the everyday life, the multiplicity of processes inherent to the shaping of urban space, questions of identities and concepts of citizenship, and the tensions playing out in the making of a modern urban order. Cross-list: ARCH 528.

HART 529 - STREETS AND URBAN LIFE: PARIS TO ISTANBUL
Short Title: STREETS AND URBAN LIFE
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 329. Mutually Exclusive: Credit cannot be earned for HART 529 and HART 329.

HART 530 - EARLY MEDIEVAL ART
Short Title: EARLY MEDIEVAL ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 330. Mutually Exclusive: Credit cannot be earned for HART 530 and HART 330.

HART 531 - GOTHIC ART
Short Title: GOTHIC ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 331. Mutually Exclusive: Credit cannot be earned for HART 531 and HART 331.

HART 532 - ART OF THE COURTS
Short Title: ART OF THE COURTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 332. Mutually Exclusive: Credit cannot be earned for HART 532 and HART 332.
HART 534 - SEEING SEX IN EUROPEAN ART, 1400-1700  
Short Title: SEEING SEX IN EUROPEAN ART  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: SWGS 534. Graduate/Undergraduate Equivalency: HART 434. Mutually Exclusive: Credit cannot be earned for HART 534 and HART 434.

HART 535 - MULTICULTURAL EUROPE, 1400-1700  
Short Title: MULTICULTURAL EUROPE, 1400-1700  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The art of Europe was never the product of a single culture working in isolation. This seminar will explore the multicultural aspects of medieval and early modern Europe by focusing on the visual culture of groups who defined themselves or are today defined by nationality, race, or religion. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 435. Mutually Exclusive: Credit cannot be earned for HART 535 and HART 435.

HART 536 - CINEMA AND THE CITY  
Short Title: CINEMA AND THE CITY  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 4  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 436. Mutually Exclusive: Credit cannot be earned for HART 536 and HART 336.

HART 538 - RENAISSANCE GOTHIC ARCHITECTURE  
Short Title: RENAISSANCE GOTHIC ARCHITECTURE  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This seminar will examine the architecture constructed in northern Europe between 1450 and 1550 bridging the gap between the end of the Middle Ages and the Early Modern Period. The ambiguous term of “Renaissance Gothic” has been coined to describe a form of architecture that straddles two fundamentally different periods with radically different approaches to the meaning, function and form of architecture. We will explore why and how Gothic architecture, the dominant style of church building for almost 350 years, was abandoned in favor of a new imported form.

HART 539 - AMERICAN ART AND ARCHITECTURE I: 1620-1800  
Short Title: AMERICAN ART: 1620-1800  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Painting, architecture, urban design, and the decorative arts in the colonies and early United States. Highlights will include design at Monticello and Mount Vernon; the portraiture of John Singleton Copley; Georgian and Federal-period architecture in Boston, New York, Williamsburg, and Philadelphia; and Spanish and Dutch colonial art and architecture. Graduate/Undergraduate Equivalency: HART 339. Mutually Exclusive: Credit cannot be earned for HART 539 and HART 339.

HART 540 - ADVANCED STUDY IN MUSEUMS AND HERITAGE: ARTS OF ANCIENT MEDITERRANEAN AT THE MENIL COLLECTION  
Short Title: ADV STUDY IN MUSEUMS/HERITAGE  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course introduces students to advanced ethical, legal and practical issues facing museums as they acquire and maintain collections from areas prone to looting and destruction, especially the Ancient Mediterranean. We will examine the civic engagement and operation of the Menil Collection through close, on-site archival and object study. Cross-list: HURC 508. Graduate/Undergraduate Equivalency: HART 312. Mutually Exclusive: Credit cannot be earned for HART 540 and HART 312.
HART 541 - EARLY RENAISSANCE ART IN ITALY
Short Title: EARLY RENAISSANCE ART IN ITALY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of Italian art and architecture from Giotto to Botticelli, with emphasis on painting and sculpture in the 15th century. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 341. Mutually Exclusive: Credit cannot be earned for HART 541 and HART 341.

HART 542 - THE HIGH RENAISSANCE AND MANNERISM IN ITALY
Short Title: HIGH RENAISSANCE&MANNERISM IN ITALY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the High Renaissance, with emphasis on its leading masters (e.g., Leonardo, Raphael, Bramante, Michelangelo, and Titian). Includes a study of mannerism, the stylish art produced after the first quarter of the 16th century. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 342. Mutually Exclusive: Credit cannot be earned for HART 542 and HART 342.

HART 543 - MASTERS OF THE BAROQUE ERA
Short Title: MASTERS OF THE BAROQUE ERA
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the works of the greatest painters and sculptors in Europe during the Baroque period. Includes Rembrandt, Rubens, Caravaggio, Poussin, Claude, and Velazquez. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 343. Mutually Exclusive: Credit cannot be earned for HART 543 and HART 343.

HART 544 - CAPITALISM AND CULTURE
Short Title: CAPITALISM AND CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will examine the way European culture, especially art, was shaped by the rise of the monetary economy and capitalism, beginning in the late Middle Ages and continuing into modern times. Faculty will meet separately on a bi-weekly basis with graduate students in the class who will also be assigned extra readings. Graduate work will be evaluated on a more challenging scale, with particular attention to methodological and interpretive rigor. Graduate/Undergraduate Equivalency: HART 344. Mutually Exclusive: Credit cannot be earned for HART 544 and HART 344.

HART 545 - HISTORY & THEORY I (INTRODUCTION)
Short Title: HISTORY & THEORY I (INTRO)
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This introductory course exposes student’s issues and debates that have driven architects and theorists from the early twentieth century to the present. The course is structured around a sequence of fourteen themes that have recurred as major issues throughout architectural history. Focusing on topics, ranging from representation, to media, to politics, urbanity, or the environment, teach theme is presented as a debate between differing viewpoints, in order to expose the positions that have motivated both theory and practice. In weekly discussion sections, we will be analyzing buildings and discussing canonical texts. These sections provide opportunities for students to develop their own positions on the issues debated, and to refine their ability to make arguments. Cross-list: ARCH 525. Graduate/Undergraduate Equivalency: HART 225. Mutually Exclusive: Credit cannot be earned for HART 545 and HART 225.

HART 546 - PICASSO, POLLOCK, WARHOL
Short Title: PICASSO, POLLOCK, WARHOL
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will look in detail at three of the twentieth century’s most important artists: Pablo Picasso, Jackson Pollock, and Andy Warhol. Our central focus in doing so will be painting, in particular, the means by which these three artists tested, expanded or even "destroyed" the medium. What did it mean to make (or reject) painting in 1910, 1950, and 1965? Special attention will be paid to recent scholarly literature and close looking at works in local collections. Graduate/Undergraduate Equivalency: HART 334. Mutually Exclusive: Credit cannot be earned for HART 546 and HART 334.
HART 547 - CONSTABLE AND TURNER
Short Title: CONSTABLE AND TURNER
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will explore critical issues surrounding the careers of John Constable and J.M.W. Turner, arguably the greatest landscape painters of the early 19th century. We will look at both similarities and differences in the work of these two rivals, while considering their work in the context of great historical change in England. Graduate students will be required to do additional reading in addition to those already assigned. Graduate/Undergraduate Equivalency: HART 357. Mutually Exclusive: Credit cannot be earned for HART 547 and HART 357.

HART 548 - A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE
Short Title: TRENDS IN CUBAN CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Research
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This research seminar will explore contemporary trends in Cuban culture through literary texts, films, music and works of art. We will examine the ways in which politics and the practices of artistic representation intersect in post-revolutionary Cuba. A research trip to Cuba has been organized as part of this seminar. This course is taught in Spanish. Graduate students will be required to complete all the requirements of the course in addition to writing a substantial research paper at the end of the semester. This is the credit for the actual trip to Cuba. Graduate/Undergraduate Equivalency: HART 348. Mutually Exclusive: Credit cannot be earned for HART 548 and HART 348.

HART 549 - TECHNICAL ART HISTORY: STUDYING THE TECHNIQUES OF WESTERN PAINTING, 13TH-20TH CENTURIES
Short Title: TECHNICAL ART HISTORY
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Art historians, especially in the United States, tend to rely on photographs, but a study of the actual object is invaluable in studying works of art. This course aims to inform students about the technical study of art, which in the last fifty years has become a major field of research. Most classes will be held at the Museum of Fine Arts, Houston, or other Houston collections. Graduate/Undergraduate Equivalency: HART 307. Mutually Exclusive: Credit cannot be earned for HART 549 and HART 307.

HART 551 - MODELS OF ABSTRACTION
Short Title: MODELS OF ABSTRACTION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine a range of different models of abstract painting and sculpture as they appear throughout the twentieth century. Looking closely at the historical contexts that gave rise to abstraction particular attention will be paid to how apparently similar forms of abstraction can denote very different kinds of meaning. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 451. Mutually Exclusive: Credit cannot be earned for HART 551 and HART 451.

HART 552 - MANET(S) AND MODERNISM(S)
Short Title: MANET(S) AND MODERNISM(S)
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar considers the pivotal figure of Edouard Manet. Combining a study of paintings from throughout his career, with close readings of primary sources, we will assess the key aspects of his style and subject matter. We will also consider art historical to his work and relationship to modernity. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideals associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 452. Mutually Exclusive: Credit cannot be earned for HART 552 and HART 452.

HART 553 - NORTHERN RENAISSANCE ART
Short Title: NORTHERN RENAISSANCE ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: HART 340. Mutually Exclusive: Credit cannot be earned for HART 553 and HART 340.
HART 554 - AGE OF ROMANTICISM IN EUROPE  
Short Title: AGE OF ROMANTICISM IN EUROPE  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will consider the emergence and flourishing of Romanticism in the visual arts in Europe. We will consider artists from France, Germany and Britain, including Eugene Delacroix, J.M.W. Turner, John Constable and Caspar David Friedrich. We will combine study of paintings with readings of contemporaneous philosophers and writers, including Hegel and Byron. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 354. Mutually Exclusive: Credit cannot be earned for HART 554 and HART 354.

HART 555 - JACQUES-LOUIS DAVID: REVOLUTION  
Short Title: JACQUES-LOUIS DAVID: REVOLUTION  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 355. Mutually Exclusive: Credit cannot be earned for HART 555 and HART 355.

HART 557 - VIDEO AND EXPANDED CINEMA  
Short Title: VIDEO AND EXPANDED CINEMA  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This seminar explores the emergence of video and "expanded cinema" as a primary field of artistic practice over the course of the 1960s and 1970s. We will examine seminal works by artists including Andy Warhol, Dan Graham, and Robert Whitman as well as the shifting aesthetic, political, and media landscapes in which this work emerged. For each lecture, Graduate students will be assigned readings. They will write an annotated bibliography of all the readings to be turned in at the end of the semester. We will meet for an additional two or three weeks to discuss the interpretive and methodological problems and ideas associated with the readings. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 457. Mutually Exclusive: Credit cannot be earned for HART 557 and HART 457.

HART 558 - IMPRESSIONISM AND POST-IMPRESSIONISM  
Short Title: IMPRESSIONISM/POST-IMP  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This class will explore painting in France from approximately 1865 to 1900. Mixing lectures and classroom discussion, we will focus on individual artists including Claude Monet, Edgar Degas, Mary Cassatt, Georges Seurat, Vincent van Gogh, and Paul Czanne. We will also consider and discuss a set of critical issues surrounding these painters, including the politics of gender and class within the changing urban setting of Paris. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 358. Mutually Exclusive: Credit cannot be earned for HART 558 and HART 358.

HART 559 - ART OF THE 60s AND 70s  
Short Title: ART OF THE 60s AND 70s  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: By all accounts the 1960s and 1970s marked one of the most vibrant, experimental, audacious, and - above all - contentious periods in the history of avant-garde modernism. This seminar will examine the momentous shift from the international dominance of American Abstract Expressionism in the 1950s to a wide array of global counter-movements in the 1960s and 70s. Possible topics include: Happenings, Minimalism, Fluxus, Conceptualism, Nouveau Realisme, Body Art, Structuralist Film, Gutai, Light and Space, Noocoretisim, Arte Povera, The Situationist International, etc. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper. Graduate/Undergraduate Equivalency: HART 461. Mutually Exclusive: Credit cannot be earned for HART 559 and HART 461.

HART 561 - WHAT IS CINEMA? CLASSIC READINGS OF CLASSIC FILMS  
Short Title: WHAT IS CINEMA?  
Department: Art History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Using a variety of readings now considered classics as our guide, this class will look closely at a broad range of films and film movements discussed by critics and theorists such as Rudolf Arnheim, Jean Epstein, Sergei Eisenstein, Walter Benjamin and Andre Bazin. Graduate students will be assigned additional readings and will be required to write a substantial research paper (20-25 pages). Graduate/Undergraduate Equivalency: HART 361. Mutually Exclusive: Credit cannot be earned for HART 561 and HART 361.
HART 562 - UPCYCLING: MEANINGFUL REUSE IN ART AND MONUMENTS FROM ANTIQUITY TO TODAY
Short Title: UPCYCLING
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this seminar, we will explore the phenomenon of upcycling - intentionally meaningful reuse - by investigating the intersection of reuse and memory in the art and monuments of many different times, places, and people, from prehistory to the modern art that surrounds us on the Rice campus. Graduate students will be assigned up to 10 additional readings over the semester and complete a 15-20 page final paper. Mutually Exclusive: Credit cannot be earned for HART 562 and HART 362.

HART 563 - PRACTICING UTOPIA: ARCHITECTURE, EUGENICS AND THE MODERN LATIN CITY
Short Title: PRACTICING UTOPIA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will explore the alliance between aesthetics, science, and ideology at the core of French and Latin American modernism. Focusing on early twentieth-century scientific and cultural dialogues between France and Latin America, this seminar will have as main territories of exploration: Paris, Rio de Janeiro, Buenos Aires, Havana, and Caracas. Graduate/Undergraduate Equivalency: HART 463. Mutually Exclusive: Credit cannot be earned for HART 563 and HART 463.

HART 565 - A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE
Short Title: TRENDS IN CUBAN CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This research seminar will explore contemporary trends in Cuban culture through literary texts, films, music and works of art. We will examine the ways in which politics and the practices of artistic representation intersect in post-revolutionary Cuba. A research trip to Cuba has been organized as part of this seminar. Course taught in Spanish. Graduate students will be expected to complete all the requirements of the course in addition to writing a research paper at the end of the semester. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 304. Mutually Exclusive: Credit cannot be earned for HART 565 and HART 304.

HART 566 - LATIN AMERICAN BODIES: ON MODERNISM
Short Title: LATIN AMER BODIES: ON MODERNISM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will examine theories and practices of modernism and modernization within Latin America-Europe Dialogues. Designed as a laboratory of ideas and forms, this seminar will probe critical perspectives on art and architecture’s relation to society and science. Each week, we will examine a theorist, an artist, and an architect. Graduate students will be expected to complete all the requirements in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 465. Mutually Exclusive: Credit cannot be earned for HART 566 and HART 465.

HART 568 - FROM THE SUBLIME TO THE SUSTAINABLE: ART, ARCHITECTURE AND NATURE
Short Title: ART, ARCHITECTURE AND NATURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar considers theories and narratives of nature in the crafting of modern and contemporary art and architecture in the Americas. Artists and architects will include Maria Fernanda Cardoso, Rogelio Salmona (Colombia); Ana Mendieta, Ricardo Porro (Cuba); Ana Maria Tavares, Lina Bo Bardi (Brazil); Mark Dion and Buckminster Fuller (USA). For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 302. Mutually Exclusive: Credit cannot be earned for HART 568 and HART 302.

HART 569 - (RE)DEFINING (CLASSICAL) ART HISTORY: DIVISION, CONNECTIVITY AND SHIFT IN THE ANCIENT MEDITERRANEAN
Short Title: REDEFINING CLASSICAL ART HIST
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For 500 years scholars have cleaved Roman and Greek art from one another in order to define the heart of antiquity. The scholarship that created such division is the very scholarship that created the discipline of Art History and redefined it through iconographical, social historical and broadly theoretical analysis: Windelmann, Droysen, Brendel, Deleuze, Gell. In this seminar, we will question the disciplinary paradigm. Looking at art from around the Mediterranean and reading the very scholarship that has both created these definitions and questioned them, we will work toward a new way of conceiving the art of the Ancient Mediterranean world. Graduate/Undergraduate Equivalency: HART 369. Mutually Exclusive: Credit cannot be earned for HART 569 and HART 369.
HART 570 - TRENDS IN CONTEMPORARY ART
Short Title: TRENDS IN CONTEMPORARY ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will map the terrain of contemporary art as it has developed in the wake of political and theoretical engagements of the 1990’s. For many critics, Contemporary Art practice has given way to the worst aspects of spectacular culture losing sight of the political, theoretical, and artistic rigor that characterized the historical and neo-avant-garde. Graduate students will be assigned 1-2 additional readings each week and prepare a final seminar paper of 20-30 pages. Graduate/Undergraduate Equivalency: HART 349. Mutually Exclusive: Credit cannot be earned for HART 570 and HART 349.

HART 571 - CHINESE PAINTING
Short Title: CHINESE PAINTING
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines Chinese painting from ancient times to the early twentieth century. Issues of examination include themes, styles, and functions of Chinese painting; the interrelationship between paintings and the intended viewers; regionalism; images and words; foreign elements in Chinese painting. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 371. Mutually Exclusive: Credit cannot be earned for HART 571 and HART 371.

HART 572 - CHINESE ART AND VISUAL CULTURE
Short Title: CHINESE ART AND VISUAL CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course, we will study how various artistic styles developed in historical, social and cultural contexts from the ancient period to the present day. Through the careful examination of architecture, calligraphy, painting, sculpture, ceramics, bronze, and film, students will gain a deeper understanding of Chinese art and visual culture. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional two or three times to discuss interpretive and methodological problems and ideas associated with the readings. Graduate students will be expected to complete all requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 372. Mutually Exclusive: Credit cannot be earned for HART 572 and HART 372.

HART 575 - ART BETWEEN THE WARS: EUROPEAN MODERNISM, 1918-1940
Short Title: ART BETWEEN WARS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Beginning in the aftermath of the First World War, a conflict that devastated the physical and psychological landscape of Europe, and ending with the rise of various totalitarian regimes (Fascism, Stalinism) this seminar will examine European art of the interwar period, from 1918-1940. Potential topics will include Surrealism, The Russian avant-garde, the return to order, Esprit-Nouveau, the machine aesthetic, De Stijl, avant-garde cinema, etc. Graduate/Undergraduate Equivalency: HART 365. Mutually Exclusive: Credit cannot be earned for HART 575 and HART 365.

HART 576 - EAST & WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND NORTHERN EUROPE
Short Title: EAST AND WEST
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores a series of issues that are critically important for the medieval art of both China and northern Europe. Topics include materials and techniques; public and private art: commerce, technology and prints; art and motion; archaeology; paradise and hell; maps and space; the gaze; erotica; patronage; and multiculturalism. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional hour every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 376. Mutually Exclusive: Credit cannot be earned for HART 576 and HART 376.

HART 577 - MEDIEVAL MANUSCRIPTS
Short Title: MEDIEVAL MANUSCRIPTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar explores illuminated European manuscripts from late antiquity through the early sixteenth century. It examines manuscripts’ functions, patrons, makers, and materials and technique, as well as such issues as the relationship between text and image and the manuscript’s ideological stance. Students have the opportunity to study original medieval illuminations. Graduate/Undergraduate Equivalency: HART 377. Mutually Exclusive: Credit cannot be earned for HART 577 and HART 377.
HART 578 - DUTCH ART IN THE AGE OF REMBRANDT
Short Title: DUTCH ART IN AGE OF REMBRANDT
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: This course will examine Dutch and Flemish seventeenth-century art, including major masters, such as Rembrandt, Rubens, and Vermeer, and major developments, such as the rise of still life, genre, and landscape painting. It will also explore women artists, Delft tiles, doll's houses, and multicultural aspects of art production. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 378. Mutually Exclusive: Credit cannot be earned for HART 578 and HART 378.

HART 581 and HART 381.

HART 581 - COLLAGE AND ITS HISTORIES
Short Title: COLLAGE AND ITS HISTORIES
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: This class will explore the centrality of collage to the development of the 20th century art and film. Beginning with the seminal achievements of Picasso and Braque, we will examine works across geographical and medium boundaries, including Dada photomontage, early avant-garde film, 1960s happenings, and the reformulation of collage aesthetics in 1980s postmodernism. For each lecture, Graduate students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional two or three weeks to discuss the interpretive and methodological problems and ideas associated with the readings. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 381. Mutually Exclusive: Credit cannot be earned for HART 581 and HART 381.

HART 582 - CAESAR'S PALACE: AUTHOR(ITY) AND MEANING IN THE ROMAN IMPERIAL RESIDENCE
Short Title: CAESAR'S PALACE
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Described as both a “Hall of Despotism” and a “Citadel of Majesty” the palace of the Roman emperors is one of the great enigmas of antiquity. Its vast remains (larger than Versailles) are relatively well preserved, but it is poorly understood as part of the concept of emperorship. In this course we will examine the palace within the context of Imperial Roman art and politics; then we will dissect its meaning(s), the intentions of those who created it, and generally deconstruct it, brick by brick, to question agency and spatial experience from a macrohistorical perspective. Graduate students will have additional readings. Graduate/Undergraduate Equivalency: HART 482. Mutually Exclusive: Credit cannot be earned for HART 582 and HART 482.

HART 584 - THE RISE OF CAPITALISM AND LATE MEDIEVAL AND EARLY MODERN ART
Short Title: CAPITALISM & ART, 1300-1700
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: . Graduate/Undergraduate Equivalency: HART 364. Mutually Exclusive: Credit cannot be earned for HART 584 and HART 364.

HART 586 - DADA
Short Title: DADA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Inaugurated against the calamitous backdrop of the First World War, "Dada," the artist Francis Picabia claimed, "smells of nothing, it is nothing, nothing, nothing." This seminar will examine the aesthetics of shock and nihilism (literally, 'nothingness'), developed by Dada in six cities: Zurich, Berlin, Cologne, Hannover, New York, and Paris. For each lecture Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 386. Mutually Exclusive: Credit cannot be earned for HART 586 and HART 386.
HART 588 - POST WAR EUROPEAN CINEMA
Short Title: POST WAR EUROPEAN CINEMA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This class surveys major developments in European cinema from the late 1940s to the late 1960s. Our study will include such movements as Italian Neorealism, German Rubble Films, French New Wave, and Soviet cinema in the Thaw. Particular attention will be paid to such issues as cinema and post-war reconstruction, memory and nation, and body and space. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional hour every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 388. Mutually Exclusive: Credit cannot be earned for HART 588 and HART 388.

HART 590 - METHODS OF ART HISTORY
Short Title: METHODS OF ART HISTORY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar surveys approaches to the study of art and visual culture from art history's origins as a discipline to the present day. We will study a range of works of art and interrogate many of the essential terms of art historical study. Frequent guest lectures will be featured. Instructor Permission Required.

HART 593 - WALTER BENJAMIN
Short Title: WALTER BENJAMIN
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will examine the key theoretical writings on media and modernity by Walter Benjamin, one of the first twentieth-century critics to place new forms of visual experience and technology at the center of his understanding of modern life. The course will pay particular attention to Benjamin's writings on urbanism, film and photography, and the ways in which these relate to avant-garde practices such as Dada, Surrealism, and New Objectivity (Neue Sachlichkeit). For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional hour every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 493. Mutually Exclusive: Credit cannot be earned for HART 593 and HART 493.

HART 594 - STUDIES IN CONTEMPORARY LITERATURE AND CULTURE
Short Title: CONTEM. LIT AND CULTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Recent topics have included Global English; Globalization and its Discontents; and Critical Regionalisms. Cross-list: ENGL 594. Repeatable for Credit.
Course URL: www.english.rice.edu

HART 596 - FROM EXPRESSIONISM TO FASCISM: ART AND FILM IN GERMANY
Short Title: FROM EXPRESSIONISM TO FASCISM
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focusing on the tumultuous years of the Weimar Republic, this class will examine art and film in Germany from the birth of Expressionism through the end of the Nazi dictatorship. Topics covered will include Expressionism, Dada, the Bauhaus, and Fascist aesthetics. Particular attention will be paid to the relations between aesthetics and politics and art and everyday life, all central concerns of the art and criticism of the period. For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Graduate/Undergraduate Equivalency: HART 398. Mutually Exclusive: Credit cannot be earned for HART 596 and HART 398.

HART 597 - SPECIAL TOPICS IN MUSEUM CURATORIAL STUDIES
Short Title: SPECIAL TOPICS: MUSEUM STUDIES
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Special Topics class taught by visiting Curators from the MFAH. FA 2016: Intro to Islamic Art at the MFAH: This course explores the dynamic, multifaceted character of Islamic art and architecture across the globe. Travel from Spain to India studying original art at the Museum of Fine Arts. Gain understanding of the historical, religious, social, craft, and visual contexts of the art. Graduate/Undergraduate Equivalency: HART 297. Mutually Exclusive: Credit cannot be earned for HART 597 and HART 297.
HART 600 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Art History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Preparation for candidacy exams.

HART 601 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Art History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Prospectus research and writing.

HART 603 - BAYOU BEND GRADUATE INTERNSHIP I
Short Title: BAYOU BEND GRAD INTERNSHIP I
Department: Art History
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate Internship at Bayou Bend, the American Decorative Arts Center of the Museum of Fine Arts, Houston. Must be a Jameson Fellowship recipient to enroll. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 400. Mutually Exclusive: Credit cannot be earned for HART 603 and HART 400. Repeatable for Credit.

HART 604 - BAYOU BEND GRADUATE INTERNSHIP II
Short Title: BAYOU BEND GRAD INTERNSHIP II
Department: Art History
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate Internship at Bayou Bend and The American Decorative Arts Center of the Museum of Fine Arts, Houston. Must be a Jameson Fellowship recipient to enroll. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 401. Mutually Exclusive: Credit cannot be earned for HART 604 and HART 401. Repeatable for Credit.

HART 606 - ICONOCLASMS: THE DESTRUCTION OF IMAGES
Short Title: ICONOCLASMS
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: With a focus on the modern period, this seminar will examine iconoclastic theory and practice from antiquity to the present. Why, we will ask, have people so incessantly felt compelled to ban or destroy images, and what can this compulsion tell us about the nature of visual representation itself? Graduate/Undergraduate Equivalency: HART 406. Mutually Exclusive: Credit cannot be earned for HART 606 and HART 406.

HART 607 - POP ART
Short Title: POP ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will examine the history and significance of Pop art by looking in detail at three or four primary figures associated with the term; likely subjects include Andy Warhol, Gerhard Richter, Ed Ruscha, Richard Hamilton, and others. Visits to local museum collections and attention to theoretical writings on art and mass culture are planned. Graduate/Undergraduate Equivalency: HART 407. Mutually Exclusive: Credit cannot be earned for HART 607 and HART 407.

HART 612 - ADVANCED SEMINAR IN ARCHITECTURE
Short Title: ADV SEMINAR IN ARCHITECTURE
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Small, focused, advanced discussion, workshop and/or design based courses on topics of recent research in architecture, delivered by RSA full time or visiting faculty. This seminar is open to RSA undergraduate students junior-level and above, and RSA graduate students. Students from other departments may enroll in the course with instructor permission. See the RSA website for more information: arch.rice.edu/courses. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Cross-list: ARCH 412. Graduate/Undergraduate Equivalency: HART 412. Mutually Exclusive: Credit cannot be earned for HART 612 and HART 412. Repeatable for Credit.

HART 623 - RELIGIOUS VISUAL CULTURES IN TRADITIONAL CHINA
Short Title: CHINESE RELIGIOUS ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar explores the visual materials and their context that shed light on pre-modern China’s Buddhist, Daoist, funeral, and other diverse religious and ritual practices. Topics of discussion include iconic and aniconic traditions; breathing, meditation, and visualization; paradise and hell; body; ritual performance; patronage; Buddhist grottoes; tombs; multi-ethnic; printing. Graduate Students will be assigned additional readings and be required to write a substantial research paper (20-25 pages, excluding footnotes). Graduate/Undergraduate Equivalency: HART 323. Mutually Exclusive: Credit cannot be earned for HART 623 and HART 323.
HART 626 - MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN ANCIENT ROME
Short Title: MATERIAL, FORM, SPACE, TIME
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: "Architectural Revolution" has been tied to Le Corbusier, the Eiffel Tower, the Louvre, Brunelleschi and to towering Gothic cathedrals. At the foundation of all these endeavors is the Concrete Revolution in Roman Architecture. In this course we'll look at the four essential elements of this revolution from the fourth century BCE to the fifth century CE, and we'll investigate how shifts in application and experience created a background that informs design to this day. Cross-list: ARCH 626. Graduate/Undergraduate Equivalency: HART 326. Mutually Exclusive: Credit cannot be earned for HART 626 and HART 326.

HART 627 - THE GENESIS OF ROMAN ART
Short Title: THE GENESIS OF ROMAN ART
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores the roots of the art and architecture of ancient Rome (ca. 600-200 BCE). In it we will examine the earliest vestiges of sculpture, painting and architecture from the Archaic and Classical periods to the twisted forms of Hellenistic conquest. You will grapple with the questions of cultural agency, connoisseurship, cultural interaction, network and object theories and spatial imagination to question standard narratives that divide Rome in this time from neighboring Greek polities. Graduate/Undergraduate Equivalency: HART 327. Mutually Exclusive: Credit cannot be earned for HART 627 and HART 327.

HART 630 - INDEPENDENT STUDY - FOURTEENTH CENTURY GOTHIC ARCHITECTURE
Short Title: INDEPENDENT STUDY
Department: Art History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Individual readings in 14th century gothic art and architecture. Instructor Permission Required.

HART 640 - ISSUES IN THE HISTORY OF PRINTS, PRE-MODERN TO PRESENT
Short Title: ISSUES IN HISTORY OF PRINTS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: With their distinctive technical, social, and commercial associations, prints are often sidelined in traditional art histories. This course will introduce recent scholarship on the multiple image from the late middle ages to the present, with stress on the transformations of printmaking from the development of photography into our digital age. Graduate/Undergraduate Equivalency: HART 440. Mutually Exclusive: Credit cannot be earned for HART 640 and HART 440.

HART 645 - HISTORY AND THEORY II - PRE 1890
Short Title: HISTORY & THEORY II - PRE 1890
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An in-depth exploration as to why select monuments from Antiquity through the 19th century were 'canonized' in popular imagination and given referential status. Following a case study format, each week will focus on a particular building, built or unbuilt, from both Western and Eastern traditions. Graduate students are expected to complete all the requirements of class in addition to writing a substantial research paper due at the end of the semester. Cross-list: ARCH 645.

HART 651 - ART, REVOLUTION, WAR: MODERN ART IN VIOLENT TIMES
Short Title: ART, REVOLUTION, WAR
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar examines the ambition (or lack thereof) of modern art to play an active role during periods of violent conflict. From the French Revolution to the recent disastrous American engagements in the Middle East wars to the never-ending war on terror, artists have produced images that attempt to actively engage in these conflicts. This class will examine the relative successes and failures of art during times of violent revolution and war within the modern era. Graduate/Undergraduate Equivalency: HART 351. Mutually Exclusive: Credit cannot be earned for HART 651 and HART 351.
HART 653 - ART AND EMOTION
Short Title: ART AND EMOTION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will examine the role played by emotion in our response to works of art. What is the relationship of emotion to the specific formal properties of a given work of art, such as color, texture, shape, line quality, sound, and so on? What role does our cognitive faculties play in determining our emotional response to art? Are there political stakes to emotional affect? These and other questions will be examined. Graduate/Undergraduate Equivalency: HART 353. Mutually Exclusive: Credit cannot be earned for HART 653 and HART 353.

HART 658 - SPECIAL TOPICS: THE POLITICAL HISTORY OF ART BETWEEN THE WORLD WARS
Short Title: SPECIAL TOPIC: ART BETWEEN WARS
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on art and architecture that intersected with the struggles between democracy, communism, and fascism. It will deal with prominent architects and artists who worked for or critiqued specific regimes. We will engage with fundamental political events in modern society - such as the Soviet Revolution, the rise of fascism in Italy, Hitler and the Jewish genocide, and democratic struggles of the Popular Front in France. Graduate students will be expected to complete all the requirements for the class in addition to writing a substantial research paper at the end of the semester.

HART 659 - CINEMAS OF URBAN ALIENATION
Short Title: CINEMAS OF URBAN ALIENATION
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar examines cinematic engagements with urban spaces and experiences around the world spanning the last two centuries. Particular attention will be paid to issues of migration, marginality, colonialism, war and post-war, nostalgia and memory, race and gender. Cities of focus include Berlin, Istanbul, Moscow, Algiers, Beirut and Paris. Our weekly discussions of individual films will be grounded in critical writings of the cities' histories and theories of space and film. Cross-list: ARCH 654. Graduate/Undergraduate Equivalency: HART 359. Mutually Exclusive: Credit cannot be earned for HART 659 and HART 359.

HART 665 - A VISUAL CULTURE TRAVELOGUE: ART AND POLITICS IN MODERN LATIN AMERICA
Short Title: ART/ POLITICS MOD LATIN AMER
Department: Art History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course challenges our pre-conceived maps of the world, highlighting Latin America's place within our understanding of modernity as a product of transnational interconnections. Transversing the Atlantic, this course traces the interactions of capitalism and culture, science and aesthetics, and the ideologies that informed and formed the urban fabric and spatial politics of important cities in the modern Latin world - Paris, Rio de Janeiro, Rome, Buenos Aires, Barcelona, Havana, and Brasilia. Cross-list: ARCH 675. Graduate/Undergraduate Equivalency: HART 375. Mutually Exclusive: Credit cannot be earned for HART 665 and HART 375.

HART 675 - LATIN-EUROPE/LATIN-AMERICA: THE AESTHETICS AND POLITICS OF MODERN CITIES
Short Title: LATIN-EUROPE/LATIN-AMERICA
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines cinematic engagements with urban spaces and experiences around the world spanning the last two centuries. Particular attention will be paid to issues of migration, marginality, colonialism, war and post-war, nostalgia and memory, race and gender. Cities of focus include Berlin, Istanbul, Moscow, Algiers, Beirut and Paris. Our weekly discussions of individual films will be grounded in critical writings of the cities' histories and theories of space and film. Cross-list: ARCH 654. Graduate/Undergraduate Equivalency: HART 359. Mutually Exclusive: Credit cannot be earned for HART 659 and HART 359.
HART 691 - MIDDLE EASTERN EUROPEAN CINEMA
Short Title: MEMORY AND PLACE IN CINEMA
Department: Art History
Grade Mode: Audit
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focuses on cinematic explorations of and preoccupations with the notion of place. Screenings include iconic and lesser - known films from Europe and the Middle East that offer diverse lenses and contexts (love, family, landscapes, borders, trauma, exile) through which we will examine questions of real and imagined place and the politics of memory. Cross-list: ANTH 578. Graduate/Undergraduate Equivalency: HART 391. Mutually Exclusive: Credit cannot be earned for HART 691 and HART 395.

HART 695 - ROMAN ARCHAEOLOGY FIELD SCHOOL
Short Title: ROMAN ARCHAEOLOGY FIELD SCHOOL
Department: Art History
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a traditional archaeological field course, taught in the Roman Forum. Techniques and advanced technologies for processing, conserving, and recording archeological materials are emphasized. Students will become familiar with procedures for ceramics, metals, plant and animal remains and building materials. Course work include lectures, hands-on excavation, and informal discussion. Instructor Permission Required. Recommended Prerequisite(s): HART 201 or ANTH 205 or ANTH 303. Mutually Exclusive: Credit cannot be earned for HART 695 and HART 395.

HART 697 - SPECIAL TOPICS: HART IN THE WORLD
Short Title: SPECIAL TOPICS - FIELD STUDY
Department: Art History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Through lectures, seminar discussions, museum visits, architectural itineraries, and field trips, this course will explore the complex political, social, and cultural histories of each country visited; locations are Brazil (2017), London (2018), Berlin (2019), China (2020). More information available at http://arthistory.rice.edu/hart-world. Instructor Permission Required. Graduate/Undergraduate Equivalency: HART 397. Mutually Exclusive: Credit cannot be earned for HART 697 and HART 397.

Course URL: arthistory.rice.edu/hart-world

HART 800 - Ph.D. RESEARCH
Short Title: DISSERTATION RESEARCH
Department: Art History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Dissertation Research for Ph.D. candidates. Repeatable for Credit.
ASIA 221 - THE LIFE OF THE PROPHET MUHAMMAD
Short Title: LIFE OF PROPHET MUHAMMAD
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will examine the life of the Prophet Muhammad, focusing on its significance for Muslims and for non-Muslims. Readings in The Qur’an, Ibn Hisham, and Haykal. Cross-list: RELI 221.

ASIA 222 - THE WORLD AND SOUTH ASIA
Short Title: WORLD AND SOUTH ASIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines the emergence of religion-based politics in various Asian countries-particularly Hindu and Muslim-focusing on the women participants in these movements as well as the movements’ concern with gender roles in society. We will investigate, for instance, the extent to which women participants have been willing or able to reshape the central ideas of such movements. Cross-list: RELI 232.

ASIA 223 - AMERICAN METAPHYSICAL RELIGION
Short Title: AMERICAN METAPHYSICAL RELIGION
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Beginning with a historical survey of the American metaphysical tradition, this course turns to a close study of the Esalen Institute in Big Sur, California, as a unique window into some of the different ways the tradition has appropriated Asian religions, psychological models of the unconscious, and contemporary scientific paradigms. Cross-list: RELI 231.

ASIA 231 - AMERICAN METAPHYSICAL RELIGION
Short Title: AMERICAN METAPHYSICAL RELIGION
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course aims to introduce students to modern Korean culture and society from a historical perspective. The course will map the historical and geopolitical elements that have shaped the continuing global relevance, particularly in American history and culture. Cross-list: RELI 232.

ASIA 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

ASIA 240 - GENDER AND POLITICIZED RELIGION
Short Title: GENDER & POLITICIZED RELIGION
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines the emergence of religion-based politics in various Asian countries-particularly Hindu and Muslim-focusing on the women participants in these movements as well as the movements’ concern with gender roles in society. We will investigate, for instance, the extent to which women participants have been willing or able to reshape the central ideas of such movements. Cross-list: RELI 285, SWGS 240. Mutually Exclusive: Credit cannot be earned for ASIA 240 and ASIA 340.
ASIA 251 - SEX, MONEY, AND POWER AROUND THE WORLD
Short Title: SEX, MONEY, AND POWER
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An interdisciplinary course exploring lives and well-being in the context of gendered international and domestic politics and economic processes. Emphasis on the implications of power relations at levels from the household to the global for women and men around the world (with particular attention to Asia). Cross-list: POLI 250, SWGS 250.

ASIA 295 - INTRODUCTION TO TRANSNATIONAL ASIAN STUDIES
Short Title: INTRO TO TRANSNATIONAL ASIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: As a gateway course for the Asian Studies major, Introduction to Transnational Asia is designed to give students diverse perspectives of learning about Asia. The course combines lecture, historical and contemporary textual analysis, group study, mini research project, and presentation.

ASIA 299 - DISCOVER ASIA IN HOUSTON
Short Title: DISCOVER ASIA IN HOUSTON
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The goal of this course is to help students learn about others’ cultures, leading them to critically reflect on their own culture. Through readings, audio-visual and hands-on materials, guest lectures, and field trips, students are exposed to diverse cultures of Asia in Houston. International students and domestic students are paired to form a team for the final presentation. Department Permission Required.

ASIA 316 - RELIGION AND MODERNITY: BUDDHISM IN BRITISH COLONIAL SOUTH AND SOUTHEAST ASIA
Short Title: BUDDHISM IN BRITISH COLONIES
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Concentrating on Buddhism in colonial India, Burma/Myanmar and Ceylon/Sri Lanka, this course examines the dynamic interactions between religion and modernity. It lays out the pressures of modernity and the ways in which Buddhism responded to them. Three broader themes of the course are the East-West contact, the modern-premodern negotiation and the local-global evolution.

ASIA 317 - ENVIRONMENT AND SOCIETY IN CHINA: SEARCHING FOR ECOLOGICAL CIVILIZATION
Short Title: ENVIRONMENT & SOCIETY IN CHINA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Environmental issues in China dominate news headlines, thorough may are unfamiliar with the on-the-ground situation in China. This course will examine the current state of the environment in China from a variety of perspectives including those of the state, local communities, and new campaigns to create an “ecological civilization.”

ASIA 319 - WAR AND MODERN EAST ASIA
Short Title: WAR AND MODERN EAST ASIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How does war affect humanity’s view of culture, history, and national identity? We will turn these questions toward the disastrous Imjin War (1592-98) which embroiled China, Japan and Korea. Investigating East Asia before, during, and after this conflict, will explore how the Imjin War created modern East Asia.

ASIA 320 - THE WORLD OF THE SAMURAI
Short Title: THE WORLD OF THE SAMURAI
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explores the lives of Muslim women in Asia, the Middle East, Europe, and North America; analyzes constructions of gender in the Islamic world overtime; the challenges faced from such diverse quarters as colonial administrators, Western feminists, and states; as well as movements and individuals within the Muslim world. Cross-list: RELI 315, SWGS 315.
ASIA 322 - INTRODUCTION TO BUDDHISM: ARTS FOR LIFE
Short Title: INTRODUCTION TO BUDDHISM
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Buddhist ideas, art, and meditation. Exploration of the Buddhism in India, China, and Japan and their impact in the USA today. Readings include Buddhists classics and contemporary responses from mediators and scientists. Cross-list: RELI 322.

ASIA 323 - RELIGIOUS VISUAL CULTURES IN TRADITIONAL CHINA
Short Title: CHINESE RELIGIOUS ART
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the visual materials and their context that shed light on pre-modern China's Buddhist, Daoist, funeral, and other diverse religious and ritual practices. Topics of discussion include iconic and aniconic traditions; breathing, meditation, and visualization; paradise and hell; body, ritual performance; patronage; Buddhist grottoes; tombs; multi-ethnic; printing. Cross-list: HART 323, MDEM 323.

ASIA 324 - SOUTHEAST ASIA UNDER JAPAN: MOTIVES, MEMOIRS, AND MEDIA
Short Title: SE ASIA UNDER JAPAN: 1941-45
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The brief Japanese occupation of Southeast Asia (1941-45) was a complex phenomenon involving the complicity of many Asian nationalist leaders. It contributed to the unraveling of western colonial rule but at a brutal human cost. Through texts, memoirs, fiction and propaganda films, we will explore those tumultuous years in Burma, Indochina, Malaya, Indonesia, and the Philippines.

ASIA 325 - JAPAN AND KOREA IN THE CHINESE CRUCIBLE
Short Title: JAPAN & KOREA CHINESE CRUCIBLE
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course investigates the role China played as both model and catalyst for the development of civilization in Japan and Korea, through diplomacy, war, and cultural transmission.

ASIA 326 - TEMPLES, TECHNOLOGY, AND TRANSITION: INDIA IN THE 21ST CENTURY
Short Title: TEMPLES, TECH&TRANSITION-INDIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: India has been in the news lately for many reasons – its growth rate, outsourcing, poverty, violence against women, Hindu nationalism, nuclear program, or Bollywood. In this class we will explore some of these topics by focusing on India's transition from colonialism to the emergence of the modern nation-state, to understand the major changes that give shape to life in contemporary South Asia.

ASIA 327 - CINEMA AND MOBILITY IN 20TH CENTURY EAST ASIA
Short Title: CINEMA & MOBILITY: EAST ASIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the ensemble of modern transportation systems and cinema as a junction point that allows a comprehensive theoretical model of modernity in East Asia, by applying theories of visuality and mobilities.

ASIA 328 - MODERN GIRL AND ASIA IN THE WORLD
Short Title: MOD GIRL & ASIA IN THE WORLD
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Using the textbook "The Modern Girl Around the World," this course examines the phenomenon of the so-called modern girl in Asia and the world, 1890-1949. Topics include: modernity, consumer culture, sexuality, and liberation. Cross-list: HIST 384, SWGS 384.

ASIA 330 - INTRODUCTION TO TRADITIONAL CHINESE POETRY
Short Title: INTRO TO TRAD CHINESE POETRY
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course seeks to decode enchanting features of traditional Chinese poetry through examining the transformation of poetic genres, the interaction between poetic creation and political, social and cultural changes, and the close association of poetry with art. Thus, this course also serves to understand Chinese culture and history through poetic perspectives. All readings in English translation. Cross-list: CHIN 330, MDEM 370.
ASIA 332 - CHINESE LITERATURE AND ITS MOVIE ADAPTATIONS  
**Short Title:** FILM & CHINESE LITERATURE  
**Department:** Asian Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Exploration of modern Chinese literature through the visual imagery of Chinese films to show how and why different time periods and different media affect the theme of a story. One third covers movie adaptations of classical Chinese literature. Films subtitled in English, shown outside of class. All readings in English translation. Cross-list: CHIN 332.

ASIA 334 - TRADITIONAL CHINESE TALES AND SHORT STORIES  
**Short Title:** TRADITIONAL CHINESE TALES  
**Department:** Asian Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Learning Chinese literature and culture through reading vernacular stories, fantastic tales, biographies, and philosophical parables. Discussion topics: literature and Confucianism, Taoism and Buddhism; literature and history; self and other; fantastic world and reality; women as domestic aliens and aliens portrayed as women, etc. Readings are in English translation. Cross-list: CHIN 334.

ASIA 335 - INTRODUCTION TO CLASSICAL CHINESE NOVELS  
**Short Title:** CLASSICAL CHINESE NOVELS  
**Department:** Asian Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Examination of the basic characteristics of classical Chinese novels, primarily through six important works from the 16th to 18th centuries: Water Margin, Monkey, Golden Lotus, Scholars, Romance of the Three Kingdoms, and Dream of the Red Chamber. Cross-list: CHIN 339, MDEM 375.

ASIA 338 - BIOETHICS AND INDIAN TRADITIONS  
**Short Title:** BIOETHICS & INDIAN TRADITIONS  
**Department:** Asian Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** We will examine western normative ethical theories alongside key concepts in Hinduism, Buddhism, and Jainism regarding definitions of life, death, consciousness, autonomy, disability, pain/pleasure, and how to make decisions in issues such as animal research, disorders of consciousness, abortion, and assisted suicide, among others.

ASIA 339 - CONSCIOUSNESS FROM INDIAN TRADITIONS TO MODERN SCIENCE  
**Short Title:** CONSCIOUSNESS, INDIA, SCIENCE  
**Department:** Asian Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course explores consciousness from ancient Indian philosophies (Jain, Buddhist, and Samkhya-Yoga), alongside western concepts of consciousness from Pythagoras to modern neuroscience and animal consciousness, touching briefly upon Judeo-Christian and Taoist concepts. 2-3 guest speakers will aid our investigation.

ASIA 345 - URBAN LAB MIDDLE EAST  
**Short Title:** URBAN LAB MIDDLE EAST  
**Department:** Asian Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** POLI 355 (may be taken concurrently) or POLI 362 (may be taken concurrently) or POLI 464 (may be taken concurrently) or POLI 562 (may be taken concurrently) or POLI 361 (may be taken concurrently)  
**Description:** The course examines the dynamics of urban politics and policy in the Middle East. We will focus on social, political, and economic issues, as well as history, culture, architecture and the arts. Weekly classes will include case studies, guest lectures, and work on research projects. The lab also features a field research trip to one or more cities (Dubai, Abu Dhabi, Muscat, Doha, etc.) during Spring Break. Prerequisites may be taken the same semester with POLI 345/ASIA 345. Department Permission Required. Cross-list: POLI 345.

ASIA 347 - URBAN LAB SHANGHAI  
**Short Title:** URBAN LAB SHANGHAI  
**Department:** Asian Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Laboratory  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** POLI 362 (may be taken concurrently) or POLI 562 (may be taken concurrently)  
**Description:** This course examines the dynamics of urban politics and policy in an emerging global city - Shanghai. In addition to social, political and economic issues, we will focus on history, culture, language, architecture and the arts. Weekly class sessions will include lectures case studies, guest lectures, and group work on research projects. The lab also features an 8-day field research trip to Shanghai. Prerequisite(s) POLI 362 or POLI 562 may be taken concurrently. Instructor Permission Required. Cross-list: POLI 347.
ASIA 349 - URBAN LAB ISTANBUL
Short Title: URBAN LAB ISTANBUL
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 355 (may be taken concurrently) or POLI 362 (may be taken concurrently) or POLI 464 (may be taken concurrently) or POLI 562 (may be taken concurrently)
Description: This course examines the dynamics of urban politics and policy in an emerging global city - Istanbul. In addition to social, political and economic issues, we will also focus on history, culture, language, architecture and the arts. Weekly class sessions will include lectures, case studies, guest lecturers, and group work on research projects. The lab also features an 8-day field research trip to Istanbul. Prerequisites may be taken the same semester as POLI 349/ASIA 349. Instructor Permission Required. Cross-list: POLI 349.

ASIA 353 - EAST ASIAN DEMOCRACIES
Short Title: EAST ASIAN DEMOCRACIES
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the functioning of the political system in the three principal East Asian democracies: Japan, South Korea, and Taiwan. Particular focus is paid to each country’s democratic institutions, electoral politics, and political party system. Cross-list: POLI 353.

ASIA 355 - CINEMA AND THE CITY
Short Title: CINEMA AND THE CITY
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class explores representations of the city in 20th and 21st century world cinema. Central concerns will include the city as cinematic protagonist, parallels between urban and cinematic space and the intertwined histories of both film and urban design over the last century. Cross-list: FILM 336, HART 336.

ASIA 360 - TRANSNATIONAL CHINA: CHINA AND THE CHINESE DIASPORA
Short Title: CHINA AND THE CHINESE DIASPORA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Exploration of the political, economic, and social forces changing the lives of nearly a quarter of humanity, the 1.4 billion people of Mainland China, Taiwan, Hong Kong, Singapore and the diasporic Chinese communities of East and Southeast Asia. Topics include political and economic liberalization, nationalism and urban identity, privatization and consumerism, environmentalism and public goods, and the globalization of communication technologies and Chinese cultural media. Cross URL: www.owlnet.rice.edu/~swlewis/asia360/

ASIA 371 - CHINESE PAINTING
Short Title: CHINESE PAINTING
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines Chinese painting from ancient times to the early twentieth century. Issues of examination include themes, styles, and functions of Chinese painting; the interrelationship between paintings and the intended viewers; regionalism; images and words; foreign elements in Chinese painting. Cross-list: HART 371.

ASIA 372 - CHINESE ART AND VISUAL CULTURE
Short Title: CHINESE ART AND VISUAL CULTURE
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this course, we will study how various artistic styles developed in historical, social, and cultural contexts from the ancient period to the present day. Through the careful examination of architecture, calligraphy, painting, sculpture, ceramics, bronze, and film, students will gain a deeper understanding of Chinese art and visual culture. Cross-list: HART 372, MDEM 373.
ASIA 376 - EAST & WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND NORTHERN EUROPE
Short Title: EAST AND WEST
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores a series of issues that are critically important for the medieval art of both China and northern Europe. Topics include materials and techniques; public and private art: commerce, technology and prints; art and motion; archaeology; paradise and hell; maps and space; the gaze; erotica; patronage; and multiculturalism. Cross-list: HART 376, MDEM 376.

ASIA 378 - CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC
Short Title: CROSS-CULTURAL ASIAN MUSIC
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will focus on traditional and contemporary art music from Asia. The classroom lectures are designed to introduce and accompany one or two events which will include live performances, workshops, lectures by invited performers and scholars. This course may be repeated since each year the countries and invited guest performers/scholars will represent different geographical areas. Cross-list: MUSI 378. Repeatable for Credit.

ASIA 380 - ASIAN AMERICAN EXPERIENCES
Short Title: ASIAN AMERICAN EXPERIENCES
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This interdisciplinary course will investigate the diverse cultural traditions and shared experiences of Asian Americans in the United States. By analyzing historical works, literary texts, and films, we will explore a range of topics including Asian immigration, gender roles, identity formation, and ethnic media. Cross-list: HIST 380.

ASIA 387 - ASIAN AMERICAN CONTEMPORARY COMMUNITIES
Short Title: ASIAN AMERICAN COMMUNITIES
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This interdisciplinary course will investigate the diverse cultural traditions and shared experiences of Asian Americans in the United States. By analyzing historical works, literary texts, and films, we will explore a range of topics including Asian immigration, gender roles, identity formation, and ethnic media. Cross-list: ANTH 387.

ASIA 388 - PHOTOGRAPHY IN CHINA
Short Title: PHOTOGRAPHY IN CHINA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3,4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Open to all students within the university who are interested in deepening their understanding of China and improving their photography skills. This course will study China through the history of photography, looking at ways in which China has been viewed by both Chinese and visiting photographers. Students will learn documentary skills and travel to China during spring break to gather materials for their own projects. Instructor Permission Required. Cross-list: FOTO 388.

ASIA 389 - MIGRATIONS AND DIASPORAS IN THE INDIAN OCEAN WORLD
Short Title: THE INDIAN OCEAN WORLD
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The Indian Ocean World presents an enormously varied arena of cultural exchange and interaction spanning coastal regions of Africa, the Middle East, South and Southeast Asia and Australia. Course introduces the region by examining societies and empires shaped by voyages of exploration, religious pilgrimages, trading diasporas and forced migration. Cross-list: HIST 389.

ASIA 390 - THE LANGUAGES OF ASIA
Short Title: THE LANGUAGES OF ASIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: This course surveys the remarkable linguistic diversity of the Pacific Rim Asia covering important grammatical features, including word origins, tones and sounds, writing systems, characteristic syntactic patterns, language families, cultural keywords and communicative styles of the major, as well as some minority languages of the region. Cross-list: LING 390. Recommended Prerequisite(s): Prerequisites as listed or 3 courses in Chinese, Japanese or Korean with special permission.
ASIA 399 - WOMEN IN CHINESE LITERATURE
Short Title: WOMEN IN CHINESE LITERATURE
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines women's roles in Chinese literature as writers, readers, and characters, focusing particularly on the tension between women's lived bodily experiences and the cultural experiences inscribed on the female body and how, in the process, women have contrarily gendered patriarchal culture into their own. It will also touch on Chinese women's incorporation of the Western Tradition. Cross-list: MDEM 379, SWGS 399.

ASIA 401 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-15
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Reading or research project to be determined by discussions between student(s) and faculty member(s). Department Permission Required.

ASIA 402 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-15
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Reading or research project to be determined by discussions between student(s) and faculty member(s). Department Permission Required.

ASIA 422 - THE ORIGINAL BEAUTY OF CHINESE LITERATURE
Short Title: ORIGINAL BEAUTY OF CHINESE LIT
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course will expose students to the best literary works created in the Chinese tradition, both classical and modern, and give them a general introduction to different genres, including poetry, fiction, drama, and philosophical essays. It will improve their language proficiency through reading original texts of Chinese literature. Cross-list: CHIN 422.

ASIA 441 - MAGIC AND POPULAR RELIGION
Short Title: MAGIC & POPULAR RELIGION
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine the popular religion in the Middle East from Late Antiquity until the 19th century, focusing on healing practices, astrology, protection, amulets, seasoned/life-cycle rituals, and other popular beliefs common to Islam, Judaism, and Christianity. Cross-list: RELI 441.

ASIA 488 - ASIA AND ENERGY
Short Title: ASIA AND ENERGY
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Multi-disciplinary study of Asian countries and cultures as to a way to explain production, exchange, consumption and influence of energy on political, economic and social/cultural institutions, including energy security and energy policy formation and resource use theories. Assumes basic knowledge of history and politics of Asian societies and economies.

ASIA 489 - CHINESE POLITICS IN COMPARATIVE PERSPECTIVE
Short Title: CHINESE POLITICS
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores the range of theories and empirical research methodologies from comparative political science, political-economy and Asian studies commonly applied to understanding Chinese politics: political participation, political organizations, collective action and popular protest, political culture and political institutional change. This course will be a seminar requiring weekly presentations extensive readings at the graduate level in social science, and an original research paper. There is no prerequisite for this course but participants are assumed to already possess extensive knowledge of Chinese history, culture and society. Cross-list: POLI 489.

ASIA 490 - COLONIAL MODERNITY IN EAST ASIA
Short Title: COLONIAL MODERNITY: EAST ASIA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: History of ideas, treaties, market and corporate strategies in imperialist and anti-imperialist movements in East Asia in 19th, 20th centuries. Uses theories of colonialism and specific case studies of fashion, architecture, mass media, urban planning, etc., to define colonial modernity transnationally. Three analytic essays and one research paper. Cross-list: HIST 490.
ASIA 492 - GENDER HISTORIES OF MODERN CHINA
Short Title: GENDER HISTORIES: MODERN CHINA
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar with some lectures considers late imperial through 21st century China using conceptual tools (masculinity, femininity, gynotechnics, globalization, representation). Examines late Qing gender order, revolutionary era, party-state formation, and the Great Transformations of late 20th and early 21st centuries using visual culture, film, primary texts, and secondary histories. Cross-list: HIST 492, SWGS 492.

ASIA 494 - SPECIAL TOPICS IN ASIAN STUDIES
Short Title: SPECIAL TOPICS ASIAN STUDIES
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar course explores various cultural topics, not covered in other Asia courses, in Asian studies. The fields may include history, film, linguistics, sociology as well as other fields in the humanities and social sciences. Department Permission Required. Repeatable for Credit.

ASIA 495 - ASIAN STUDIES RESEARCH SEMINAR
Short Title: ASIAN STUDIES RESEARCH SEM
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is designed to elevate the knowledge on Asia acquired by Asian Studies majors in their first two years of study to a higher level and to train them in executing their original research an producing a substantial research paper. Department Permission Required. Mutually Exclusive: Credit cannot be earned for ASIA 495 and ASIA 695. Repeatable for Credit.

ASIA 695 - ASIAN STUDIES RESEARCH SEMINAR
Short Title: ASIAN STUDIES SEMINAR
Department: Asian Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: To elevate the knowledge on Asia acquired by AS majors in their undergraduate years to a graduate level with more depth and focus, and to train AS majors in designing and executing their original research and offer them an opportunity to produce a substantial research paper based on bibliographic research and other forms of data-gathering. In 695 (vs. 495), students will be assigned one additional reading per week throughout the semester. Department Permission Required. Mutually Exclusive: Credit cannot be earned for ASIA 495 and ASIA 695. Repeatable for Credit.

Astronomy (ASTR)

ASTR 100 - EXPLORING THE COSMOS
Short Title: EXPLORING THE COSMOS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to concepts, methods and discoveries of astronomy and astrophysics, with a theme to be chosen from the frontier topics of modern astrophysics. Will emphasize student presentations. Designed for first year students interested in science or engineering, but other majors are welcome.

ASTR 201 - STARS, GALAXIES, AND THE UNIVERSE
Short Title: STARS, GALAXIES & THE UNIVERSE
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introductory course for students in academic programs. The formation, evolution, and death of stars; the composition and evolution of galaxies; the structure and evolution of the universe.

ASTR 202 - EXPLORATION OF THE SOLAR SYSTEM
Short Title: EXPLORATN OF THE SOLAR SYSTEM
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The physical processes governing the nature and behavior of the various Solar System bodies are discussed with a focus on the origins, evolution and fate of the Solar System and its parts. This broader context leads to a deeper understanding of the Earth as a life-supporting planet.

ASTR 221 - OBSERVING THE NIGHT SKY
Short Title: OBSERVING THE NIGHT SKY
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to the celestial sphere and movements of the sun, moon, and planets. Students will gain hands-on experience using computerized telescopes, binoculars, digital imagers, and planetarium software to study astronomical objects. Intended for students in all types of academic programs.
ASTR 230 - ASTRONOMY LAB
Short Title: ASTRONOMY LAB
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A hands-on introduction to modern techniques of observational astronomy. Students use telescopes, CCDs, and computers to obtain and analyze their own images and spectra of solar system, galactic, and extragalactic objects. The course employs the campus observatory, dark sky observing sites, and state of the art data analysis software. Instructor Permission Required.

ASTR 243 - LIVING WITH A STAR: THE PHYSICS OF THE SUN-EARTH CONNECTION
Short Title: LIVING WITH A STAR
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): MATH 102 and PHYS 102 or PHYS 126
Description: Introduction to astrophysical processes, particularly the effect of the Sun on the Earth. Possible effects of solar variability will be considered, especially global warming. The observational and theoretical basis of our current understanding will be presented.

ASTR 350 - INTRODUCTION TO ASTROPHYSICS-STARS
Short Title: INTRO ASTROPHYSICS-STARS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 102 and PHYS 102 or PHYS 126
Description: Introduction to celestial mechanics, radiative transfer, stellar structure, and stellar remnants (including black holes and neutron stars). Aspects of stellar atmospheres may also be explored. Together, ASTR 350 and ASTR 360 provide a comprehensive survey of modern astrophysics needed for senior research and graduate study in astronomy. Either ASTR 350 or 360 may be taken first. Recommended Prerequisite(s): MATH 212

ASTR 360 - INTRODUCTION TO ASTROPHYSICS-GALAXY AND COSMO
Short Title: INTRO ASTROPHYSIC-GALAXY&COSMO
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and PHYS 202 (may be taken concurrently)
Description: Introduction to astrophysical processes, particularly the effect of the Sun on the Earth. Possible effects of solar variability will be considered, especially global warming. The observational and theoretical basis of our current understanding will be presented.

ASTR 360 - INTRODUCTION TO ASTROPHYSICS-GALAXY AND COSMO
Short Title: INTRO ASTROPHYSIC-GALAXY&COSMO
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and PHYS 202 (may be taken concurrently)
Description: Introduction to astrophysical processes, particularly the effect of the Sun on the Earth. Possible effects of solar variability will be considered, especially global warming. The observational and theoretical basis of our current understanding will be presented.

ASTR 451 - ASTROPHYSICS I: SUN AND STARS
Short Title: ASTROPHYSICS I: SUN AND STARS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and PHYS 202 (may be taken concurrently)
Description: Introduction to astrophysical processes, particularly the effect of the Sun on the Earth. Possible effects of solar variability will be considered, especially global warming. The observational and theoretical basis of our current understanding will be presented.

ASTR 452 - ASTROPHYSICS II: GALAXIES AND COSMOLOGY
Short Title: ASTROPHYS II: GALAXY&COSMO
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and PHYS 202 (may be taken concurrently)
Description: Introduction to astrophysical processes, particularly the effect of the Sun on the Earth. Possible effects of solar variability will be considered, especially global warming. The observational and theoretical basis of our current understanding will be presented.

ASTR 452 - ASTROPHYSICS II: GALAXIES AND COSMOLOGY
Short Title: ASTROPHYS II: GALAXY&COSMO
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and PHYS 202 (may be taken concurrently)
Description: Introduction to astrophysical processes, particularly the effect of the Sun on the Earth. Possible effects of solar variability will be considered, especially global warming. The observational and theoretical basis of our current understanding will be presented.
### ASTR 470 - SOLAR SYSTEM PHYSICS

**Short Title:** SOLAR SYSTEM PHYSICS  
**Department:** Physics and Astronomy  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** PHYS 301 and PHYS 302  
**Description:** The Sun, solar-terrestrial relationships, solar wind; planetary atmospheres, ionospheres and magnetospheres. Graduate/Undergraduate Equivalency: ASTR 570. Mutually Exclusive: Credit cannot be earned for ASTR 470 and ASTR 570.

### ASTR 500 - GRADUATE RESEARCH SEMINAR

**Short Title:** GRADUATE RESEARCH SEMINAR  
**Department:** Physics and Astronomy  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** A presentation of current research programs in the department. Graduate/Undergraduate Equivalency: ASTR 400. Repeatable for Credit.

### ASTR 502 - TEACHING EARTH AND SPACE SCIENCE

**Short Title:** TEACHING EARTH & SPACE SCIENCE  
**Department:** Physics and Astronomy  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Overview of the Earth and the solar system: structure, evolution, and dynamics. Includes non-calculus mathematics: algebra, logarithms and simple trigonometry, including Kepler’s laws. Observing sessions at campus observatory and George Observatory TBD. Designed for inservice and preservice science teachers (grades 4-12), but open to undergraduates considering a teaching career. Mutually Exclusive: Credit cannot be earned for ASTR 502 and ASTR 402.

### ASTR 503 - ASTRONOMY FOR TEACHERS

**Short Title:** ASTRONOMY FOR TEACHERS  
**Department:** Physics and Astronomy  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Overview of the Sun, stars, galaxies, and the Universe at a non-calculus level. Methods to help students master content, including lab activities suitable for K-12. Observing sessions at Rice campus observatory and George Observatory TBD. Designed for inservice and preservice teachers (grades 5-12), but open to undergraduates considering a teaching career. Mutually Exclusive: Credit cannot be earned for ASTR 470 and PHYS 480.

### ASTR 504 - NEBULAR ASTROPHYSICS

**Short Title:** NEBULAR ASTROPHYSICS  
**Department:** Physics and Astronomy  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Analysis of physical processes at work in the sun, such as helioseismology, solar variability, solar activity, magnetic reconnection, heliosphere interactions and modern observational techniques.

### ASTR 505 - PROCESSES IN COSMIC PLASMAS

**Short Title:** PROCESSES IN COSMIC PLASMAS  
**Department:** Physics and Astronomy  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** ASTR 470 and PHYS 480  
**Description:** Study of plasma phenomena that occur widely in nature. May include quasi-static equilibrium, magnetic equilibrium, magnetic reconnection, particle acceleration, plasma winds and jets, and interchange instabilities.

### ASTR 530 - TEACHING ASTRONOMY LABORATORY

**Short Title:** TEACHING ASTRONOMY LABORATORY  
**Department:** Physics and Astronomy  
**Grade Mode:** Standard Letter  
**Course Type:** Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** ASTR 230 or ASTR 350 or ASTR 360 or ASTR 402 or ASTR 403 or ASTR 502 or ASTR 503  
**Description:** Methods of observational astronomy for public education: telescopes, astronomical binoculars, portable planetariums, digital cameras, and photography (still, 3D, and time lapse). Students will train beginners in the use of telescopes and carry out a modest observational program. The course requires one public presentation. Topics vary with each offering. Mutually Exclusive: Credit cannot be earned for ASTR 530 and ASTR 430.

### ASTR 542 - NEBULAR ASTROPHYSICS

**Short Title:** NEBULAR ASTROPHYSICS  
**Department:** Physics and Astronomy  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** ASTR 451  
**Description:** The physics of emission nebulae, including radiative transfer, photo ionization and thermal equilibria, and internal gaseous dynamics. Physical processes in the interstellar medium. Recommended Prerequisite(s): PHYS 541.

### ASTR 545 - ASTROPHYSICS OF THE SUN

**Short Title:** ASTROPHYSICS OF THE SUN  
**Department:** Physics and Astronomy  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Analysis of physical processes at work in the sun, such as helioseismology, solar variability, solar activity, magnetic reconnection, heliosphere interactions and modern observational techniques.
ASTR 555 - PROTOTARS AND PLANETS
Short Title: PROTOTARS AND PLANETS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ASTR 451
Description: Physics of star and planet information, including molecular cloud dynamics and chemistry, circumstellar accretion disks, jets, dust, debris disks, atmospheres rotation, and magnetic fields of young stars, binaries, brown dwarfs, comets, Kuiper belt objects, giant planet formation and discoveries of extra solar planets.

ASTR 565 - COMPACT OBJECTS
Short Title: COMPACT OBJECTS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Selected topics involving white dwarfs, neutron stars, black holes and their environments, e.g., pulsars, supernova remnants, and accretion disks.

ASTR 570 - SOLAR SYSTEM PHYSICS
Short Title: SOLAR SYSTEM PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Sun, solar-terrestrial relationships, solar wind; planetary atmospheres, ionospheres and magnetospheres. Includes a research paper and presentation on a physical process in the solar system. Graduate/Undergraduate Equivalency: ASTR 470. Mutually Exclusive: Credit cannot be earned for ASTR 570 and ASTR 470.

ASTR 600 - ADVANCED TOPICS IN ASTROPHYSICS
Short Title: ADV TOPICS IN ASTROPHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Lecture/seminars which treat topics of departmental interest. Not offered every year. Repeatable for Credit.

Biochemistry & Cell Biology (BIOC)

BIOC 112 - INTRODUCTORY BIOLOGICAL RESEARCH CHALLENGES
Short Title: INTRO BIOL RESEARCH CHALLENGES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Teams of students work on investigative, client-based projects with opportunities to design experiments, analyze data, and communicate their findings. This course is recommended for students interested in the Biosciences major who have very limited practical laboratory experience. Only first year students may enroll. Mutually Exclusive: Credit cannot be earned for BIOC 112 and BIOC 111/NSCI 120.

BIOC 115 - FRESHMAN SEMINAR IN LOCAL BIOLOGY RESEARCH (BCB)
Short Title: FRESHMAN BIOLOGY SEMINAR (BCB)
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group III
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A 7-week seminar course to introduce freshmen prospective biologists to the excitement of research at Rice and the Medical Center and to provide context with which to think about facts presented in biosciences textbooks. Small groups will meet weekly with a graduate student or postdoctoral researcher to explore a published research article by a local lab, gaining background information about the subject and exposure to the research techniques. In the final session, the group will tour the lab that produced the featured article. Additional tours and activities TBA. All first-year non-transfer students are eligible to enroll in BIOC 115/FSEM 115 regardless of AP credit. This course meets in the second half of the semester and features research in the Program of Biochemistry and Cell Biology. Cross-list: FSEM 115.
Course URL: www.bioc.rice.edu/bioc115/

BIOC 122 - CURRENT TOPICS IN BIOLOGY
Short Title: BIOLOGY FOR VOTERS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Students cannot enroll who have a major in Biochemistry and Cell Biology, Biological Sciences or Ecology & Evolutionary Biology. Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Designer babies, climate change, the anti-vaccine movement, gender identity, evolution...exploring these and other socially relevant topics will provide a context for learning essential concepts in biology and ways to distinguish science truth from science fiction.
Course URL: www.ruf.rice.edu/~bioslabs/bioc122/
BIOC 129 - BRAINSTEM - TEACHING STEM THROUGH NEUROSCIENCE
Short Title: BRAINSTEM
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: BrainSTEM is a service organization that teaches STEM subjects through the lens of neuroscience. We perform hands-on, small-group activities with ~45 students per week. This course will prepare you to communicate science in a both effective and entertaining manner, as well as build your skills in managing small groups. More information can be found at ‘www.brainstem.club.’ Repeatable for Credit.

BIOC 201 - INTRODUCTORY BIOLOGY
Short Title: INTRODUCTORY BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the scientific method, principles of experimental biology, Mendelian genetics, molecular genetics, developmental biology, and plant physiology.

BIOC 205 - MICROBE HUNTERS REVISITED
Short Title: MICROBE HUNTERS REVISITED
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This seminar will review important microbiologists and their discoveries of infectious agents. From Pasteur to Prusiner, we will review the infectious agents they described, as well as the methods used for their discovery. The classic text by Paul de Kruif entitled “Microbe Hunters” will be the basis for half of the course material.

BIOC 211 - INTERMEDIATE EXPERIMENTAL BIOSCIENCES
Short Title: EXPERIMENTAL BIOSCIENCES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): BIOC 201 (may be taken concurrently) and
Description: Introduction to scientific method, principles of experimental design, selected research strategies, record keeping, and technical communication as related to biological science. The prereq BIOC 201 may be taken concurrently with BIOC 211. Mutually Exclusive: Credit cannot be earned for BIOC 211 and BIOC 212.

BIOC 212 - INTERMEDIATE EXPERIMENTAL CELLULAR AND MOLECULAR NEUROSCIENCE
Short Title: EXPERIMENTAL NEUROSCIENCE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): BIOC 201 (may be taken concurrently) and
Description: Introduction to the scientific method, principles of experimental design, selected research strategies, record keeping, and technical communication as related to neuroscience. This course is primarily intended for prospective and declared NEUR majors. The pre-req BIOC 201 may be taken concurrently with BIOC 212. Instructor Permission Required. Mutually Exclusive: Credit cannot be earned for BIOC 212 and BIOC 211.

BIOC 215 - BIOSCIENCES LAB TEACHING
Short Title: BIOC LAB TEACHING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Undergraduate teaching in a biosciences laboratory. Provide group and individual instruction and feedback to undergraduates during and outside of laboratory classes. Instructor Permission Required. Repeatable for Credit.

BIOC 216 - DISCUSSION SECTION TEACHING
Short Title: DISCUSSION SECTION TEACHING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, undergraduates who have previously excelled in a BIOC course, as approved by the Department Chair for this activity, will develop teaching skills by leading discussion sections or serving as writing mentors. These activities are designed to benefit students presently taking the relevant BIOC course and will be performed under the guidance of the professor teaching the course. Instructor Permission Required. Repeatable for Credit.

BIOC 220 - FORENSIC BIOLOGY AND CRIMINALISTICS
Short Title: FORENSIC BIOL & CRIMINALISTICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): BIOC 201
Description: This course will introduce students to certain areas of forensic science including - crime scene analysis, forensic serology, molecular genetics (DNA), forensic toxicology; drugs, and the identification of biological fluids such as blood, saliva, and semen, with case studies and a potential field trip. The course is designed for biology and chemistry students, for students interested in the application of biosciences in DNA and crime scene analysis.
BIOC 300 - PARADIGMS IN BIOCHEMISTRY AND CELL BIOLOGY
Short Title: PARADIGMS IN BIOCHM & CELL BIO
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examination of paradigms in Biochemistry and Cell Biology with a focus on the "central dogma" of molecular biology. Recommended strongly for students with Advanced Placement in Biology and designed for prospective BIOC majors. This course is strongly recommended as preparation for BIOC 341 (Cell Biology). Enrollment is restricted to students who have not yet taken BIOC 301 or BIOC 341. Recommended Prerequisite(s): Recommended strongly for students with Advanced Placement in Biology and designed for prospective BIOC majors. For students with AP credit for BIOS/BIOC 201, this course is strongly recommended as preparation for BIOC 341 (Cell Biology).

BIOC 301 - BIOCHEMISTRY I
Short Title: BIOCHEMISTRY I
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 211 and BIOC 201
Description: The second in an integrated sequence of three courses (BIOC 201, 301, 302). Structure and function of proteins, enzymes, and nucleic acids; enzyme kinetics; glycolysis, aerobic metabolism, and energy coupling. Recommended Prerequisite(s): CHEM 212.

BIOC 302 - BIOCHEMISTRY II
Short Title: BIOCHEMISTRY II
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 301
Description: The final in an integrated sequence of three courses (BIOC 201, 301, 302). In depth study of carbohydrate, amino acid, and lipid metabolic pathways, hormone regulation of metabolic path ways, key cell signaling mechanisms, and the structural biology of DNA replication, transcription, and translation into proteins. Course also involves analysis of primary scientific literature. Recommended Prerequisite(s): CHEM 212 or CHEM 320.

BIOC 305 - INVESTIGATIVE BIOCHEMISTRY
Short Title: INVESTIGATIVE BIOCHEMISTRY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment limited to students with a class of Junior or Senior. Students cannot enroll who have a major in Biochemistry and Cell Biology, Biological Sciences or Ecology & Evolutionary Biology. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 301 (may be taken concurrently)
Description: In this course designed for premedical students not majoring in the Biosciences, students work in teams to complete part of a research project. In addition to gaining practical laboratory experience in biochemistry, students maintain a laboratory notebook, generate and analyze data, and write a research paper. The prerequisite BIOC 301 may be taken concurrently with BIOC 305.

BIOC 310 - INDEPENDENT RESEARCH FOR BIOCHEMISTRY AND CELL BIOLOGY UNDERGRADUATES
Short Title: IND RES FOR BIOC UNDERGRADS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 111 or BIOC 211 or BIOC 112 or NSCI 120
Description: Independent research in Rice BCB faculty laboratories (sections 2 and above) or other Texas Medical Center laboratories (sections 1). Students spend at least 3 hours per week in the laboratory for each semester hour of credit. If taken for 3 or more hours, counts as one required 300+ level lab course (not BIOC 311). Requires a proposal abstract, weekly reports, and a research paper (fall semester) or a proposal abstract, weekly reports, and a poster presentation (spring semester). Students wishing to perform their research in an off-campus lab must submit a completed application to the BIOC 310 instructor at least 2 weeks prior to the start of classes and may not register for fewer than 3 credit hours. Instructor Permission Required. Recommended Prerequisite(s): Students are strongly advised to secure research advisors and register for the class well in advance of the start of classes. Repeatable for Credit.
Course URL: www.bioc.rice.edu/bioc310

BIOC 311 - ADVANCED EXPERIMENTAL BIOSCIENCES
Short Title: ADV EXPERIMENTAL BIOSCIENCES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 211 and BIOC 301 (may be taken concurrently)
Description: Advancement of biochemical laboratory methods, record keeping, technical communication skills, and research strategies. Students will maintain a research quality laboratory notebook and will submit a paper in the style of a journal article. Pre-req BIOC 301 may be taken concurrently with BIOC 311.
BIOC 313 - INTRODUCTORY SYNTHETIC BIOLOGY
Short Title: INTRODUCTORY SYNTHETIC BIO
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOS 211 or BIOC 211
Description: Students learn molecular biological procedures commonly used to build and characterize synthetic genetic circuits. Teams of students work on a research project in the interdisciplinary field of synthetic biology. Students continue to develop technical communication skills.
Course URL: www.owlnet.rice.edu/~bios311/bios311/bios313/bios313.html

BIOC 318 - MICROBIOLOGY LABORATORY
Short Title: MICROBIOLOGY LABORATORY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 211
Description: Team projects focusing on water analysis and isolation, culture, observation, assay, and identification of bacteria. Offered in the second half of each semester, self-scheduled after the first formal meetings.
Course URL: www.ruf.rice.edu/~bioslabs/bios318/

BIOC 320 - LABORATORY IN TISSUE CULTURE
Short Title: LABORATORY IN TISSUE CULTURE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 440 or STAT 440 or BIOC 311
Description: Introduction to tissue culture techniques, including cell passage, cell viability, and cell attachment and proliferation assays. Students complete quantitative analysis of their data. Engineering design and applications are featured in graded work. Sections 1 and 2 are taught during the first half of the semester. Sections 3 and 4 are taught during the second half of the semester. Students may be required to attend lab on a university holiday. Instructor Permission Required. Cross-list: BIOE 342.

BIOC 329 - ANIMAL BIOLOGY AND PHYSIOLOGY
Short Title: ANIMAL BIOLOGY AND PHYSIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 213
Description: This course gives a broad overview of the biology of infectious diseases using examples from humans, plants, and animals. Topics include diversity of diseases, mechanisms of disease transmission, epidemiology, population regulation, evolution of virulence, disease dynamics in natural communities and disease invasion and conservation biology. Cross-list: EBIO 331.

BIOC 331 - BIOLOGY OF INFECTIOUS DISEASES
Short Title: BIOLOGY OF INFECTIOUS DISEASES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 213
Description: This course gives a broad overview of the biology of infectious diseases using examples from humans, plants, and animals. Topics include diversity of diseases, mechanisms of disease transmission, epidemiology, population regulation, evolution of virulence, disease dynamics in natural communities and disease invasion and conservation biology. Cross-list: EBIO 331.

BIOC 332 - SYSTEMS PHYSIOLOGY
Short Title: SYSTEMS PHYSIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and (PHYS 101 and PHYS 102) or (PHYS 125 and PHYS 126)
Description: This course will teach the fundamentals of human physiology with a specific focus on the nervous, cardiovascular, respiratory, and urinary systems. Basic introductory engineering principles will be applied to the study of physiological systems. The course is aimed to be accessible to students with non-engineering backgrounds. Students may receive credit for only one of BIOE 302, BIOC 332, and BIOC 332. Cross-list: BIOE 302. Mutually Exclusive: Credit cannot be earned for BIOC 332 and BIOE 332.
BIOC 334 - EVOLUTION  
Short Title: EVOLUTION  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): EBIO 202  
Description: Principles of biological evolution. Topics include natural selection, adaptation, molecular evolution, formation of new species, the fossil record, biogeography, and principles of classification. Cross-list: EBIO 334.  
Course URL: www.ruf.rice.edu/~queller/Bios334/  

BIOC 335 - CELLULAR AND MOLECULAR ANIMAL PHYSIOLOGY  
Short Title: CELL & MOL ANIMAL PHYSIOLOGY  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): BIOC 201  
Description: This course takes a functional approach to investigate animal physiology from a cellular and molecular perspective. Using an integrated and comparative approach, students learn how animals maintain homeostasis, including how they meet their energy needs, take up and transport oxygen, and maintain hydration and salt balance. Students will read primary literature to explore physiological adaptations for survival in extreme environments. Graduate/Undergraduate Equivalency: BIOC 536. mutually Exclusive: Credit cannot be earned for BIOC 335 and BIOC 536.  

BIOC 341 - CELL BIOLOGY  
Short Title: CELL BIOLOGY  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): BIOC 201  
Description: Molecular mechanisms of eukaryotic cell function. Structure, function, and biogenesis of all subcellular organelles. Cell-cell communication, cytoskeleton assembly and function, cell cycle control, and cell-cell adhesions. Emphasis will be on cytoplasmic events; molecular studies of transcription are taught in BIOC 302 and BIOC 344. RECOMMENDATION: BIOC 300 is recommended for students using advanced placement credit for BIOC 201 and students preferring additional foundational background prior to enrollment in BIOC 341.  

BIOC 344 - MOLECULAR BIOLOGY AND GENETICS  
Short Title: MOLECULAR BIOLOGY & GENETICS  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and BIOC 301  
Description: Mendelian genetics, population genetics, mapping, gene expression and regulation, genetic engineering, DNA replication and recombination, human genetics, genetic disease and gene therapy. Recommended Prerequisite(s): BIOC 201.  

BIOC 352 - PHYSICAL CHEMISTRY FOR THE BIOSCIENCES  
Short Title: PHYS CHEM FOR BIOSCIENCES  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and MATH 102  
Description: Importance of nutritional and pharmaceutical compounds, impact of cost of compounds on global health; Overview of biochemical pathways; metabolite analysis; Genetic engineering and molecular biology tools for ME; Pharmaceuticals and drug discovery approaches (antibiotics, antivirals; anti-parasite compounds); anti-diarrhea treatments; vaccines. Cross-list: BioE 361, GLHT 361.  
Course URL: www.btb.rice.edu  

BIOC 368 - CONCEIVING AND MISCONCEIVING THE MONSTROUS IN FICTION AND IN ART, IN MEDICINE AND IN BIOSCIENCE  
Short Title: MONSTER  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: However various the forms of life, we draw boundaries between normal, not normal, and monstrous. From the Biosciences to the Arts, our conceptions of the “monstrous” illuminate our identity, perceptions, and fears. Priority for enrollment beyond the cap given to students also enrolled in ARTS 358. Cross-list: HUMA 368.
BIOC 371 - SEMINAR IN CONTEMPORARY BIOLOGICAL AND BIOMEDICAL RESEARCH
Short Title: BIOMEDICAL RESEARCH SEMINAR
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 341 (may be taken concurrently) or BIOC 301 (may be taken concurrently)
Description: This course will offer students a close-up look at an area of contemporary biological and biomedical research in a small-group seminar setting. Each seminar will focus on a different area of research through reading and discussion of recent research articles in that focus area. The faculty discussion leader for each seminar will be drawn from Baylor College of Medicine, UT Health Science Center, MD Anderson Cancer Center, Rice and others. Please consult the course website for a complete listing of seminars offered each semester. Please refer to the following link for additional information: http://www.bioc.rice.edu/bioc371. Instructor Permission Required. Recommended Prerequisite(s): Students should check the courses website for additional prerequisites, notes from the instructor, and other information specific to each section. Repeatable for Credit.
Course URL: www.bioc.rice.edu/bioc371

BIOC 372 - IMMUNOLOGY
Short Title: IMMUNOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201
Description: Cellular and molecular basis of innate and adaptive immune function in mammals. Graduate/Undergraduate Equivalency: BIOC 573. Recommended Prerequisite(s): BIOC 301 and BIOC 341. Mutually Exclusive: Credit cannot be earned for BIOC 372 and BIOC 573/BIOS 372.

BIOC 373 - LABORATORY TRANSFER CREDIT IN BIOCHEMISTRY AND CELL BIOLOGY
Short Title: LAB TRANSFER CREDIT
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hour: 1
Course Level: Undergraduate Upper-Level
Description: For transfer of an advanced laboratory course in the Biochemistry and Cell Biology that has no current equivalent in the Rice curriculum. Any student may receive a maximum of one credit of BIOC 373.

BIOC 374 - FUNDAMENTAL NEUROSCIENCE SYSTEMS
Short Title: NEUROSYSTEMS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will provide a broad overview of the brain's neural systems that subserve perception, learning, and behavior. The course will be highly integrative with thematic content including functional organization of the nervous system, neural encoding and decoding, sensory systems, motor systems, and high-level concept processing. Cross-list: NEUR 380, PSYC 380. Recommended Prerequisite(s): PSYC 101.

BIOC 375 - FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE
Short Title: FUNDAMENTALS OF NEUROSCIENCE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Cellular, molecular, and integrative mechanisms of neural function, including membrane and axon physiology, synaptic transmission and plasticity, sensory transduction and processing. Cross-list: NEUR 385. Graduate/Undergraduate Equivalency: BIOC 585. Recommended Prerequisite(s): BIOC 201. Mutually Exclusive: Credit cannot be earned for BIOC 385 and BIOC 585.

BIOC 376 - TRANSFER CREDIT IN BIOCHEMISTRY AND CELL BIOLOGY
Short Title: TRAN CREDIT BIOCHEM&CELL BIO
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: For transfer of courses which have no current equivalent in the Rice curriculum, but which can be counted as 300 level BIOC lecture courses, in satisfying requirements for majors in Biosciences. Repeatable for Credit.

BIOC 390 - TRANSFER CREDIT IN BIOCHEMISTRY AND CELL BIOLOGY
Short Title: TRAN CREDIT BIOCHEM&CELL BIO
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: For transfer of courses which have no current equivalent in the Rice curriculum, but which can be counted as 300 level BIOC lecture courses, in satisfying requirements for majors in Biosciences. Repeatable for Credit.
BIOC 401 - UNDERGRADUATE HONORS RESEARCH
Short Title: UNDERGRADUATE HONORS RESEARCH
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 5
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The Biochemistry and Cell Biology Honors Research Program is a suite of courses offering our seniors and advanced juniors the opportunity to perform a two-semester, individual research project in a research laboratory in Biochemistry & Cell Biology. Students having performed BIOS/BIOC 310 research in an off-campus laboratory in the Texas Medical Center will also be eligible to apply to perform honors research in that laboratory. The Honors Research Program courses function as a set and must all be taken in the same academic year. Registration for any of the courses requires a commitment to register for all three. Requires at least 15 hours of laboratory research per week, a proposal (revised from application), monthly reports, and a formal progress report (abstract, aims, progress toward aims, discussion of results, plans for the spring semester). Prerequisites: strong performance in (BIOC 310, or HONS 470/471) and BIOL 211 and either BIOL 301 or BIOL 341. Research professor recommendation required. Application for admission required (BCB Honors Program OwlSpace Resources). Department Permission Required. Repeatable for Credit.

BIOC 402 - UNDERGRADUATE HONORS RESEARCH
Short Title: UNDERGRADUATE HONORS RESEARCH
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 5
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOL 401
Corequisite: BIOL 412
Description: The Biochemistry and Cell Biology Honors Research Program is a suite of courses offering our seniors and advanced juniors the opportunity to perform a two-semester, individual research project in a research laboratory in Biochemistry & Cell Biology. Students having performed BIOS/BIOC 310 research in an off-campus laboratory in the Texas Medical Center will also be eligible to apply to perform honors research in that laboratory. Registration for any of the courses requires a commitment to register for all three. Requires at least 15 hours of laboratory research per week, monthly reports, a thesis (substantial research paper) and a poster presentation at the Rice Undergraduate Research Symposium. Repeatable for Credit.

BIOC 412 - UNDERGRADUATE RESEARCH SEMINAR
Short Title: UNDERGRADUATE RESEARCH SEMINAR
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOL 401
Corequisite: BIOL 402
Description: This companion seminar requires attendance at course meetings and a formal scientific presentation of research performed while enrolled in the Honors Research Program. Repeatable for Credit.

BIOC 413 - EXPERIMENTAL MOLECULAR BIOLOGY
Short Title: EXPERIMENTAL MOLECULAR BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOL 311
Description: Application of strategies in molecular biology to investigate gene expression and function with an emphasis on experimental design, data analysis, and data interpretation. Students will prepare a scientific poster. Offered second half of spring semester.

BIOC 415 - EXPERIMENTAL PHYSIOLOGY
Short Title: EXPERIMENTAL PHYSIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOL 311
Description: Laboratory studies in membrane, nerve, and muscle physiology, with emphasis on experimental design, data analysis, and data interpretation.
Course URL: www.ruf.rice.edu/~bioslabs/bios415

BIOC 417 - EXPERIMENTAL CELL AND MOLECULAR NEUROSCIENCE
Short Title: ADV EXPERIMENTAL NEUROSCIENCE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 202 and BIOL 212 and CAAM 210 and (STAT 305 or STAT 310 or STAT 312) and (BIOL 385 or NEUR 385)
Description: Students will explore the molecular properties of neurons and related cells using standard techniques in the field. Experiments will include manipulating exocytosis, examining protein expression levels in different brain regions of mice, and culturing primary neurons. Lessons will also include a brief lecture/discussion on fundamental principles within cellular and molecular neuroscience.

BIOC 424 - MICROBIOLOGY AND BIOTECHNOLOGY
Short Title: MICROBIOLOGY & BIOTECHNOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOL 201
Description: Structure and functions of microorganisms with emphasis on their environmental, industrial and medical importance. Graduate/Undergraduate Equivalency: BIOL 524. Recommended Prerequisite(s): BIOL 301 or Instructor Permission. Mutually Exclusive: Credit cannot be earned for BIOL 424 and BIOL 524.
BIOC 425 - PLANT MOLECULAR GENETICS AND DEVELOPMENT
Short Title: PLANT MOLECULAR GENETICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 301 or BIOC 341
Description: Novel aspects of plant biology and development with emphasis on molecular and genetic mechanisms. Plant responses to the environment and the use of bioengineering and other means to develop new plant products will also be covered. Graduate/Undergraduate Equivalency: BIOC 525. Mutually Exclusive: Credit cannot be earned for BIOC 425 and BIOC 525.

BIOC 442 - MOLECULES, MEMORY AND MODEL ANIMALS: METHODS IN BEHAVIORAL NEUROSCIENCE
Short Title: BEHAVIORAL NEUROSCIENCE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (BIOC 380 or NEUR 380 or PSYC 380 or BIOC 385 or NEUR 385) and (PSYC 203 or EBIO 321) and (STAT 305 or STAT 310 or STAT 312)
Description: This will be a combined lecture/discussion course on historical and current methods in behavioral neuroscience using primary literature. Topics will include the molecular basis of memory, genetic impacts on cognition, and possible epigenetic influences on behavior. Special emphasis will be placed on discussing different model organism and their benefits/drawbacks in neuroscience research.

BIOC 443 - ADVANCED CONCEPTS AND CRITICAL ANALYSIS IN MODERN DEVELOPMENTAL BIOLOGY
Short Title: DEVELOPMENT
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 341 or BIOC 301 or BIOC 344
Description: An advanced undergraduate and graduate level course, dedicated to analysis and evaluation of scientific inquiry into animal development. Textbook based lectures and discussions based on primary scientific literature are used to exemplify and evaluate concepts and methodology. Writing assignments, quizzes, midterm and final exam will be used to evaluate performance. Graduate/Undergraduate Equivalency: BIOC 544. Mutually Exclusive: Credit cannot be earned for BIOC 443 and BIOC 544.

BIOC 445 - ADVANCED MOLECULAR BIOLOGY AND GENETICS
Short Title: ADV MOLECULAR BIOL & GENETICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 301 or BIOC 344
Description: Molecular and genetic aspects of the regulation of gene expression as seen in simple prokaryotic systems and the model eukaryotic systems used for studies of development. Graduate/Undergraduate Equivalency: BIOC 545. Mutually Exclusive: Credit cannot be earned for BIOC 445 and BIOC 545.

BIOC 447 - EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE
Short Title: BIOLOGY AND MEDICINE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 301 or BIOC 341 or BIOC 344
Description: Current biological methods offer the potential to transform health care. We will examine the biology and methodology of emergent health care technologies such as stem cell therapy and personal genome sequencing to understand their potential to impact human health. Graduate/Undergraduate Equivalency: BIOC 547.

BIOC 449 - ADVANCED CELL AND MOLECULAR NEUROSCIENCE
Short Title: ADV CELL AND MOLECULAR NEURO
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): NEUR 380 or BIOC 380 or PSYC 380
Description: This course will be an overview of advanced principles and techniques in cell and molecular neuroscience; subjects will include bioelectricity, cellular signaling, and the molecular mechanics of neuronal plasticity. The class will primarily be lecture driven. However, there will be seminar component – students will review primary scientific literature, discuss it in small groups, and present their findings. Recommended Prerequisite(s): NEUR 380 or BIOC 380 or PSYC 380.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Prerequisite(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 450</td>
<td>VIRUSES AND INFECTIOUS DISEASES</td>
<td>Biosciences</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>BIOC 201 and BIOC 301 and BIOC 341</td>
<td>Animal viruses, especially those relevant to human health, will be discussed. Topics primarily focus on virus structure and the molecular biology of the virus life cycle. Practical issues such as the history of viral diseases, clinical manifestations, laboratory diagnosis, management and prevention will also be discussed. Graduate/Undergraduate Equivalency: BIOC 550. Mutually Exclusive: Credit cannot be earned for BIOC 450 and BIOC 550.</td>
</tr>
<tr>
<td>BIOC 455</td>
<td>COMPUTATIONAL SYNTHETIC BIOLOGY</td>
<td>Biosciences</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>BIOC 201 and BIOC 301 and BIOC 341</td>
<td>Mathematical and computational techniques of cell biology and synthetic biology. Topics include deriving and implementing mathematical and computational models of cellular growth and division, evolution, gene regulation, synthetic gene circuits, enzymatic processing, and stochastic processes in biology. Graduate/Undergraduate Equivalency: BIOC 555. Recommended Prerequisite(s): CAAM 210</td>
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<tr>
<td>BIOC 460</td>
<td>CANCER BIOLOGY</td>
<td>Biosciences</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>BIOC 201 and BIOC 301 and BIOC 341</td>
<td>Provides an integrated lecture series summarizing current knowledge in cancer biology and integrating current literature with basic concepts. Topics include: statistics of incidence/survival, types of cancer, pathology, the process of carcinogenesis and sources of carcinogens, genetic and epigenetic mechanisms and consequences, cancer progression, metastasis and current treatment options. Students will learn to use online databases to develop independent strategies for analyzing datasets. There will be several writing assignments and in-class oral presentations of research articles. Graduate/Undergraduate Equivalency: BIOC 560. Mutually Exclusive: Credit cannot be earned for BIOC 460 and BIOC 560.</td>
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<tr>
<td>BIOC 464</td>
<td>EXTRACELLULAR MATRIX</td>
<td>Biosciences</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>BIOC 341 or BIOC 343</td>
<td>This course will address the biology, organization, mechanics, and turnover of extracellular matrix. There will be an emphasis on cells and cell-matrix interactions, matrix distribution within and design of connective tissues and organs techniques for quantitative analysis of matrix, techniques for measurement and modeling of connective tissue biomechanics, changes with growth and aging and tissue/matrix degradation. Cross-list: BIOE 464. Graduate/Undergraduate Equivalency: BIOC 523. Recommended Prerequisite(s): BIOC 372, BIOC 341. Mutually Exclusive: Credit cannot be earned for BIOC 464 and BIOC 523.</td>
</tr>
<tr>
<td>BIOC 470</td>
<td>COMPUTATION WITH BIOLOGICAL DATA</td>
<td>Biosciences</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>(BIOC 301 or BIOC 341 or BIOC 344) and MATH 102</td>
<td>Focus on principles of common biophysical methods used for study of conformations and dynamics of biological macromolecules and assemblies. Topics cover spectroscopic methods (absorption, fluorescence, circular dichroism, epr, NMR), transport processes, sedimentation, calorimetry, mass spectrometry, crystallography, cryo-electron microscopy, atomic force microscopy, ligand-protein interactions, protein folding, single molecule detection, computer simulations, functional genomics and laboratory evolution. Biological examples will be used to demonstrate merits and complementarity in each of the biophysical methods. Graduate/Undergraduate Equivalency: BIOC 551.</td>
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</table>

**Equivalency:**
- BIOC 450: BIOC 550
- BIOC 455: BIOC 555
- BIOC 460 and BIOC 464: BIOC 560
- BIOC 464 and BIOC 523: BIOC 560
- BIOC 470 and BIOC 570: BIOC 560
BIOC 482 - STRUCTURAL BIOLOGY
Short Title: STRUCTURAL BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 301 and (PHYS 101 or PHYS 125) and (PHYS 102 or PHYS 126)
Description: Structural biology plays an important role in defining atomic structures of biomolecules and understanding relationships between structure, dynamics and function in living systems. This course will give an introduction to techniques of determining biomolecular structures, X-ray crystallography, NMR, and cryoelectron microscopy and discuss striking examples of the power of structural biology. Graduate/Undergraduate Equivalency: BIOC 552. Mutually Exclusive: Credit cannot be earned for BIOC 482 and BIOC 552.

BIOC 523 - EXTRACELLULAR MATRIX
Short Title: EXTRACELLULAR MATRIC
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will address the biology, organization, mechanics, and turnover of extracellular matrix. There will be an emphasis on cells and cell-matrix interactions, matrix distribution within and design of connective tissues and organs techniques for quantitative analysis of matrix, techniques for measurement and modeling of connective tissue biomechanics, changes with growth and aging and tissue/matrix degradation. Additional projects will be required of graduate level students. Cross-list: BIOE 372, BIOC/BIOE 341. Mutually Exclusive: Credit cannot be earned for BIOC 523 and BIOC 552.

BIOC 524 - MICROBIOLOGY & BIOTECHNOLOGY
Short Title: MICROBIOLOGY & BIOTECHNOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Structure and functions of microorganisms with emphasis on their environmental, industrial and medical importance. Graduate/Undergraduate Equivalency: BIOC 424. Mutually Exclusive: Credit cannot be earned for BIOC 524 and BIOC 424.

BIOC 525 - PLANT MOLECULAR GENETICS AND DEVELOPMENT
Short Title: PLANT MOLECULAR GENETICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Novel aspects of plant biology and development with emphasis on molecular and genetic mechanisms. Plant responses to the environment and the use of bioengineering and other means to develop new plant products will also be covered Graduate/Undergraduate Equivalency: BIOC 425. Mutually Exclusive: Credit cannot be earned for BIOC 525 and BIOC 425.

BIOC 530 - LAB MODULE IN NMR SPECTROSCOPY AND MOLECULAR MODELING
Short Title: LAB MOD NMR SPECTROSCOPY&MOLEC
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 481 or BIOC 482 (may be taken concurrently) or BIOC 552 (may be taken concurrently) or BIOC 551
Description: The students will learn to set up, acquire, and process one-dimensional and basic two-dimensional NMR experiments. Spectral interpretation (3D molecular modeling of proteins and nucleic acids) for nucleic acids and proteins using homonuclear and heteronuclear data. Enrollment limited to 12, with priority to graduate students. Offered first half of the semester. BIOC 482/552 may be taken concurrently with BIOC 530.

BIOC 532 - LABORATORY MODULE IN OPTICAL SPECTROSCOPY AND KINETICS
Short Title: LAB MOD OPTICAL SPECTROSCOPY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students learn the principles behind fluorescence, circular dichroism, analytical ultracentrifugation, spectroscopy and rapid kinetics by carrying out experiments with genetically engineered proteins and state-of-the-art equipment. Data will be interpreted and manipulated using curve-fitting and graphics software. Offered second half of the semester. Recommended Prerequisite(s): BIOE 352 or equivalent. Concurrent or previous enrollment in BIOC 481 or BIOC 551.
BIOC 533 - BIOINFORMATICS & COMPUTATIONAL BIOLOGY
Short Title: BIOINFORMATICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to the emerging field of bioinformatics. A series of lectures, combined with hands-on exercises. The topics to be discussed include sequence comparison, structure analysis, phylogenetics, database searching, microarrays and proteomics. Recommended prerequisite(s): BIOC 301 or permission of instructor.

BIOC 535 - PRACTICAL X-RAY CRYSTALLOGRAPHY
Short Title: PRACT X-RAY CRYSTALLOGRAPHY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 552 (may be taken concurrently) or BIOC 482 (may be taken concurrently)
Description: This is an introduction to macromolecular crystallography with emphasis on crystallization methods, data acquisition, processing and molecular model-building. Approaches to solving structures will be discussed, as well as refinement of molecular models. Offered second half of the semester. Prerequisites are concurrent and may be taken the same semester.

BIOC 536 - CELLULAR AND MOLECULAR ANIMAL PHYSIOLOGY
Short Title: CELL & MOL ANIMAL PHYSIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course investigates animal physiology from a cellular and molecular perspective. Using an integrated and comparative approach, students learn how animals maintain homeostasis. Students will read primary literature to explore physiological adaptations for survival in extreme conditions. Graduate/Undergraduate Equivalency: BIOC 335. Mutually Exclusive: Credit cannot be earned for BIOC 536 and BIOC 335.

BIOC 537 - ADVANCED CRYSTALLOGRAPHY SEMINAR
Short Title: ADV CRYSTALLOGRAPHY SEMINAR
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: One hour seminar course in theoretical and practical aspects of crystallography, primarily as it applies to macromolecular crystallography. Presentations will be given by instructors and students on advanced topics based on published works or original research. Repeatable for Credit.

BIOC 540 - METABOLIC ENGINEERING
Short Title: METABOLIC ENGINEERING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

BIOC 544 - ADVANCED CONCEPTS AND CRITICAL ANALYSIS IN MODERN DEVELOPMENTAL BIOLOGY
Short Title: DEVELOPMENT
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 341 or BIOC 301 or BIOC 344
Description: An advanced undergraduate and graduate level course, dedicated to analysis and evaluation of scientific inquiry into animal development. Textbook based lectures and discussions based on primary scientific literature are used to exemplify and evaluate concepts and methodology. Writing assignments, quizzes, midterm and final exam will be used to evaluate performance. Graduate/Undergraduate Equivalency: BIOC 443. Mutually Exclusive: Credit cannot be earned for BIOC 544 and BIOC 443.

BIOC 545 - ADVANCED MOLECULAR BIOLOGY AND GENETICS
Short Title: ADV MOLECULAR BIOL & GENETICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Current biological methods offer the potential to transform health care. We will examine the biology and methodology of emergent health care technologies such as stem cell therapy and personal genome sequencing to understand their potential to impact human health. Graduate/Undergraduate Equivalency: BIOC 447. Recommended Prerequisite(s): BIOC 301 or BIOC 341 or BIOC 344.
BIOC 550 - VIRUSES AND INFECTIOUS DISEASES
Short Title: VIRUSES & INFECTIOUS DISEASES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 201 and BIOC 301 and BIOC 341
Description: Animal viruses, especially those relevant to human health, will be discussed. Topics primarily focus on virus structure and the molecular biology of the virus life cycle. Practical issues such as the history of viral diseases, clinical manifestations, laboratory diagnosis, management and prevention will also be discussed. Graduate/Undergraduate Equivalency: BIOC 450. Mutually Exclusive: Credit cannot be earned for BIOC 550 and BIOC 450.

BIOC 551 - MOLECULAR BIOPHYSICS
Short Title: MOLECULAR BIOPHYSICS I
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 301 or BIOC 352
Description: Focus on principles of common biophysical methods used for study of conformations and dynamics of biological macromolecules and assemblies. Topics cover spectroscopic methods (absorption, fluorescence, circular dichroism, epr, NMR), transport processes, sedimentation, calorimetry, mass spectrometry, crystallography, cryoelectron microscopy, atomic force microscopy, ligand-protein interactions, protein folding, single molecule detection, computer simulations, functional genomics and laboratory evolution. Biological examples will be used to demonstrate merits and complementarity in each of the biophysical methods. Graduate/Undergraduate Equivalency: BIOC 481.

BIOC 552 - STRUCTURAL BIOLOGY
Short Title: STRUCTURAL BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (PHYS 101 or PHYS 125) and (PHYS 102 or PHYS 126)
Description: Structural biology plays an important role in defining atomic structures of biomolecules and understanding relationships between structure, dynamics and function in living systems. This course will give an introduction to techniques of determining biomolecular structures, X-ray crystallography, NMR, and cryoelectron microscopy and discuss striking examples of the power of structural biology. Graduate/Undergraduate Equivalency: BIOC 482. Recommended prerequisite(s): BIOC 301. Mutually Exclusive: Credit cannot be earned for BIOC 552 and BIOC 482.

BIOC 555 - COMPUTATIONAL SYNTHETIC BIOLOGY
Short Title: COMP SYNTH BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mathematical and computational techniques of cell biology and synthetic biology. Topics include deriving and implementing mathematical and computational models of cellular growth and division, evolution, gene regulation, synthetic gene circuits, enzymatic processing, and stochastic processes in biology. Graduate/Undergraduate Equivalency: BIOC 455.

BIOC 558 - ADVANCES IN NUCLEASE-MEDIATED GENOME ENGINEERING
Short Title: ADV NUCLEASE-MEDIATED GEN ENG
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides a comprehensive understanding of advances in the nuclease-mediated genome engineering field. Past and current stages of genome-editing technologies, the fundamental mechanisms of different classes of genome-editing nucleases, and cutting-edge strategies for engineering novel genome-editing agents and their applications in synthetic biology and therapeutics. Cross-list: CHBE 558.

BIOC 560 - CANCER BIOLOGY
Short Title: CANCER BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Provides an integrated lecture series summarizing current knowledge in cancer biology and integrating current literature with basic concepts. Topics include: statistics of incidence/survival, types of cancer, pathology, the process of carcinogenesis and sources of carcinogens, genetic and epigenetic mechanisms and consequences, cancer progression, metastasis and current treatment options. Students will learn to use online databases to develop independent strategies for analyzing datasets. There will be several writing assignments and in-class oral presentations of research articles. This course requires instructor permission to enroll. Please fill out the special registration form from https://registrar.rice.edu/student/special_registration. All requests will be reviewed and you will be notified of an enrollment decision. Instructor Permission Required. Cross-list: BIOE 560. Graduate/Undergraduate Equivalency: BIOC 460. Mutually Exclusive: Credit cannot be earned for BIOC 560 and BIOC 460.
BIOC 570 - COMPUTATION WITH BIOLOGICAL DATA
Short Title: COMPUTATION WITH BIOL DATA
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will teach programming and analysis techniques essential for modern research in the biological sciences. Students will learn the basics of programming in the MATLAB or Python scripting languages and applications to analyzing biological data. There will be a particular focus on quantitative image and sequence analysis. Instructor Permission Required. Graduate/Undergraduate Equivalency: BIOC 470. Mutually Exclusive: Credit cannot be earned for BIOC 570 and BIOC 470.

BIOC 571 - BIOINFORMATICS: SEQUENCE ANALYSIS
Short Title: BIOINFORMATICS: SEQUENCE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Pairwise and multiple sequence alignment, Markov chains and HMMs, Phylogenetic reconstruction, Haplotype inference, Computational models of RNA structure, Gene finding, Genome rearrangements, and comparative genomics. Cross-list: COMP 571.
Course URL: www.cs.rice.edu/~nakhleh/COMP571/

BIOC 572 - BIOINFORMATICS: NETWORK ANALYSIS
Short Title: BIOINFORMATICS: NETWORKS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers computational aspects of biological network analysis, a major theme in the area of systems biology. The course addresses protein-protein interaction networks, signaling, and metabolic networks, and covers issues related to reconstructing, analyzing, and integrating various types of networks. Cross-list: BIOE 564, COMP 572.
Course URL: www.cs.rice.edu/~nakhleh/COMP572/

BIOC 573 - IMMUNOLOGY
Short Title: IMMUNOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Cellular and molecular basis of innate and adaptive immune function in mammals. Graduate students will be required to do all the usual assignments associated with the undergraduate section of the course but in addition will write a substantial paper on some aspects of the field that is relevant to their planned careers in biomedical research/biotechnology. Graduate/Undergraduate Equivalency: BIOC 372. Recommended Prerequisite(s): BIOC 301 AND BIOC 341. Mutually Exclusive: Credit cannot be earned for BIOC 573 and BIOC 372.

BIOC 575 - INTRODUCTION TO RESEARCH
Short Title: INTRODUCTION TO RESEARCH
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction of first-year graduate students to the research programs and laboratories of individual faculty members. Open only to BCB graduate students.

BIOC 576 - FOUNDATIONS OF BIOTECHNOLOGY
Short Title: FOUNDATIONS OF BIOTECHNOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level introduction to a wide range of research methods in biosciences and bioengineering. Individual faculty members from the Biosciences and Bioengineering will each present practices and techniques for their areas of expertise. A web-based methods database will be constructed, with student involvement, from the library of lectures. Cross-list: BIOE 576.

BIOC 577 - FOUNDATIONS OF BIOTECHNOLOGY
Short Title: FOUNDATIONS OF BIOTECHNOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level introduction to a wide range of research methods in biosciences and bioengineering. Individual faculty members from the biosciences and bioengineering will each present practices and techniques for their areas of expertise. A web-based methods database will be constructed, with student involvement, from the library of lectures. Cross-list: BIOE 577.

BIOC 578 - BIOTECHNOLOGY PRACTICUM
Short Title: BIOTECHNOLOGY PRACTICUM
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is part of the NIH Biotechnology Training Program and is limited to program participants. Students will receive exposure and training in cutting edge concepts and technologies. Cross-list: BIOE 578.
BIOC 580 - PROTEIN ENGINEERING
Short Title: PROTEIN ENGINEERING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Manipulation of gene expression in prokaryotic and eukaryotic cells. Rational design and directed solutions for cell and protein engineering. Selection and screening technologies and process optimization. Synthetic Biology: engineering and application of gene circuits. Molecular biotechnology applications: Diagnosis, Therapeutics and Vaccines. Cross-list: BIOE 580, CHBE 580. Recommended Prerequisite(s): CHBE 310/510 or equivalent is highly recommended.

BIOC 581 - GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY
Short Title: GRAD SEM BIOCHEM & CELL BIOL
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A discussion of selected research topics. Required of all Biochemistry and Cell Biology graduate students. Open only to BCB graduate students. Repeatable for Credit.

BIOC 582 - GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY
Short Title: GRAD SEM/BIOCHEM & CELL BIOL
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A discussion of selected research topics. Required of all Biochemistry and Cell Biology graduate students. Open only to BCB graduate students. Repeatable for Credit.

BIOC 583 - MOLECULAR INTERACTIONS
Short Title: MOLECULAR INTERACTIONS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to students with a major in Biochemistry and Cell Biology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: First of two integrated classes taken by first-year graduate students in BCB (to be followed by BIOC 588, Cellular Interactions). Covers advanced topics in genetics, cell biology, and developmental biology, focusing on cellular, tissue, and organismal structure and function with an emphasis on fundamental principles, research methodologies, and critical analysis of primary literature. Enrollment limited to BCB graduate students.

BIOC 585 - FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE
Short Title: FUNDAMENTALS OF NEUROSCIENCE
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Cellular, molecular, and integrative mechanisms of neural function, including membrane and axon physiology, synaptic transmission and plasticity, sensory transduction and processing. Graduate/Undergraduate Equivalency: BIOC 385. Recommended Prerequisite(s): BIOC 201. Mutually Exclusive: Credit cannot be earned for BIOC 585 and BIOC 385.

BIOC 587 - RESEARCH DESIGN, PROPOSAL WRITING, AND PROFESSIONAL DEVELOPMENT
Short Title: PROPOSAL WRITING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Preparation for professional scientific communication with an emphasis on writing research proposals, describing work in progress, and presenting data in context of research goals.

BIOC 588 - CELLULAR INTERACTIONS
Short Title: CELLULAR INTERACTIONS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to students with a major in Biochemistry and Cell Biology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Second of two integrated classes taken by first-year graduate students in BCB (following BIOC 583, Molecular Interactions). Covers advanced topics in genetics, cell biology, and developmental biology, focusing on cellular, tissue, and organismal structure and function with an emphasis on fundamental principles, research methodologies, and critical analysis of primary literature.
**BIOC 589 - COMPUTATIONAL MOLECULAR BIOENGINEERING/BIOPHYSICS**

**Short Title:** COMP MOLECULAR BIOENG/BIOPHYS

**Department:** Biosciences

**Grade Mode:** Standard Letter

**Course Type:** Lecture

**Credit Hours:** 3

**Restrictions:** Enrollment is limited to Graduate level students.

**Course Level:** Graduate

**Description:** This is a course designed for students in computationally-oriented biomedical and bioengineering majors to introduce the principles and methods used for the simulations and modeling of macromolecules of biological interest. Protein conformation and dynamics are emphasized. Empirical energy function and molecular dynamics calculations, as well as other approaches, are described. Specific biological problems are discussed to illustrate the methodology. Cross-list: BIOE 589. Recommended Prerequisite(s): MATH 212, BIOC 301, BIOE 332.

**BIOC 590 - SPECIAL TOPICS IN BIOCHEMISTRY AND CELL BIOLOGY**

**Short Title:** SPEC TOPCS BIOCHEM&CELL BIO

**Department:** Biosciences

**Grade Mode:** Standard Letter

**Course Type:** Seminar

**Credit Hour:** 1

**Restrictions:** Enrollment is limited to Graduate level students.

**Course Level:** Graduate

**Description:** Development of specific topic areas at the graduate level. Instructor Permission Required.

**BIOC 592 - TOPICS IN QUANTITATIVE BIOLOGY AND BIOMEDICAL INFORMATICS (KECK SEMINAR)**

**Short Title:** TOPICS QUANT BIO & BIOMED INFO

**Department:** Biosciences

**Grade Mode:** Satisfactory/Unsatisfactory

**Course Type:** Seminar

**Credit Hour:** 1

**Restrictions:** Enrollment is limited to Graduate level students.

**Course Level:** Graduate

**Description:** A discussion of selected research topics in quantitative biology and biomedical informatics. Cross-list: KECK 592. Repeatable for Credit.

**BIOC 593 - CURRENT TOPICS IN PLANT BIOLOGY**

**Short Title:** TOPICS IN PLANT BIOLOGY

**Department:** Biosciences

**Grade Mode:** Satisfactory/Unsatisfactory

**Course Type:** Seminar

**Credit Hour:** 1

**Restrictions:** Enrollment is limited to students with a major in Biochemistry and Cell Biology. Enrollment is limited to Graduate level students.

**Course Level:** Graduate

**Description:** Discussion of selected research topics in current plant biology literature. Repeatable for Credit.

**BIOC 599 - GRADUATE TEACHING IN BIOCHEMISTRY AND CELL BIOLOGY**

**Short Title:** GRADUATE TEACHING IN BIOCHEM

**Department:** Biosciences

**Grade Mode:** Satisfactory/Unsatisfactory

**Course Type:** Independent Study

**Credit Hour:** 1

**Restrictions:** Enrollment is limited to students with a major in Biochemistry and Cell Biology. Enrollment is limited to Graduate level students.

**Course Level:** Graduate

**Description:** Supervised instruction in teaching biochemistry and cell biology. Repeatable for Credit.

**BIOC 611 - RESEARCH SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY**

**Short Title:** RESEARCH SEMINAR

**Department:** Biosciences

**Grade Mode:** Satisfactory/Unsatisfactory

**Course Type:** Seminar

**Credit Hour:** 1

**Restrictions:** Enrollment is limited to Graduate level students.

**Course Level:** Graduate

**Description:** Discussion of individual research or current topics in particular areas. Intended for students conducting research projects in the lab of the instructor. Repeatable for Credit.

**BIOC 643 - CELL MECHANICS, MECHANOTRANSDUCTION AND THE CELL MICROENVIRONMENT**

**Short Title:** MECHANOTRANSDUCTION

**Department:** Biosciences

**Grade Mode:** Standard Letter

**Course Type:** Lecture

**Credit Hours:** 3

**Restrictions:** Enrollment is limited to Graduate level students.

**Course Level:** Graduate

**Description:** Mechanotransduction is a fundamental process essential for living systems and plays a fundamental role in cell signaling, cancer metastasis and stem cell differentiation. Additionally, fundamental biological processes such as endocytosis cell fusion and cell migration are driven by a coordinated interplay of molecular interactions that drive membrane deformation. This course will survey the current understanding of mechanotransduction and the mechanical properties of cells and their microenvironment, including membrane and cytoskeletal mechanics. Experimental approaches for measuring and manipulating the material properties of cells and their environment; including optical, electrical and magnetic techniques will be covered. A variety of application will be covered, including manipulation in engineering of mechanotransduction pathways to drive cell migration and stem cell differentiation. Instructor Permission Required. Cross-list: BioE 643, PHYS 643.

**BIOC 701 - GRADUATE LAB RESEARCH I**

**Short Title:** GRADUATE LAB RESEARCH I

**Department:** Biosciences

**Grade Mode:** Satisfactory/Unsatisfactory

**Course Type:** Research

**Credit Hours:** 2-4

**Restrictions:** Enrollment is limited to Graduate level students.

**Course Level:** Graduate

**Description:** Graduate research in Biochemistry and Cell Biology. Designed for short term laboratory projects for first year graduate students. Recommended prerequisite(s): Graduate standing in Biochemistry and Cell Biology. Repeatable for Credit.
BIOC 702 - GRADUATE LAB RESEARCH II
Short Title: GRADUATE LAB RESEARCH II
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 2-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research in Biochemistry and Cell Biology. Designed for short term laboratory projects for first year graduate students. Recommended prerequisite(s): Graduate standing in Biochemistry and Cell Biology. Repeatable for Credit.

BIOC 800 - BIOCHEMISTRY & CELL BIOLOGY GRADUATE RESEARCH
Short Title: BCB GRADUATE RESEARCH
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to students with a major in Biochemistry and Cell Biology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

Bioengineering (BIOE)

BIOE 202 - CAREERS IN BIOENGINEERING
Short Title: CAREERS IN BIOENGINEERING
Department: Bioengineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This seminar is suitable for freshman, sophomores, and non-majors. A series of guest lectures will introduce students to a variety of career options in bioengineering. Students will participate in at least one field trip to an industry partner or hospital to learn more about careers in bioengineering.

BIOE 252 - BIOENGINEERING FUNDAMENTALS
Short Title: BIOENGINEERING FUNDAMENTALS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): MATH 101 and MATH 102 and MATH 211 (may be taken concurrently) and CHEM 122 and CAAM 210 and (PHYS 101 or PHYS 125 or PHYS 111) and (PHYS 102 or PHYS 126 or PHYS 112)
Description: Introduction to material, energy, charge, and momentum balances in biological systems. Steady state and transient conservation equations for mass, energy, charge and momentum will be derived and applied using basic mathematical principles, physical laws, stoichiometry, and thermodynamic properties. Problem based learning groups will solve open-ended problems. Required for students intending to major in bioengineering. MATH 211 is a concurrent prerequisite and may be taken the same semester.

BIOE 307 - SYSTEMS BIOLOGY OF BLOOD VESSELS
Short Title: SYS BIOLOGY OF BLOOD VESSELS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252
Description: How blood vessels respond to hypoxia is a process critical to the progression of many diseases and conditions including cardiovascular disease, cancer, cerebrovascular disease, diabetes, obesity and arthritis. Physiological processes such as exercise, aging, and wound healing also depend on hypoxia-induced microvessel changes. This course introduces engineering concepts of hypoxic response, angiogenesis, and capillary remodeling - from the effects at the intracellular level to the whole body. Topics covered include computational systems biology modeling of hypoxia and angiogenesis, the use of angiogenesis in tissue engineering and regenerative medicine, imaging of blood vessel dynamics, capillaries of the brain, and the design of new blood vessels. Graduate/Undergraduate Equivalency: BIOE 507. Mutually Exclusive: Credit cannot be earned for BIOE 307 and BIOE 507.

BIOE 320 - SYSTEMS PHYSIOLOGY LAB MODULE
Short Title: SYSTEMS PHYSIOLOGY LAB MODULE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and (BIOS 332 or BIOE 322 (may be taken concurrently) or BIOC 332 (may be taken concurrently))
Description: Exploration of physiologic systems through measurement of biologic signals. EEG, ECG, EMG pulmonary function tests, etc. are performed and analyzed. Students will explore physiologic concepts through computer simulations, data collection, and analysis. Enrollment in or completion of BIOE 322/BIOC 332 is expected and maybe taken the same semester as BIOE 320. For students intending to major in Bioengineering. Instructor Permission Required.
BIO 321 - CELLULAR ENGINEERING
Short Title: CELLULAR ENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252
Description: Introduction to engineering principles and modeling regulation and circuitry at the cellular level. Topics include genetic metabolic networks and cell surface interactions.

BIOE 322 - FUNDAMENTALS OF SYSTEMS PHYSIOLOGY
Short Title: FUND OF SYSTEMS PHYSIOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and MATH 211
Description: This course will teach the fundamentals of human physiology from an engineering perspective, with specific focus on the nervous, cardiovascular, respiratory and urinary systems. Lectures, assignments and exams will be quantitative and will introduce engineering principles, such as conservation of mass and energy, controls and system analysis, thermodynamics and mass transport, and apply them to the study of physiologic systems. This course is limited to undergraduates. Students may receive credit for only one of BIOE 302, BIOE 322, and BIOE 332Mutually Exclusive: Credit cannot be earned for BIOE 322 and BIOE 332/BIOE 302.

BIOE 330 - BIOREACTION ENGINEERING
Short Title: BIOREACTION ENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and (BIOC 201 or BIOS 201)
Description: Application of engineering principles to biological processes. Mathematical and experimental techniques for quantitative descriptions of enzyme kinetics, metabolic and genetic networks, cell growth kinetics, bioreactor design and operation.

BIOE 332 - BIOENGINEERING THERMODYNAMICS
Short Title: BIOENGINEERING THERMODYNAMICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and MATH 212
Description: This course provides a mathematically rigorous and quantitative coverage of the fundamentals of thermodynamics with applications drawn from contemporary bioengineering problems. Fundamental topics will include the Zeroth, First and Second Law, Entropy Inequality, Gibbs and Helmholtz Free Energies, The Third Law, Maxwell Relations, chemical potential, equilibrium, phase transitions, solution thermodynamics, protein-ligand binding and statistical mechanics. Advanced topics will include transcription factor-DNA binding, nucleic acid hybridization, translation initiation and genetic circuits. The course will cover the role that thermodynamics plays in molecular engineering and synthetic biology.

BIOE 342 - LABORATORY IN TISSUE CULTURE
Short Title: LABORATORY IN TISSUE CULTURE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 440 or STAT 440 or BIOC 311 or BIOS 311
Description: Introduction to tissue culture techniques, including cell passage, cell viability, and cell attachment and proliferation assays. Students complete quantitative analysis of their data. Engineering design and applications are featured in graded work. Sections 1 and 2 are taught during the first half of the semester. Sections 3 and 4 are taught during the second half of the semester. Students may be required to attend lab on a university holiday. Instructor Permission Required. Cross-list: BIOC 320.

BIOE 348 - MOLECULAR TECHNIQUES IN BIOENGINEERING
Short Title: MOLECULAR TECHNIQUES IN BIOE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 341 and (BIOE 342 (may be taken concurrently) or BIOC 320 (may be taken concurrently))
Description: Introduction to the fundamental physical principles of light interaction with matter, separation (by charge, size, confirmation) and detection techniques utilized in the field of bioengineering. These include absorbance and fluorescence spectroscopy, light and fluorescence microscopy, flow cytometry, electrophoresis, PCR, Blotting, and ELISA. BIOE 342/BIOC 320 may be taken concurrently with BIOE 348.
BIOE 360 - APPROPRIATE DESIGN FOR GLOBAL HEALTH
Short Title: APPRO DESIGN FOR GLOBAL HEALTH
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): GLHT 201
Description: Seminar-style introductory design course covering epidemiology, pathophysiology, health systems, health economics, medical ethics, humanitarian emergencies, scientific and engineering design methods, and appropriate health technology case studies. To register, you must be enrolled in the GLHT minor and submit a 250 statement to beyondtraditionalborders@rice.edu by Monday of preregistration. The minor and course prerequisite is waived for students majoring in Bioengineering. Instructor Permission Required. Cross-list: GLHT 360.

BIOE 361 - METABOLIC ENGINEERING FOR GLOBAL HEALTH
ENVIRONMENTS
Short Title: METAB ENG GLOBAL HEALTH ENVMNT
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (BIOE 362 or GLHT 362) and (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and MATH 102
Description: Importance of nutritional and pharmaceutical compounds, impact of cost of compounds on global health; Overview of biochemical pathways; metabolite analysis; Genetic engineering and molecular biology tools for ME; Pharmaceuticals and drug discovery approaches (antibiotics, antivirals; anti-parasite compounds); anti-diarrhea treatments; vaccines. Cross-list: BIOC 361, GLHT 361.

Course URL: www.btb.rice.edu

BIOE 365 - SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD
Short Title: SUST WTR PURIF FOR DEV WORLD
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is an overview of sustainable strategies for safe water supply in off-the-grid, low-income regions. Topics covered include water quality and treatment, sustainability and WASH (water, sanitation and hygiene). A major element of the course is a project to solve a water-related issue in a real-world context. Cross-list: CEVE 314, GLHT 314. Repeatable for Credit.

BIOE 370 - BIOMATERIALS
Short Title: BIOMATERIALS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and CHEM 211 and (MECH 211 (may be taken concurrently) or CEVE 211 (may be taken concurrently))
Description: This course will introduce both basic materials science and biological concepts with an emphasis on application of basic quantitative engineering principles to understanding the interactions between materials and biological systems. Topics covered include chemical structure of biomaterials, physical, mechanical, and surface properties of biomaterials, biomaterial degradation, and biomaterial processing. Additional topics include protein and cell interactions with biomaterials, biomaterial implantation, and acute inflammation, wound healing and the presence of biomaterials immune responses to biomaterials, biomaterials, immune responses to biomaterials, biomaterials and thrombosis, as well as infection, tumorigenesis, and calcification of biomaterials that can collectively apply to design of biomaterials for myriad applications. MECH 211 or CEVE 211 may be taken concurrently with BIOE 370.

BIOE 372 - BIOMECHANICS
Short Title: BIOMECHANICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and MATH 212 and (MECH 211 or CEVE 211)
Description: This course introduces the fundamental principles of mechanics applied to the analysis and characterization of biological systems. Topics covered include normal and shear stresses, normal and shear strains, mechanical properties of materials, load, deformation, elasticity and elastoplastic behavior. Quantitative analysis of statically determinate and indeterminate structures subjected to tension, compression, torsion and bending will be covered. Additionally, aspects of blood rheology, viscoelasticity, and musculoskeletal mechanics will be addressed.

BIOE 380 - INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY
Short Title: INTRO TO NEUROENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and (PHYS 102 or PHYS 112 or PHYS 126 or PHYS 142)
Description: This course will serve as an introduction to quantitative modeling of neural activity and the methods used to stimulate and record brain activity. Cross-list: ELEC 380, NEUR 383. Mutually Exclusive: Credit cannot be earned for BIOE 380 and BIOE 480/BIOE 590/ELEC 480/ELEC 580.
BIOE 381 - FUNDAMENTALS OF NERVE AND MUSCLE
ELECTROPHYSIOLOGY
Short Title: FUND OF ELECTROPHYSIOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to cellular electrophysiology. Includes development of whole-cell models for neurons and muscle (cardiac and skeletal muscle) cells, based on ion channel currents obtained from whole-cell voltage-clamp experiments. Material balance equations are developed for various ions and chemical signaling agents (e.g., second messengers). Numerical methods are introduced for solving the ordinary and partial differential equations associated with these models. Several types of cell models are discussed ranging from neurons and muscle cells to sensory cells of mechanoreceptors, auditory hair cells and photoreceptor cells. Volume conductor boundary-value problems frequently encountered in electrophysiology are posed. Course provides a cellular basis for the interpretation of macroscopic bioelectric signals such as the electrocardiogram (ECG), electromyogram (EMG), electroretinogram (ERG) and electroencephalogram. Cross-list: ELEC 381.

BIOE 383 - BIOMEDICAL ENGINEERING INSTRUMENTATION
Short Title: BIOMED ENGINEER INSTRUMENTATION
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and ELEC 243 and (BIOC 201 or BIOS 201) and (PHYS 102 or PHYS 126 or PHYS 112)
Corequisite: BIOE 385
Description: This is an introductory level course on fundamentals of biomedical engineering instrumentation and analysis. Topics include measurement principles; fundamental concepts in electronics including circuit analysis, data acquisition, amplifiers, filters and A/D converters; Fourier analysis; temperature, pressure, and flow measurements in biological systems.

BIOE 385 - BIOMEDICAL INSTRUMENTATION LAB
Short Title: BIOMEDICAL INSTRUMENTATION LAB
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Corequisite: BIOE 383
Description: Students will gain hands on experience with building biomedical instrumentation circuits and systems. Students will learn the basics of lab view programming and signal analysis. Instructor Permission Required.

BIOE 391 - NUMERICAL METHODS
Short Title: NUMERICAL METHODS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 and CAAM 210 and MATH 211 and MATH 212 (may be taken concurrently)
Description: Introduction to numerical approximation techniques with bioengineering applications. Topics include error propagation, Taylor’s Series expansions curre fitting, roots of equations, optimization numerical differentiation and integration, ordinary differential equations, and partial differential equations. Matlab and other software will be used for solving equations. Math 212 may be taken concurrently with BIOE 391.

BIOE 392 - NEEDS FINDING AND DEVELOPMENT IN BIOENGINEERING
Short Title: NEEDS FINDING & DEV IN BIOE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students in this course will learn and develop the engineering skill of needs finding in the field of bioengineering focused on designing for disabilities. Students will work in groups with patients with disabilities to identify daily needs and develop design criteria to meet those needs including preliminary prototype development. Instructor Permission Required. Cross-list: GLHT 392.

BIOE 400 - ENGINEERING UNDERGRADUATE RESEARCH
Short Title: ENGINEERING UG RESEARCH
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent investigation of a specific topic or problem in modern bioengineering research under the direction of a selected faculty member. Research project has a strong engineering component. Repeatable for Credit.

BIOE 401 - UNDERGRADUATE RESEARCH
Short Title: UNDERGRADUATE RESEARCH
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent investigation of a specific topic or problem in modern bioengineering research under the direction of a selected faculty member. Repeatable for Credit.
BIOE 403 - ADVANCES IN BIONANOTECHNOLOGY
Short Title: ADVANCES IN BIONANOTECHNOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 370 (may be taken concurrently)
Description: This course covers nanotechnology applications in bioengineering. Students learn about cutting edge research that uses the tools of nanotechnology to tackle medical problems. Topics include bionanotechnology-related research for diagnosis, detection, and treatment of disease; cell targeting; drug design and delivery; gene therapy; prostheses and implants; and tissue regeneration. (REGISTRATION NOTE: The prerequisite BIOE 370 can also be taken concurrently with BIOE 403)

BIOE 408 - SYNTHETIC BIOLOGY
Short Title: SYNTHETIC BIOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 332
Description: Design of biology at scales from molecules to multicellular organisms will be covered by lecture, primary literature, and student presentations. Students will execute a team-based design challenge. Graduate/Undergraduate Equivalency: BIOE 508. Mutually Exclusive: Credit cannot be earned for BIOE 408 and BIOE 508.

BIOE 419 - INNOVATION LAB FOR MOBILE HEALTH
Short Title: INNOVATION LAB - MOBILE HEALTH
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will be an innovation lab for mobile health products. The students will organize themselves in groups with complementary skills and work on a single project for the whole semester. The aim will be to develop a product prototype which can then be demonstrated to both medical practitioners and potential investors. For successful projects with an operational prototype, the next steps could be applying for OWLspark (Rice accelerator program) or crowd sourcing (like Kickstarter) and/or work in Scalable Health Labs over summer. ELEC Juniors can also continue the project outcomes as a starting point for their senior design. Cross-list: ELEC 419. Graduate/Undergraduate Equivalency: BIOE 534. Mutually Exclusive: Credit cannot be earned for BIOE 419 and BIOE 534. Repeatable for Credit.
Course URL: www.ece.rice.edu/~ashu/ELEC419.html

BIOE 420 - TRANSPORT PHENOMENA IN BIOENGINEERING
Short Title: TRANSPORT PHENOMENA IN BIOE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and MATH 212 and (BIOE 332 or CHBE 411) and BIOE 391
Description: BIOE/CHBE 420 covers transport phenomena as applied to biological systems and biomedical devices. Conservation of momentum and mass equations are first derived and then used to analyze transport of momentum and mass in biology, physiology, and in biomedical devices. This course is designed for senior bioengineering students. Cross-list: CHBE 420.

BIOE 421 - MICROCONTROLLER APPLICATIONS
Short Title: MICROCONTROLLER APPLICATIONS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 385
Description: This class covers the usage of microcontrollers in a laboratory setting. We will start with basic electronics and, in the lab component, design, program, and build systems utilizing widely-available microcontrollers (e.g. Arduino, Raspberry Pi). Units in motion control, sensors (light, temperature, humidity, UV/Vis absorbance), and actuation (pneumatics, gears, and motors) will provide students with functional knowledge to design and prototype their own experimental systems for laboratory-scale automation. Instructor Permission Required. Graduate/Undergraduate Equivalency: BIOE 521. Mutually Exclusive: Credit cannot be earned for BIOE 421 and BIOE 521.

BIOE 422 - GENE THERAPY
Short Title: GENE THERAPY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 211 and (BIOS 201 or BIOC 201)
Description: This course will examine the gene therapy field, with topics ranging from gene delivery to vectors to ethics of gene therapy. The design principles for engineering improved gene delivery vectors, both viral and nonviral, will be discussed. The course will culminate in a design project focused on engineering a gene delivery device for a specific therapeutic application. Graduate/Undergraduate Equivalency: BIOE 522. Mutually Exclusive: Credit cannot be earned for BIOE 422 and BIOE 522.
BIOE 431 - BIOMATERIALS APPLICATIONS
Short Title: BIOMATERIALS APPLICATIONS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (CHEM 211 or CHEM 251) and BIOE 370
Description: Emphasis will be placed on issues regarding the design, synthesis, evaluation, regulation and clinical translation of biomaterials for specific applications. An overview of significant biomaterials engineering applications will be given, including topics such as ophthalmologic, orthopedic, cardiovascular and drug delivery applications, with attention to specific case studies. Regulatory issues concerning biomaterial will also be addressed. Assignments for this class will include frequent readings of the scientific literature with occasional homework questions, one midterm and cumulative final, a group project, a seminar report and individual presentations. Graduate/Undergraduate Equivalency: BIOE 631. Mutually Exclusive: Credit cannot be earned for BIOE 431 and BIOE 631.

BIOE 439 - APPLIED STATISTICS FOR BIOENGINEERING AND BIOTECHNOLOGY
Short Title: APPLIED STAT FOR BIOE BIOTECH
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 (may be taken concurrently)
Description: Course will cover fundamentals of probability and statistics with emphasis on application to biomedical problems and experimental design. Recommended for students pursuing careers in medicine or biotechnology. BIOE 439 and BIOE 440/STAT 440 cannot both be taken for credit. Prerequisite BIOE 252 may be taken concurrently. Graduate/Undergraduate Equivalency: BIOE 539. Mutually Exclusive: Credit cannot be earned for BIOE 439 and BIOE 440/BIOTECH 539/STAT 440.

BIOE 440 - STATISTICS FOR BIOENGINEERING
Short Title: STATISTICS FOR BIOENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 (may be taken concurrently)
Description: Course covers application of statistics to bioengineering. Topics include descriptive statistics, estimation, hypothesis testing, ANOVA, and regression. Offered first five weeks of the semester. BIOE 252 may be taken concurrently with BIOE 440. BIOE 440/STAT 440 and BIOE 439 cannot both be taken for credit. Cross-list: STAT 440. Mutually Exclusive: Credit cannot be earned for BIOE 440 and BIOE 439.

BIOE 442 - TISSUE ENGINEERING LAB MODULE
Short Title: TISSUE ENGINEERING LAB MODULE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (BIOE 342 or BIOE 320 or STAT 320) and (BIOE 440 or STAT 440)
Description: Students design and conduct a series of tests to synthesize PLLA, characterize PLLA and PLGA, monitor PLLA and PLGA degradation, and assess the viability, attachment, and proliferation of HDF cells on PLLA films. The experiments include many of the basic types of experiments that would be required to do a preliminary investigation of a tissue engineered product. Sections 1 and 2 will be taught during the first half of the semester and sections 3 and 4 will be taught during the second half of the semester. In addition sections 1 and 3 will need to come into lab on 2-3 Fridays and sections 2 and 4 will need to come into lab on 2-3 Saturdays. Section sign-up is required by the instructor in Keck 108 during preregistration week.

BIOE 443 - BIOPROCESSING LAB MODULE
Short Title: BIOPROCESSING LAB MODULE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (BIOE 342 or BIOE 320 or STAT 320) and (BIOE 440 or STAT 440)
Description: Students design and conduct a series of experiments to observe the growth of E. coli under different conditions, including agar plates, shake flasks, and a small-scale bioreactor. The E. coli has been transformed with a plasmid that produces beta-galactosidase. Engineering applications are emphasized. Some work "off hours" (early evening) is required. Sections 1 and 2 are taught in the first half of the semester and Sections 3 and 4 are taught in the second half of the semester. Section sign-up is required by the instructor in Keck 108 during preregistration week.

BIOE 444 - MECHANICAL TESTING LAB MODULE
Short Title: MECHANICAL TESTING LAB MODULE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOPROCESSING LAB MODULE (BIOE 443 or STAT 440)
Description: Students design and conduct a series of tests to elucidate the mechanical and material properties of animal tissue using the Instron. BIOE 372 may be taken concurrently with BIOE 444.
BIOE 445 - ADVANCED INSTRUMENTATION LAB MODULE
Short Title: ADVANCED INSTRUMENTATION LAB MODULE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 383 and BIOE 385 and (BIOE 440 or STAT 440)
Description: Students design and build a biomedical instrumentation device. Sign up is required in Keck 108 during pre-registration week.

BIOE 446 - COMPUTATIONAL MODELING LAB
Short Title: COMPUTATIONAL MODELING LAB
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 391
Description: This course offers a hands-on application to systems biology modeling. Students will learn a range of modeling methods, and apply them directly in class to current bioengineering problems. Weekly tutorials will be offered, and a laptop is required (or can be loaned). Topics covered include in silico drug delivery and design studies, integrating multiscale models with high-resolution imaging, experimental design via computer modeling, and patient-specific simulations. Modeling methods include protein-protein interaction networks, biocircuits, stochastic differential equations, agent-based modeling, computational fluid dynamics, and finite element modeling.

BIOE 447 - DIGITAL DESIGN & VISUALIZATION
Short Title: DIG DES & VIS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 391
Description: Students will acquire basic to intermediate-level digital design proficiency for bioengineering-related applications. Programs for the design of patient-specific therapies including image reconstruction, computer aided design, and parameter modeling will be used to create models. Section sign up is required during pre-registration week.

BIOE 449 - TROUBLESHOOTING WORKSHOP FOR CLINICALLY-RELEVANT BIOMEDICAL EQUIPMENT
Short Title: MED BIOENGINEERING WORKSHOP
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 243
Description: Bioengineering course in the troubleshooting, repair, and maintenance of standard biomedical equipment used in hospitals in the developed and developing worlds. Cross-list: GLHT 449. Repeatable for Credit.

BIOE 451 - BIOENGINEERING DESIGN I
Short Title: BIOENGINEERING DESIGN I
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 383 and BIOE 385 and (BIOE 332 or BIOE 372)
Description: Senior Bioengineering students will design devices in biotechnology or biomedicine. This project-based course covers systematic design processes, engineering economics, FDA requirements, safety, engineering ethics, design failures, research design, intellectual property rights, environmental impact, business planning and marketing. Students will be expected to compile documentation and present orally progress of their teams. BIOE 451 and 452 must be taken the same academic year. Instructor Permission Required.

BIOE 452 - BIOENGINEERING DESIGN II
Short Title: BIOENGINEERING DESIGN II
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 451
Description: Senior Bioengineering students will design devices in biotechnology or biomedicine. This project-based course covers systematic design processes, engineering economics, FDA requirements, safety, engineering ethics, design failures, research design, intellectual property rights, environmental impact, business planning and marketing. Students will be expected to compile documentation and present orally progress of their teams. BIOE 451 and 452 must be taken the same academic year. Instructor Permission Required.

BIOE 454 - COMPUTATIONAL FLUID MECHANICS
Short Title: COMPUTATIONAL FLUID MECHANICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 371 (may be taken concurrently) or CEVE 363 (may be taken concurrently) or CHBE 401 (may be taken concurrently)
Description: Fundamental concepts of finite element methods in fluid mechanics, including spatial discretization and numerical integration in multidimensions, time-integration, and solution of nonlinear ordinary differential equation systems. Advanced numerical stabilization techniques designed for fluid mechanics problems. Strategies for solution of complex, real-world problems. Topics in large-scale computing, parallel processing, and visualization. Prerequisites may be taken concurrently. Cross-list: CEVE 454, MECH 454. Graduate/Undergraduate Equivalency: BIOE 554. Mutually Exclusive: Credit cannot be earned for BIOE 454 and BIOE 554.
BIOE 460 - BIOCHEMICAL ENGINEERING
Short Title: BIOCHEMICAL ENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252
Description: Design, operation, and analysis of processes in the biochemical industries. Topics include enzyme kinetics, cell growth kinetics, energetics, recombinant DNA technology, microbial, tissue and plant cell cultures, bioreactor design and operation, and downstream processing. Cross-list: CHBE 460.

BIOE 464 - EXTRACELLULAR MATRIX
Short Title: EXTRACELLULAR MATRIX
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOS 341 or BIOC 341
Description: This course will address the biology, organization, mechanics, and turnover of extracellular matrix. There will be an emphasis on cells and cell-matrix interactions, matrix distribution within and design of connective tissues and organs techniques for quantitative analysis of matrix, techniques for measurement and modeling of connective tissue biomechanics, changes with growth and aging and tissue/matrix degradation. Cross-list: BIO 464. Graduate/Undergraduate Equivalency: BIOE 524. Recommended Prerequisite(s): BIOE 372, BIOC/ BIOE 341. Mutually Exclusive: Credit cannot be earned for BIOE 464 and BIOE 524.

BIOE 470 - FROM SEQUENCE TO STRUCTURE: AN INTRODUCTION TO COMPUTATIONAL BIOLOGY
Short Title: FROM SEQUENCE TO STRUCTURE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Contemporary introduction to problems in computational biology spanning sequence to structure. The course has three modules: the first introduces students to the design and statistical analysis of gene expression studies; the second covers statistical machine learning techniques for understanding experimental data generated in computational biology; and the third introduces problems in the modeling of protein structure using computational methods from robotics. The course is project oriented with an emphasis on computation and problem-solving. Cross-list: COMP 470, STAT 470. Recommended Prerequisite(s): COMP 280 and (STAT 310 or STAT 331).

BIOE 481 - COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING
Short Title: COMP/NEUROSCIENCE/NEURAL ENGNR
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to the anatomy and physiology of the brain. Includes basic electrophysiology of nerve and muscle. Develops mathematical models of neurons, synaptic transmission and natural neural networks. Leads to a discussion of neuromorphic circuits which can represent neuron and neural network behavior in silicon. Recommendation: Knowledge of electrical circuits, operational amplifier circuits and ordinary differential equations. Involves programming Matlab. Cross-list: ELEC 481, NEUR 481. Graduate/Undergraduate Equivalency: BIOE 583. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits; and ordinary differential equations. Mutually Exclusive: Credit cannot be earned for BIOE 481 and BIOE 583.

BIOE 482 - PHYSIOLOGICAL CONTROL SYSTEMS
Short Title: PHYSIOLOGICAL CONTROL SYSTEMS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A study of the somatic and autonomic nervous system control of biological systems. Simulation methods, as well as, techniques common to linear and nonlinear control theory are used. Also included is an introduction to sensors and instrumentation techniques. Examples are taken from the cardiovascular, respiratory, and visual systems. Cross-list: ELEC 482. Graduate/Undergraduate Equivalency: BIOE 582. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits: and ordinary differential equations. Mutually Exclusive: Credit cannot be earned for BIOE 482 and BIOE 582.
BIODE 484 - BIOPHOTONICS INSTRUMENTATION AND APPLICATIONS
Short Title: BIOPHOTONICS INSTRUMENTATION
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 383
Description: This course is an introduction to the fundamentals of Biophotonics instrumentation related to coherent light generation, transmission by optical components such as lenses and fibers, and modulation and detection. Interference and polarization concepts and light theories including ray and wave optics will be covered. A broad variety of optical imaging and detection techniques including numerous microscopy techniques, spectral imaging, polarimetry, OCT and others will be covered. The course will guide through the principles and concepts used in a variety of optical instruments and point to special requirements for Biomedical applications with emphasis on principles and concepts used in a variety of optical instruments and point to special requirements for Biomedical applications with emphasis on principles and concepts used in a variety of optical instruments and point out special requirements for bio-medical applications in optical sensing, diagnosis, and biomedical applications. Graduate/Undergraduate Equivalency: BIOE 512. Mutually Exclusive: Credit cannot be earned for BIOE 484 and BIOE 512.

BIODE 485 - FUNDAMENTALS OF MEDICAL IMAGING I
Short Title: FUND MEDICAL IMAGING I
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will introduce basic principles of image acquisition, formation and processing of several medical imaging modalities such as X-Ray, CT, MRI, and US that are used to evaluate the human anatomy. The course also includes visits to a clinical site to gain experience with the various imaging modalities covered in class. Cross-list: COMP 485, ELEC 485. Graduate/Undergraduate Equivalency: BIOE 591. Recommended Prerequisite(s): MATH 211 and MATH 212. Mutually Exclusive: Credit cannot be earned for BIOE 485 and BIOE 591.

BIODE 486 - FUNDAMENTALS OF MEDICAL IMAGING II
Short Title: FUND MEDICAL IMAGING II
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 485 or BIOE 485 or COMP 485
Description: This course focuses on functional imaging modalities used specifically in nuclear medicine such as Gamma cameras, SPECT, and PET imaging. The course will introduce the basic principles of image acquisition, formation, processing and the clinical applications of these imaging modalities and lays the foundations for understanding the principles of radiotracer kinetic modeling. A trip to a clinical site in also planned to gain experience with nuclear medicine imaging. Cross-list: COMP 486, ELEC 486. Graduate/Undergraduate Equivalency: BIOE 596. Mutually Exclusive: Credit cannot be earned for BIOE 486 and BIOE 596.

BIODE 490 - INTRO COMPUTATIONAL SYSTEMS BIOLOGY: MODELING & DESIGN PRINCIPLES OF BIOCHEM NETWORKS
Short Title: INTRO SYSTEMS BIOLOGY MODELING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 212 or MATH 213) and (BIOE 252 or CHBE 310) and BIOC 341 and CAAM 210
Description: The course summarizes techniques for quantitative analysis and simulations of basic circuits in genetic regulation, signal transduction and metabolism. We discuss engineering approaches adapted to computational systems biology and aim to formulate evolutionary design principles explaining organization of networks in terms of their physiological demands. We discuss biochemical simulation methodology and software as well as recent advances in the field. Topics include end-product inhibition in biosynthesis, optimality and robustness of the signaling networks and kinetic proofreading. Graduate/Undergraduate Equivalency: BIOE 552. Mutually Exclusive: Credit cannot be earned for BIOE 490 and BIOE 552.

BIODE 492 - SENSORY NEUROENGINEERING
Short Title: SENSORY NEUROENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 332
Description: This course will explore how bioengineering techniques and principles are applied to understand and develop sensory systems, with a focus on the auditory, vestibular, and visual systems. The interaction between the electrical, mechanical and optical aspects of these systems, and ways to modulate these interactions, will be explored. The course will also cover the design of current auditory, visual and somatosensory neuroprosthetics (i.e. cochlear implants, retinal implants and brain-machine interfaces), as well as emerging technologies for neural stimulation. Graduate/Undergraduate Equivalency: BIOE 592. Mutually Exclusive: Credit cannot be earned for BIOE 492 and BIOE 592.

BIODE 500 - GRADUATE RESEARCH
Short Title: GRADUATE RESEARCH
Department: Bioengineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
BIOE 502 - PHYSICAL BIOLOGY
Short Title: PHYSICAL BIOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Basic introduction to a biophysical view of living systems, from the subcellular to the multicellular scales. Topics include: biomolecular dynamics, cellular biomechanics, cell motility and cell division, calcium signaling, action potential propagation, and tissue organization. Cross-list: SSPB 501.

BIOE 504 - FIRST YEAR GRADUATE STUDENT LAB ROTATION
Short Title: GRADUATE LAB ROTATION
Department: Bioengineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides students the opportunity to experience different research projects and assists first-year students in choosing an advisor and a lab for conduction thesis research. Students must successfully complete rotations in three labs to receive a satisfactory grade. All new BIOE PhD students must take this course during their first semester.

BIOE 506 - GRADUATE INDEPENDENT STUDY
Short Title: GRADUATE INDEPENDENT STUDY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Independent investigation of a specific topic in modern bioengineering research under the direction of a faculty member. Department Permission Required. Repeatable for Credit.

BIOE 507 - SYSTEMS BIOLOGY OF BLOOD VESSELS
Short Title: SYS BIOLOGY OF BLOOD VESSELS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOE 252
Description: How blood vessels respond to hypoxia is a process critical to the progression of many diseases and conditions including cardiovascular disease, cancer, cerebrovascular disease, diabetes, obesity and arthritis. Physiological processes such as exercise, aging, and wound healing also depend on hypoxia-induced microvessel changes. This course introduces engineering concepts of hypoxic response, angiogenesis, and capillary remodeling - from the effects at the intracellular level to the whole body. Topics covered include computational systems biology modeling of hypoxia and angiogenesis, the use of angiogenesis in tissue engineering and regenerative medicine, imaging of blood vessel dynamics, capillaries of the brain, and the design of new blood vessels. Graduate students will be required to complete a term research project and present a related short seminar. Graduate/Undergraduate Equivalency: BIOE 307. Mutually Exclusive: Credit cannot be earned for BIOE 507 and BIOE 307.

BIOE 508 - SYNTHETIC BIOLOGY
Short Title: SYNTHETIC BIOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Design of biology at scales from molecules to multicellular organisms will be covered by lecture, primary literature, and student presentations. Students will write a research proposal at the end of the course. Cross-list: SSPB 503. Graduate/Undergraduate Equivalency: BIOE 408. Mutually Exclusive: Credit cannot be earned for BIOE 508 and BIOE 408.

BIOE 509 - POINT-OF-CARE DIAGNOSTICS
Short Title: POINT-OF-CARE DIAGNOSTICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an overview of diagnostic technologies that can be used at the point-of-care, including lateral flow assays, 2- and 3-D paper-based assays, and imaging based assays. Topics include the principles of assay design, validation and commercial development, with a focus on diagnostics for low-resource settings. The course includes a lecture and laboratory component, along with a team-based design project. Only graduate students may register for this course.
BIOE 510 - SEMINAR IN TROPICAL MEDICINE
Short Title: SEMINAR IN TROPICAL MEDICINE
Department: Bioengineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: 8 week lecture series on topics in global health. The theme for this offering is one health; integrating efforts to obtain optimal health for humans, animals, and the environment. Offered in conjunction with the new National School of Tropical Medicine, the course will feature lectures by various experts on the public health issues most pressing in poor populations in the world today. Course open to all undergraduates and graduate students. Cross-list: GLHT 510. Repeatable for Credit.

BIOE 512 - BIOPHOTONICS INSTRUMENTATION AND APPLICATIONS
Short Title: BIOPHOTONICS INSTRUMENTATION
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is an introduction to the fundamentals of Biophotonics instrumentation related to coherent light generation, transmission by optical components such as lenses and fibers, and modulation and detection. Interference and polarization concepts and light theories including ray and wave optics will be covered. A broad variety of optical imaging and detection techniques including numerous microscopy techniques, spectral imaging, polarimetry, OCT and others will be covered. The course will guide through the principles and concepts used in a variety of optical instruments and point to special requirements for Biomedical applications with emphasis on principles and concepts used in a variety of optical instruments and point to special requirements for Biomedical applications with emphasis on principles and concepts used in a variety of optical instruments and point out special requirements for bio-medical applications in optical sensing, diagnosis, and biomedical applications. In addition to the undergraduate requirements in BIOE 484, graduate students will be required to complete more complex problems on both homework and tests. Graduate students will also be required to submit a research paper with oral presentations. Graduate/Undergraduate Equivalency: BIOE 484. Mutually Exclusive: Credit cannot be earned for BIOE 512 and BIOE 484.

BIOE 514 - INTRODUCTION TO BIOSTATISTICS
Short Title: INTRODUCTION TO BIOSTATISTICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Bioengineering. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Presents basic and advanced methods of statistics as applied to problems in bioengineering. Demonstrates techniques for data organization, exploration, and presentation. Foundations of statistical estimation, inference, and testing are reviewed. Optimal planning of experiments is explored. Advanced techniques include multiple regression, variable selection, logistic regression, analysis of variance, survival analysis, multiple measurements and measurements over time. Additional topics, such as Bayesian methods, will be discussed as time allows. Labs will use the statistical software JMP and/or R. Cross-list: STAT 514.

BIOE 516 - MECHANICS, TRANSPORT, AND CELLULAR SIGNALING
Short Title: MECHANICS/TRANSPORT/SIGNALING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will cover the fundamental principles of mechanics, thermodynamics, and transport in the context of classical and contemporary bioengineering problems. An overall goal will be to expose students to the integrated approaches that are necessary to solve complex research problems. Topics covered will include membrane transport, cell signaling, and mechanotransduction. This course is intended for first year BIOE PhD students only.

BIOE 517 - INSTRUMENTATION AND MOLECULAR ANALYSIS
Short Title: INSTRUMENT/MOLECULAR ANALYSIS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will cover the basic principles of optics, optical instrumentation, microscopy and molecular detection technologies. Emphasis will be placed on the application of advance microscopy techniques to imaging problems in biology and medicine. This course is intended for first year BIOE PhD students only.
| **BIOE 518 - INTRODUCTION TO COMPUTATIONAL BIOLOGY** |
| **Short Title:** INTRO TO COMPUTATION BIOLOGY |
| **Department:** Bioengineering |
| **Grade Mode:** Standard Letter |
| **Course Type:** Lecture |
| **Credit Hours:** 3 |
| **Restrictions:** Enrollment is limited to Graduate level students. |
| **Course Level:** Graduate |
| **Description:** Provides students with the ability to use computational methods to understand and analyze biological data. This course will introduce students to advances in computational cell biology from an engineering perspective, and equip them with a suite of tools emerging from systems biology. Topics covered include computational cell engineering, high-throughput analysis, modeling of signaling pathways, network analysis, imaging coupled to modeling, and multi scale modeling. This course is intended for first year BIOE PhD students only. |

| **BIOE 519 - BIOMATERIALS SYNTHESIS** |
| **Short Title:** BIOMATERIALS SYNTHESIS |
| **Department:** Bioengineering |
| **Grade Mode:** Standard Letter |
| **Course Type:** Lecture |
| **Credit Hours:** 3 |
| **Restrictions:** Enrollment is limited to Graduate level students. |
| **Course Level:** Graduate |
| **Description:** Biomaterials covers the design and synthesis of materials which interact with biologic phenomena such as cell-free, microbial, and mammalian systems. Topics covered include: surfaces and surface fractionalization, biomedical implants and them immune response, three dimensional cell culture systems, and regulatory hurdles (e.g., FDA clearance). The class will be rooted in a historical perspective, with a particular emphasis on the latest techniques in synthetic chemistry relating to biomaterials. This course is intended for first year BIOE PhD students only. |

| **BIOE 521 - MICROCONTROLLER APPLICATIONS** |
| **Short Title:** MICROCONTROLLER APPLICATIONS |
| **Department:** Bioengineering |
| **Grade Mode:** Standard Letter |
| **Course Type:** Lecture/Laboratory |
| **Credit Hours:** 3 |
| **Restrictions:** Enrollment is limited to Graduate level students. |
| **Course Level:** Graduate |
| **Prerequisite(s):** BIOE 385 |
| **Description:** This class covers the usage of microcontrollers in a laboratory setting. We will start with basic electronics and, in the lab component, design, program, and build systems utilizing widely-available microcontrollers (e.g. Arduino, Raspberry Pi). Units in motion control, sensors (light, temperature, humidity, UV/Vis absorbance), and actuation (pneumatics, gears, and motors) will provide students with functional knowledge to design and prototype their own experimental systems for laboratory-scale automation. BIOE 521 students will be expected to complete a final research paper. Instructor Permission Required. Graduate/Undergraduate Equivalency: BIOE 421. Mutually Exclusive: Credit cannot be earned for BIOE 521 and BIOE 421. |

| **BIOE 522 - GENE THERAPY** |
| **Short Title:** GENE THERAPY |
| **Department:** Bioengineering |
| **Grade Mode:** Standard Letter |
| **Course Type:** Lecture |
| **Credit Hours:** 3 |
| **Restrictions:** Enrollment is limited to Graduate level students. |
| **Course Level:** Graduate |
| **Prerequisite(s):** CHEM 212 and (BIOS 201 or BIOC 201) |
| **Description:** This course will examine the gene therapy field, with topics ranging from gene delivery to vectors to ethics of gene therapy. The design principles for engineering improved gene delivery vectors, both viral and nonviral, will be discussed. The course willculminate in a design project focused on engineering a gene delivery device for a specific therapeutic application. Graduate/Undergraduate Equivalency: BIOE 422. Mutually Exclusive: Credit cannot be earned for BIOE 522 and BIOE 422. |

| **BIOE 523 - BIOENGINEERING SYSTEMS AND CONTROL** |
| **Short Title:** BIOENG SYSTEMS & CONTROLS |
| **Department:** Bioengineering |
| **Grade Mode:** Standard Letter |
| **Course Type:** Lecture |
| **Credit Hours:** 3 |
| **Restrictions:** Enrollment is limited to Graduate level students. |
| **Course Level:** Graduate |
| **Description:** Introduction to basic principles of control theory and applications of these methods and tools to analyze the dynamics of biological systems with examples from metabolic pathway control, synthetic biology and physiological systems. Cross-list: CHBE 523. |

| **BIOE 524 - EXTRACELLULAR MATRIX** |
| **Short Title:** EXTRACELLULAR MATRIC |
| **Department:** Bioengineering |
| **Grade Mode:** Standard Letter |
| **Course Type:** Lecture |
| **Credit Hours:** 3 |
| **Restrictions:** Enrollment is limited to Graduate level students. |
| **Course Level:** Graduate |
| **Description:** This course will address the biology, organization, mechanics, and turnover of extracellular matrix. There will be an emphasis on cells and cell-matrix interactions, matrix distribution within and design of connective tissues and organs techniques for quantitative analysis of matrix, techniques for measurement and modeling of connective tissue biomechanics, changes with growth and aging and tissue/matrix degradation. Additional projects will be required of graduate level students. Cross-list: BIOE 523. Graduate/Undergraduate Equivalency: BIOE 424. Recommended Prerequisite(s): BIOE 372, BIOC/BIOE 341. Mutually Exclusive: Credit cannot be earned for BIOE 524 and BIOE 424. |
BIOE 525 - NANOBIOENGINEERING AND NANOMEDICINE
Short Title: NANOBIOENG AND NANOMEDICINE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Covers broad range of topics in nanobioengineering and nanomedicine, including synthesis characterization and fractionalization of nanomaterials and nanostructures, nanoparticle-based molecular imaging probes, nanocarriers, for drug/gene delivery, and nanomachines for gene editing and regulation. Examples will be given to illustrate the applications of nanobioengineering and nanomedicine.

BIOE 526 - PRECISION GENOME EDITING
Short Title: PRECISION GENOME EDITING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a course for graduate students who are interested in learning the emerging field of precision genome editing and its applications in biology and medicine. This is a lecture course consisting of classes that meet weekly for 3 hours; instruction is delivered both in a lecture setting and through projects.

BIOE 527 - MEDICAL TECHNOLOGY DESIGN I
Short Title: MEDICAL TECHNOLOGY DESIGN I
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students apply principles in engineering, business and medicine to develop new products and services in healthcare. Design projects are team-based, involving clinical immersion to identify needs, concepts generation, prototype creation, and the development of business strategies. This course is limited to MBE-GMI students only. Instructor Permission Required.

BIOE 528 - MEDICAL TECHNOLOGY IMPLEMENTATION 1
Short Title: MEDICAL TECH IMPLEMENTATION 1
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students focus on implementing strategies for manufacturing, regulatory, quality, and clinical trials with products that have already been through at least one cycle of design. Students are exposed to multiple projects at various levels of maturity in a team setting. This course is limited to MBE-GMI students only. Instructor Permission Required.

BIOE 529 - MEDICAL TECHNOLOGY DESIGN 2
Short Title: MEDICAL TECHNOLOGY DESIGN 2
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Corequisite: BIOE 629
Description: This is a companion course to BIOE 529 and concurrent enrollment is required. Students will apply the principles learned in BIOE 529 in emerging-market design projects. Design projects are team-based and each student will be involved in multiple projects at different levels of maturity. This course is limited to MBE-GMI students only. Instructor Permission Required.

BIOE 530 - MEDICAL TECHNOLOGY IMPLEMENTATION 2
Short Title: MEDICAL TECH IMPLEMENTATION 2
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Corequisite: BIOE 630
Description: This is the companion course to BIOE 630 and concurrent enrollment is required. Students will apply the principles learned in BIOE 630 in emerging market design projects. Design projects are team-based, and each student will be involved in multiple projects at different levels of maturity. This course is limited to MBE-GMI students only. Instructor Permission Required.

BIOE 534 - INNOVATION LAB FOR MOBILE HEALTH
Short Title: INNOVATION LAB - MOBILE HEALTH
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will be an innovation lab for mobile health products. The students will organize themselves in groups with complementary skills and work on a single project for the whole semester. The aim will be to develop a product prototype which can then be demonstrated to both medical practitioners and potential investors. For successful projects with an operational prototype, the next steps could be applying for OWLspark (Rice accelerator program) or crowd sourcing (like Kickstarter) and/or work in Scalable Health Labs over summer. ELEC Juniors can also continue the project outcomes as a starting point for their senior design. Additional course work required beyond the undergraduate course requirements. Cross-list: ELEC 559. Graduate/Undergraduate Equivalency: BIOE 419. Mutually Exclusive: Credit cannot be earned for BIOE 534 and BIOE 419. Repeatable for Credit.
Course URL: www.ece.rice.edu/~ashu/ELEC419.html
BIOE 539 - APPLIED STATISTICS FOR BIOENGINEERING AND BIOTECHNOLOGY

**Short Title:** APPLIED STAT FOR BIOE BIOTECH

**Department:** Bioengineering

**Grade Mode:** Standard Letter

**Course Type:** Lecture

**Credit Hours:** 3

**Restrictions:** Enrollment is limited to Graduate level students.

**Course Level:** Graduate

**Description:** Course will cover fundamentals of probability and statistics with emphasis on application to biomedical problems and experimental design. Recommended for students pursuing careers in medicine or biotechnology. Graduate/Undergraduate Equivalency: BIOE 439. Recommended Prerequisite(s): BIOE 252 Mutually Exclusive: Credit cannot be earned for BIOE 539 and BIOE 439.

BIOE 543 - DNA BIOTECHNOLOGY, BIOPHYSICS, AND MODELING

**Short Title:** DNA BIOTECHNOLOGY

**Department:** Bioengineering

**Grade Mode:** Standard Letter

**Course Type:** Lecture/Laboratory

**Credit Hours:** 3

**Restrictions:** Enrollment is limited to Graduate level students.

**Course Level:** Graduate

**Description:** Semester-long course on fundamental properties of DNA, and their role in DNA biotechnology. Students will develop, analyze, and simulate simple biophysical models of DNA reactions, as well as learn and model methods of modern DNA biotechnology. Proficiency with MATLAB required.

BIOE 548 - MACHINE LEARNING AND SIGNAL PROCESSING FOR NEURO ENGINEERING

**Short Title:** NEURAL SIGNAL PROCESSING

**Department:** Bioengineering

**Grade Mode:** Standard Letter

**Course Type:** Lecture

**Credit Hours:** 3

**Restrictions:** Enrollment is limited to Graduate level students.

**Course Level:** Graduate

**Description:** The activity of a complex network of billions of interconnected neurons underlies our ability to sense, represent and store the details of experienced life, and enables us to interact with our environment and other organisms. Modern neuroscience techniques enable us to access this activity, and thus to begin to understand the processes whereby individual neurons enable complex behaviors. In order to increase this understanding and to design biomedical systems which might therapeutically interact with neural circuits, advanced statistical signal processing and machine learning approaches are required. This class will cover a range of techniques and their application to basic neuroscience and neural interfaces. Topics include latent variable models, point processes, Bayesian inference, dimensionality reduction, dynamical systems, and spectral analysis. Neuroscience applications include modeling neural firing rates, spike sorting, decoding, characterization of neural systems, and field potential analysis. Cross-list: ELEC 548.

BIOE 554 - COMPUTATIONAL FLUID MECHANICS

**Short Title:** COMPUTATIONAL FLUID MECHANICS

**Department:** Bioengineering

**Grade Mode:** Standard Letter

**Course Type:** Lecture

**Credit Hours:** 3

**Restrictions:** Enrollment is limited to Graduate level students.

**Course Level:** Graduate

**Prerequisite(s):** MECH 371 (may be taken concurrently) or CEVE 363 (may be taken concurrently) or CHBE 401 (may be taken concurrently)

**Description:** Additional work required. Cross-list: CEVE 554, MECH 554. Graduate/Undergraduate Equivalency: BIOE 454. Mutually Exclusive: Credit cannot be earned for BIOE 554 and BIOE 454.
**BIOE 560 - CANCER BIOLOGY**

**Short Title:** CANCER BIOLOGY  
**Department:** Bioengineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Provides an integrated lecture series summarizing current knowledge in cancer biology and integrating current literature with basic concepts. Topics include: statistics of incidence/survival, types of cancer, pathology, the process of carcinogenesis and sources of carcinogens, genetic and epigenetic mechanisms and consequences, cancer progression, metastasis and current treatment options. Students will learn to use online databases to develop independent strategies for analyzing datasets. There will be several writing assignments and in class oral presentations of research articles. This course requires instructor permission to enroll. Please fill out the special registration form from https://registrar.rice.edu/student/special_registration. All requests will be reviewed and you will be notified of an enrollment decision. Instructor Permission Required. Cross-list: BIOC 560.

**BIOE 564 - BIOINFORMATICS: NETWORK ANALYSIS**

**Short Title:** BIOINFORMATICS: NETWORKS  
**Department:** Bioengineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course covers computational aspects of biological network analysis, a major theme in the area of systems biology. The course addresses protein-protein interaction networks, signaling, and metabolic networks, and covers issues related to reconstructing, analyzing, and integrating various types of networks. Cross-list: BIO 572, COMP 572.  
**Course URL:** [www.cs.rice.edu/~nakhleh/COMP572/](http://www.cs.rice.edu/~nakhleh/COMP572/)

**BIOE 574 - CONTINUUM BIOMECHANICS**

**Short Title:** CONTINUUM BIOMECHANICS  
**Department:** Bioengineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course deals with elements of continuum mechanics relevant to bioengineering. The course covers important concepts in tensor calculus, kinematics, stress and strain, and constitutive theories of continua. Selected topics in bone, articular cartilage, blood and circulation, and cell biomechanics will be discussed to illustrate the application of continuum mechanism to bioengineering problems.

**BIOE 576 - FOUNDATIONS OF BIOTECHNOLOGY**

**Short Title:** FOUNDATIONS OF BIOTECHNOLOGY  
**Department:** Bioengineering  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Graduate level introduction to a wide range of research methods in biosciences and bioengineering. Individual faculty members from the Biosciences and Bioengineering will each present practices and techniques for their areas of expertise. A web-based methods database will be constructed, with student involvement, from the library of lectures. Cross-list: BIOC 576.

**BIOE 577 - FOUNDATIONS OF BIOTECHNOLOGY**

**Short Title:** FOUNDATIONS OF BIOTECHNOLOGY  
**Department:** Bioengineering  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Graduate level introduction to a wide range of research methods in biosciences and bioengineering. Individual faculty members from the Biosciences and Bioengineering will each present practices and techniques for their areas of expertise. A web-based methods database will be constructed, with student involvement, from the library of lectures. Cross-list: BIOC 577.

**BIOE 578 - BIOTECHNOLOGY PRACTICUM**

**Short Title:** BIOTECHNOLOGY PRACTICUM  
**Department:** Bioengineering  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course is part of the NIH Biotechnology Training Program and is limited to program participants. Students will receive exposure and training in cutting edge concepts and technologies. Cross-list: BIO 578.

**BIOE 580 - PROTEIN ENGINEERING**

**Short Title:** PROTEIN ENGINEERING  
**Department:** Bioengineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Manipulation of gene expression in prokaryotic and eukaryotic cells. Rational design and directed evolution for cell and protein engineering. Selection and screening technologies and process optimization. Synthetic Biology: engineering and application of gene circuits. Molecular biotechnology applications: Diagnosis, Therapeutics and Vaccines. Cross-list: BIO 580, CHBE 580. Recommended Prerequisite(s): CHBE 310/510 or equivalent is highly recommended.
BIOE 581 - CARDIOVASCULAR AND RESPIRATORY SYSTEM DYNAMICS
Short Title: CARDIO-RESP SYSTEM DYNAMICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Autonomic nervous system control of the cardiovascular and respiratory systems. Development of models of neuron and cardiac cell activity; models of ventricular and vascular system mechanics; models of pulmonary mechanics and gas transport. Includes a study of instrumentation and techniques used in the cardia catheterization laboratory. Discussions of different types of ventricular assist devices is also included. The course serves as an introduction to engineering in cardiovascular and respiratory system diagnosis and critical care medicine. Cross-list: ELEC 581. Recommended Prerequisite(s): Knowledge of ordinary differential equations; electricity and magnetism, and solid mechanics form elementary physics; linear control theory and elementary physiology of the cardiovascular and respiratory systems. Repeatable for Credit.

BIOE 582 - PHYSIOLOGICAL CONTROL SYSTEMS
Short Title: PHYSIOLOGICAL CONTROL SYSTEMS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of the somatic and autonomic nervous system control of biological systems. Simulation methods, as well as, techniques common to linear and nonlinear control theory are used. Also included is an introduction to sensors and instrumentation techniques. Examples are taken from the cardiovascular, respiratory, and visual systems. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 582. Graduate/Undergraduate Equivalency: BIOE 482. Mutually Exclusive: Credit cannot be earned for BIOE 582 and BIOE 482.

BIOE 583 - COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING
Short Title: COMP/NEUROSCIENCE/NEURAL ENGNR
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

BIOE 585 - RESPIRATORY SYSTEM MECHANICS
Short Title: RESPIRATORY SYSTEM MECHANICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mechanics of ventilation, respiratory muscle mechanics, rib cage mechanics, mechanical coupling between the respiratory muscles and the rib cage, and inferences on mechanics from respiratory muscle anatomy. The class will meet in the Pulmonary Division at Baylor College of Medicine in the Texas Medical Center. Cross-list: MECH 586.

BIOE 586 - RESPIRATORY SYSTEM MECHANICS
Short Title: OPTICAL IMAGING/NANOBIOPHOTONICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on diagnostic and therapeutic applications of photonics-based technologies with particular emphasis on nanotechnology enabled optical approaches. This course emphasizes biomedical applications of optics and complements BIOE 484 which introduces fundamental principles of optics to bioengineers.

BIOE 589 - COMPUTATIONAL MOLECULAR BIOENGINEERING/BIOPHYSICS
Short Title: COMP MOLECULAR BIOENG/BIOPHYS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a course designed for students in computationally-oriented biomedical and bioengineering majors to introduce the principles and methods used for the simulations and modeling of macromolecules of biological interest. Protein conformation and dynamics are emphasized. Empirical energy function and molecular dynamics calculations are described. Specific biological problems are discussed to illustrate the methodology. Classic examples such as the cooperative mechanism of hemoglobin and more frontier topics such as the motional properties of molecular motors and ion channels as well as results derived from the current literature are covered. Cross-list: BIOPH 589. Recommended Prerequisite(s): MATH 212, (BIOS 301 or BIOC 301), BIOE 332.
BIOE 591 - FUNDAMENTALS OF MEDICAL IMAGING I
Short Title: FUND MEDICAL IMAGING I
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce basic principles of image acquisition, formation and processing of several medical imaging modalities such as X-Ray, CT, MRI, and US that are used to evaluate the human anatomy. The course also includes visits to a clinical site to gain experience with the various imaging modalities covered in class. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 585. Graduate/Undergraduate Equivalency: BIOE 485. Mutually Exclusive: Credit cannot be earned for BIOE 591 and BIOE 485.

BIOE 592 - SENSORY NEUROENGINEERING
Short Title: SENSORY NEUROENGINEERING
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOE 332 and BIOE 384
Description: This course will explore how bioengineering techniques and principles are applied to understand and model sensory systems, with a focus on the auditory, vestibular, and visual systems. The interaction between the electrical, mechanical and optical aspects of these systems, and ways to modulate these interactions, will be explored. The course will also cover the design of current auditory, visual and somato-sensory neuroprosthetics (i.e. cochlear-implants, retinal implants and brain-machine interfaces), as well as emerging technologies for neural stimulation. Graduate/Undergraduate Equivalency: BIOE 492. Mutually Exclusive: Credit cannot be earned for BIOE 592 and BIOE 492.

BIOE 595 - MODELING TISSUE MECHANICS
Short Title: MODELING TISSUE MECHANICS
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Independent study and seminar course which focuses on modeling the mechanical properties of biological tissues. Data from experiments will be used to refine the predictions of nonlinear mathematical computer models. Aimed at juniors, seniors, and graduate students. Laboratory work performed at Baylor College of Medicine, computer work at Rice University. Cross-list: MECH 595.

BIOE 596 - FUNDAMENTALS OF MEDICAL IMAGING II
Short Title: FUND MEDICAL IMAGING II
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on functional imaging modalities used specifically in nuclear medicine such as Gamma cameras, SPECT, and PET imaging. The course will introduce the basic principles of image acquisition, formation, processing and the clinical applications of these imaging modalities and lays the foundations for understanding the principles of radiotracer kinetic modeling. A trip to a clinical site in also planned to gain experience with nuclear medicine imaging. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 586. Graduate/Undergraduate Equivalency: BIOE 486. Mutually Exclusive: Credit cannot be earned for BIOE 596 and BIOE 486.

BIOE 600 - GRADUATE BIOENGINEERING INDUSTRY INTERNSHIP
Short Title: GRAD BIOE INDUSTRY INTERNSHIP
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will participate in an industry internship or industry-sponsored project under the direction of Bioengineering faculty. This course may be taken in the summer for six credits or in the fall and spring for three credits each semester. Enrollment is limited to students in the Global Medical Innovation track of the MBE degree. Instructor permission is required. Instructor Permission Required. Repeatable for Credit.

BIOE 610 - METHODS OF MOLECULAR SIMULATION
Short Title: METHODS OF MOLECULAR SIMUL
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHBE 611 or BIOC 589 or BIOE 589 or BIOS 589 or CHEM 520 or PHYS 526
Description: Modern simulation techniques for classical atomistic systems. Review of statistical mechanical systems. Monte Carlo and molecular dynamics simulation techniques. Extensions of the basic methods to various ensembles. Applications to simulations of large molecules such as proteins. Advanced techniques for simulation of complex systems, including constraint satisfaction, cluster moves, biased sampling, and random energy models. Cross-list: PHYS 610.
BIOE 615 - BIOENGINEERING AND CARDIAC SURGERY  
**Short Title:** BIOENGINEERING/CARDIAC SURGERY  
**Department:** Bioengineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course will address biomaterials and medical devices relevant to cardiac and vascular surgery and interventional cardiology in adult and pediatric patients. Mechanical and design considerations, notable successes and failures, and ethical issues will also be discussed, as will differences in cardiac disease and care due to health disparities.

BIOE 620 - TISSUE ENGINEERING  
**Short Title:** TISSUE ENGINEERING  
**Department:** Bioengineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Study of cell-cell interactions and the role of the extracellular matrix in the structure and function of normal and pathological tissues. Includes strategies to regenerate metabolic organs and repair structural tissues, as well as cell-based therapies to deliver proteins and other therapeutic drugs, with emphasis on issues related to cell and tissue transplantation such as substrate properties, angiogenesis, growth stimulation, cell differentiation, and immunoprotection. Cross-list: CHBE 620.

BIOE 621 - BIOVENTURES  
**Short Title:** BIOVENTURES  
**Department:** Bioengineering  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hours:** 2  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** MGMT 633 or BIOE 633  
**Description:** A hands-on immersion into life science entrepreneurship through practical lessons that are applied to students' group projects throughout the course. This practical course will provide the skills and resources to facilitate scientist-driven entrepreneurship in conceiving new life science ventures and translating research ideas into commercial ventures. This course will be taught in conjunction w/UTMB faculty on the Rice campus (BRC) and will meet from Feb 26 - April 30, 2015. To apply for the course, Rice students should fill out the online application located on the URL site listed above. Instructor Permission Required. Repeatable for Credit.  
**Course URL:** goo.gl/forms/pJ0UMeJItO (http://goo.gl/forms/pJ0UMeJItO)  

BIOE 627 - MEDICAL TECHNOLOGY DESIGN SEMINAR 1  
**Short Title:** MED TECH DESIGN SEMINAR 1  
**Department:** Bioengineering  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course will expose students to a variety of career paths in the medical technology industry through guest lectures, case studies, and informal/actual interviews. Instructor Permission Required.

BIOE 628 - MEDICAL TECHNOLOGY DESIGN SEMINAR 2  
**Short Title:** MED TECH DESIGN SEMINAR 2  
**Department:** Bioengineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Corequisite:** BIOE 528  
**Description:** Students will learn to address unmet clinical needs thru methodical design. Concept generation principles & proof-of-concept prototyping will be discussed. Screening techniques will be taught that not only weigh technical merit of a concept, but regulatory, reimbursement, IP & business strategies. Students will participate in industry case studies & guest lectures from industry professionals. Instructor Permission Required.

BIOE 631 - BIOMATERIALS APPLICATIONS  
**Short Title:** BIOMATERIALS APPLICATIONS  
**Department:** Bioengineering  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Emphasis will be placed on issues regarding the design, synthesis, evaluation, regulation and clinical translation of biomaterials for specific applications. An overview of significant biomaterials engineering applications will be given, including topics such as ophthalmologic, orthopedic, cardiovascular and drug delivery applications, with attention to specific case studies. Regulatory issues concerning biomaterial will also be addressed. Assignments for this class will include frequent readings of the scientific literature with occasional homework questions, one midterm and cumulative final, a group project, a seminar report and individual presentations. In addition, graduate students in BIOE 631 will have additional exam problems and an additional research paper. Graduate/Undergraduate Equivalency: BIOE 431. Mutually Exclusive: Credit cannot be earned for BIOE 631 and BIOE 431.
BIOE 633 - LIFE SCIENCE ENTREPRENEURSHIP AND THE ROLES OF FOUNDERS AND VENTURE CAPITAL ON HIGH TECH STARTUP
Short Title: LIFE SCIENCE ENTREPRENEURSHIP
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The roles of physicians, scientists, engineers, and MBA's in biotech, medical device, and other life science companies will be described and characterized. The major trends and innovations driving the creation of new products in large established companies and venture-capital-backed startup companies are discussed. This pragmatic, experienced-based course describes the venture capital process, formation, and capitalization of high-tech companies, sources of technologies, role of tech transfer at universities and medical schools, startup operational issues, role of VCs and board members, execution time frames, liquidity process, IPOs and mergers, and payout prospects for founders and investors. Live, ongoing case studies are presented by guest entrepreneurs. These case studies of ongoing biotech, medical device, and healthcare informatics companies are presented by many notable M.D. and Ph.D. founders and CEOs. Rules of professional and ethical conduct of M.D.s, Ph.D.s, scientific advisory boards, clinical advisory boards, and boards of directors are reviewed. In the final classes, a high-tech, career-planning guide is discussed, plus a special lecture on leadership, intelligence, and entrepreneurship will be presented.
Insider secrets and success stories from decades of highly successful VC practice in medical, biotech and infotech companies will be shared. Cross-list: MGMT 633. Repeatable for Credit.

BIOE 680 - NANO-NEUROTECHNOLOGY
Short Title: NANO-NEUROTECHNOLOGY
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will review current nanofabricated technologies for measuring, manipulating, and controlling neural activity. The course will be based on reviewing current academic literature and topics will include nano-electronic, -photonic, -mechanical, and -fluidic neural devices. Cross-list: ELEC 680.

BIOE 682 - SYSTEMS BIOLOGY OF HUMAN DISEASES
Short Title: SYS BIO OF HUMAN DISEASES
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to concepts necessary for application of systems - Biology Approaches to Human Diseases. Topics include transcriptional and metabolic design principles, introduction to various regulatory network motifs in diseases and potential treatments using embryonic stem cells. Analysis of complex diseases using engineering concepts such as optimality, nonequilibrium thermodynamics, multiscale analysis and spatiotemporal transport. Cross-list: CHBE 682.

BIOE 690 - PROFESSIONAL DEVELOPMENT FOR BIOENGINEERS
Short Title: PROF DEVELOPMENT FOR BIOE
Department: Bioengineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Professional development topics relevant to academic careers including applying for faculty positions, interviewing, negotiating offers, building a lab, obtaining funding and balancing professional obligations. Designed for graduate students planning academic careers in research-intensive bioengineering departments.
BUSI 220 - LILIE E-TEAMS EXPERIENCE
Short Title: LILIE E-TEAMS EXPERIENCE
Department: Business
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, students will form teams and collaborate on a project contributed by a startup company. Using design thinking, students will take a human-centered approach towards crafting an innovative solution by developing empathy for the users, articulating the problem, brainstorming possibilities, prototyping for communication, and testing and iterating.

BUSI 221 - NEW ENTERPRISES
Short Title: NEW ENTERPRISES
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, students will learn and experience a process for innovation-based venture development. During the semester, students will form teams and create a plan for a new venture. Mutually Exclusive: Credit cannot be earned for BUSI 221 and BUSI 462.

BUSI 223 - BUSINESS MODELING FOR ENTREPRENEURS
Short Title: MODELING FOR ENTREPRENEURS
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The course teaches how to translate a startup business plan into a bottoms up quantitative model of the business and its underlying assumptions. Students will learn how to build a model of cash flows for a startup, how to use that model to track performance and identify errors in the underlying assumptions and adjust, and how to update the model based on realized performance.

BUSI 296 - BUSINESS COMMUNICATIONS
Short Title: BUSINESS COMMUNICATIONS
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Provides an introduction to business, focusing on the strategy and practice of effective communications in business situations. The course includes individual communication skills assessment and instruction. Space is limited. Registration does not guarantee a space in class. The Jones School will conduct a lottery for over-enrolled classes to create the course roster for the semester. The Jones School will communicate the results within a week after the close of the registration period.
Course URL: business.rice.edu/business_minor.aspx

BUSI 305 - FINANCIAL ACCOUNTING
Short Title: FINANCIAL ACCOUNTING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Covers the preparation, analysis, and use of corporate financial statements; asset and liability valuation and income determination; receivables, inventories, present values, tangible and intangible fixed assets, bonds, leases, shareholder equity, intercorporate investments, consolidations, and cash flow accounting. Space is limited. No Special Registration requests will be accepted. Mutually Exclusive: Credit cannot be earned for BUSI 305 and ACCO 305.
Course URL: business.rice.edu/
BUSI 310 - LEADING PEOPLE IN ORGANIZATIONS
Short Title: LEADING IN ORGANIZATIONS
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduces the psychological and sociological processes underlying human behavior in organizational settings (e.g., companies, schools, sports clubs). Topics include motivation, decision making, principles of fairness and justice, cross-cultural differences, working in teams, and tactics of influence. Space is limited. Registration does not guarantee a space in class. The Jones School will conduct a lottery for over-enrolled classes to create the course roster for the semester. The Jones School will communicate the results within a week after the close of the registration period.
Course URL: business.rice.edu/

BUSI 343 - FINANCIAL MANAGEMENT
Short Title: FINANCIAL MANAGEMENT
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (STAT 280 or STAT 305 or STAT 310 or ECON 307 or STAT 339 or ELEC 303 or POLI 395 or PSYC 339 or SOCI 298 or ECON 307 or ECON 382 or ECON 331) and (ECON 100 or ECON 201 or ECON 301)
Description: Introduces the core concepts of corporate financial management and introduces a set of analytical tools to evaluate financial decisions. Employs concepts of time value of money, risk and return, and market efficiency to examine how capital market investors value risky assets. Develops a framework for evaluating corporate investment and financing decisions. Mutually Exclusive: Credit cannot be earned for BUSI 343 and ECON 343.
Course URL: business.rice.edu/

BUSI 380 - MARKETING
Short Title: MARKETING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BUSI 305
Description: Introduces the role of marketing in organizations and the principal marketing decisions facing management. Topics include marketing planning and strategy; buyer behavior; development and management of products and services; branding; channels of distribution; sales, advertising and promotional methods; pricing strategy; and the development of integrated marketing strategies and programs.
Course URL: business.rice.edu/

BUSI 390 - STRATEGIC MANAGEMENT
Short Title: STRATEGIC MANAGEMENT
Department: Business
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BUSI 305
Description: Examines the strategic management of businesses in market and non-market environments. Key topics include competitive and industry analysis, strategy formulation and implementation, and strategic planning. Case discussions of real companies are combined with readings. Recommended Prerequisite(s): ECON 100 or 201 or 301. Mutually Exclusive: Credit cannot be earned for BUSI 390 and BUSI 471.
Course URL: business.rice.edu/
BUSI 405 - ISSUES IN FINANCIAL REPORTING
Short Title: ISSUES IN FINANCIAL REPORTING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BUSI 305
Description: Building on subject matter introduced in BUSI 305, this course provides students with a deeper knowledge of generally accepted accounting principles and procedures so that they properly account for and present information in financial statements prepared for external users. The student will acquire an understanding of the accounting issues relating to complex revenue recognition issues, inventory costing, long-lived tangible and intangible assets, and discontinued operations. The student should be able to demonstrate written communication skills required of accountants. BUSI 305 Financial Accounting is a prerequisite for this course.

BUSI 430 - MANAGERIAL ACCOUNTING
Short Title: MANAGERIAL ACCOUNTING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course emphasizes the use of accounting information for internal purposes, as opposed to the external reporting focus of financial accounting. The course covers the design of management accounting systems for planning and controlling operations and for motivating personnel. The course integrates accounting with ideas from data analysis, decision analysis, finance, microeconomics, and operations management. Among the topics covered are the use of cost information for short- and long-term decision making, cost-volume-profit analysis, budgetary control, cost allocation, capital budgeting, and performance evaluation. It is suggested that students enrolled in this course have completed BUSI 305 or ECON 201.

BUSI 440 - AUDITING
Short Title: AUDITING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BUSI 305
Description: The principles and procedures used by public accountants and internal auditors in examining financial statements and supporting data to verify the accuracy and fairness of the information presented. Specific topics covered include: financial statement, regulatory and contract compliance, internal and operational audits, professional standards and ethical conduct; statistical and judgmental sampling; the audit-impact of information technology; audit risk and internal control structure evaluation; application of procedures in transaction cycles; audit reporting; the importance of professional skepticism; role of the PCAOB in setting and enforcing auditing standards for U.S. publicly traded companies, as well as the issue of mandatory audit firm rotation; role of the International Auditing and Assurance Standards Board in setting International Standards of Auditing.

BUSI 460 - FOUNDATIONS OF ENTREPRENEURSHIP: STRATEGY AND FUNDING
Short Title: FOUNDATIONS OF ENT: STRATEGY
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course provides an integrated strategy framework for entrepreneurs. The course is structured to provide a deep understanding of the core strategic challenges facing start-up innovators, and a synthetic framework for choosing and implementing entrepreneurial strategy in dynamic environments. A central theme of the course is that, to achieve competitive advantage, technology entrepreneurs must balance the process of experimentation and learning inherent to entrepreneurship with the selection and implementation of a strategy that establishes competitive advantage. The course identifies the types of choices that entrepreneurs must make to take advantage of a novel opportunity and the logic of particular strategic commitments and positions that allow entrepreneurs to establish competitive advantage. Course is taught either 1st or 2nd Half of Full Term. Repeatable for Credit.
BUSI 461 - FOUNDATIONS OF ENTREPRENEURSHIP II: FINANCING
Short Title: FOUNDATIONS OF ENT II:FINANCING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The goal of the course is to provide students with a general understanding of the financing options for early stage startups, including angel investment, accelerators, crowdfunding and the venture capital industry. This includes an in-depth overview of the organization, operation and economics of different funding sources; venture capital and angel investment term sheets and deal structures; startup investment methodology—deal sourcing, monitoring and liquidation; the role of VCs as key advisors and board members; and current issues in early stage financing as a result of a changing global and economic environment. The course combines interactive lectures, speakers and case analyses. The cases and assignments offer an opportunity to integrate and apply the principles taught in the course in a practical way, and draws from a diverse range of industries and settings. Repeatable for Credit.

BUSI 463 - FOUNDATIONS OF ENTREPRENEURSHIP: STRATEGY AND FUNDING
Short Title: ENTREPRENEURSHIPSTRAT & FUND
Department: Business
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course provides an integrated strategy framework for entrepreneurs. The course is structured to provide a deep understanding of the core strategic challenges facing start-up innovators, and a synthetic framework for choosing and implementing entrepreneurial strategy in dynamic environments, as well as a general understanding of the financing options for early stage startups, including angel investment, accelerators, crowdfunding and the venture capital industry. A central theme of the course is that, to achieve competitive advantage, technology entrepreneurs must balance the process of experimentation and learning inherent to entrepreneurship with the selection and implementation of a strategy that establishes competitive advantage. The course identifies the types of choices that entrepreneurs must make to take advantage of a novel opportunity and the logic of particular strategic commitments and positions that allow entrepreneurs to establish competitive advantage. The course includes an in-depth overview of the organization, operation and economics of different funding sources; venture capital and angel investment term sheets and deal structures; startup investment methodology—deal sourcing, monitoring and liquidation; the role of VCs as key advisors and board members; and current issues in early stage financing as a result of a changing global and economic environment. The course combines interactive lectures, speakers and case analyses. The cases and assignments offer an opportunity to integrate and apply the principles taught in the course in a practical way, and draws from a diverse range of industries and settings.

BUSI 464 - SOCIAL ENTREPRENEURSHIP
Short Title: SOCIAL ENTREPRENEURSHIP
Department: Business
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to contemporary concepts, debates, and contexts necessary for analyzing and engaging in the sphere of social entrepreneurship. The course has five distinct parts: 1. social entrepreneurship overview; 2. social context and stakeholders; 3. private sector roles and motivations; 4. organizational forms and collaborations; and 5. measurement and impacts (private and public). Students will be exposed to various forms of social entrepreneurship, such as base of the pyramid/microenterprises, private-public partnerships, private-governmental partnerships, voluntary social codes, corporate social responsibility, and ethical consumerism. From this introductory foundation, students will undertake a social entrepreneurship project about a contemporary social problem in Houston: the urban food desert (https://apps.ams.usda.gov/fooddeserts/fooddeserts.aspx). Students will learn a range of research methods (e.g. quantitative data analysis, ethnography, focus groups). With these research tools and building from perspectives offered by earlier by readings, guest speakers, and field visits, students will problematize, propose, develop, and present competing solutions to the social problem during the final course meetings. Cross-list: GLHT 464, SOSC 464.

BUSI 469 - LILIE NEW VENTURE CHALLENGE
Short Title: LILIE NEW VENTURE CHALLENGE
Department: Business
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this capstone project-based experiential learning course, students work on their own startup ideas in teams using the frameworks taught in the E&I framework courses (financing and strategy for startups, new enterprises, business modeling for entrepreneurs, human and social context in entrepreneurship). To apply for this course visit http://hpanahi.web.rice.edu/nvc/ Instructor Permission Required.

2017-2018 General Announcements
BUSI 491 - ACCOUNTING THEORY
Short Title: ACCOUNTING THEORY
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BUSI 405
Description: The aim of this seminar is to impart an understanding of the historical evolution of the literature on financial accounting theory and accounting principles, as well as emerging developments in accounting research. A companion objective is to come to understand the evolving dynamic of the standard-setting process for financial reporting in the United States and at the international level, including consideration of the “political” intrusions into this process. Readings will be drawn from the periodical literature, books and monographs, and reports. A term paper will be required. The prerequisite for undergraduates is BUSI 405, but the course will also be open also to a small number of other students who have taken just BUSI 305. MBA students: Prerequisite is MGMT 601. PhD students: no prerequisites. All students must obtain the prior permission of the instructor. Course may not be taken pass/fail and may not be audited. Enrollment will be limited. Mutually Exclusive: Credit cannot be earned for BUSI 491 and MACC 591/601.

BUSI 499 - UNDERGRADUATE BUSINESS INDEPENDENT STUDY
Short Title: UG BUSINESS INDEPENDENT STUDY
Department: Business
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

BUSI 500 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Business
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 501 - DOCTORAL MARKETING RESEARCH SEMINAR
Short Title: DOCTORAL MARK. RES. SEMINAR
Department: Business
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 503 - SEMINAR IN JUDGEMENT AND DECISION MAKING
Short Title: SEM IN JDGMT & DECISION MAKING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The purpose of this seminar is to examine recent work in, or relevant to, consumer research. We will select a set of topics to be considered over the semester, often triggered by a new article of particular interest or student interests. For each topic considered, a few articles will be chosen, and we will read and discuss those. Our goals will be to gain exposure to the latest ideas in consumer research and to develop research ideas. In particular, each week we should generate in class the design/idea for at least one new study in the focal topic area. Repeatable for Credit.
BUSI 507 - BAYESIAN APPLICATIONS IN MARKETING LITERATURE
Short Title: BAYESIAN APPS IN MARKETING LIT
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course aims to develop an understanding of Bayesian empirical applications in the Marketing literature. The course starts with a brief theoretical foundation to Bayesian inference and subsequently focuses on empirical applications in the Marketing literature. The aim of this course is not to equip students with the methodological tools of Bayesian inference. It is assumed that students are familiar with these methodologies. Academic papers from the Marketing literature are assigned to the class and discussed in class. Repeatable for Credit.

BUSI 510 - ANALYTICAL MODELS IN MARKETING
Short Title: ANALYTICAL MODELS IN MARKETING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 511 - SELECTED TOPICS IN MARKETING
Short Title: SELECT TOPICS IN MARKETING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 515 - MICRO FOUNDATIONS OF ORGANIZATION AND MANAGEMENT
Short Title: MICRO FOUNDATIONS - ORG & MGMT
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 521 - FINANCIAL ECONOMICS I
Short Title: FINANCIAL ECONOMICS I
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 501 and ECON 502
Description: Introduction at the graduate level to asset pricing and portfolio choice theory. Covers single-period and dynamic models, including pricing by arbitrage, mean-variance analysis, factor models, dynamic programming, recursive utility, and an introduction to continuous-time finance. Cross-list: ECON 505.

BUSI 522 - CORPORATE FINANCE
Short Title: CORPORATE FINANCE
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will prepare students for a career as a scholar in finance. To do so, we will read and discuss key scholarly papers in the field. Our focus will be on classic and recent research papers in the field of corporate finance. The course is structured to introduce students to selected areas of research and research methods, rather than to be encyclopedic in its coverage. Repeatable for Credit.

BUSI 523 - EMPIRICAL METHODS IN FINANCE
Short Title: EMPIRICAL METHODS IN FINANCE
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is intended to get students up to speed with a toolbox and working facility of methods commonly used in empirical finance research. For each method, we will follow a three-step learning process. We first cover the econometrics from a mathematical (but light and intuitive) approach. Then we will observe researchers using the method in the wild. Then you will use it yourself through exercises and problem sets. Repeatable for Credit.
BUSI 524 - FINANCE: SPECIAL TOPICS I
Short Title: FINANCE: SPECIAL TOPICS I
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides a brief review of the literature on derivative pricing and the term structure of interest rates. If we have time we may also read some papers on the financial crisis. The objective is to prepare students to critically think about the current research in each of these areas and, at the same time, give some basic knowledge about each of these research areas. The course is intended for Ph.D. students. This course is very quantitative and requires basic familiarity with asset pricing theory (BUSI 521). Even though, the course is very quantitative, emphasis is given to intuition instead to mathematical rigor. Repeatable for Credit.

BUSI 525 - FINANCE: SPECIAL TOPICS II
Short Title: FINANCE: SPECIAL TOPICS II
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 526 - FINANCE: SPECIAL TOPICS III
Short Title: FINANCE: SPECIAL TOPICS III
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 527 - FINANCE: SPECIAL TOPICS IV
Short Title: FINANCE: SPECIAL TOPICS IV
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 530 - INTRODUCTION TO ACCOUNTING RESEARCH
Short Title: INTRO TO ACCT. RESEARCH
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course offers a thorough and broad-ranging introduction to accounting theory and research. It covers origins and evolution of key relevant accounting institutions, thought, paradigms and methods. Repeatable for Credit.

BUSI 531 - EMPIRICAL METHODS IN ACCOUNTING
Short Title: EMPIRICAL METHODS IN ACCOUNTING
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 532 - ANALYTICAL RESEARCH IN ACCOUNTING
Short Title: ANALYTICAL RESEARCH IN ACCT
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 533 - CONTEMPORARY ACCOUNTING: RESEARCH TOPICS
Short Title: CONTEMPORARY ACCT. RES. TOPICS
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 540 - STRATEGY I
Short Title: STRATEGY I
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides a Ph.D. level seminar focused on seminal theory and recent theoretical approaches in the strategic management literature. The literature in strategic management attempts to explain the differences in the performance and survival of firms by analyzing the effects of a variety of factors at multiple levels, including countries, industries, organizational networks, firms, teams, and individuals. The intent of this seminar is to provide a foundation for conducting and publishing original research in strategic management. The seminar will cover several topics in the field along with relevant theoretical perspectives developed in economics, finance, organization theory, psychology, and sociology. Over the course of the semester, you will: • Read a large amount of articles published in the leading journals of the field; • Evaluate different theoretical perspectives; • Constructively critique empirical research; • Formulate novel research ideas that advance the field of strategic management; • Professionally present research ideas and respond to comments; and • Develop ideas into a research paper that provides the foundations for a future theoretical paper or empirical study. Repeatable for Credit.
BUSI 541 - STRATEGY II
Short Title: STRATEGY II
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Strategic management research attempts to explain the differences in firm behaviors and outcomes by analyzing the effects of a variety of factors at multiple levels, including countries, industries, firms, teams, and individuals. This seminar is the second part of the strategic management seminar series (The first part is Business 540: Strategic Management Theory). While Business 540 focuses on seminal theory and recent theoretical approaches in the strategic management literature, this seminar focuses on phenomena and research topics in strategy research. It provides an overview of classic and current research topics including innovation and technology strategy, strategic alliances and networks, international strategy, product diversification, corporate governance, executive leadership, strategic decision processes, change and adaptation. Specific topics and phenomena will be examined from both theoretical and empirical perspectives. From the theoretical perspective, we will discuss how the various theories discussed in Business 540 are used to explain these phenomena. From the empirical perspective, we will discuss various research designs and methods used in research on these topics. Overall, the intent of this seminar is to provide students a foundation for conducting and publishing original research in strategic management. Repeatable for Credit.

BUSI 542 - ORGANIZATIONAL CHANGE
Short Title: ORGANIZATIONAL CHANGE
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 543 - EXECUTIVE LEADERSHIP AND CORPORATE GOVERNANCE
Short Title: EXEC LEADERSHIP & CORP GOV
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 544 - CONTEMPORARY MANAGEMENT THOUGHT
Short Title: CONTEMPORARY MGMT THOUG
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 545 - STRATEGY RESEARCH IN CORPORATE DEVELOPMENT
Short Title: STRATEGY RESEARCH IN CORP DEV.
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 546 - EMERGING MARKET STRATEGY
Short Title: EMERGING MARKET STRATEGY
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 547 - INNOVATION AND KNOWLEDGE SPILLOVERS IN EMERGING MARKETS
Short Title: INNOVATION & KNOWLEDGE
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 548 - CORPORATE STRATEGY
Short Title: CORPORATE STRATEGY
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 549 - STRATEGY PRO-SEMINAR
Short Title: STRATEGY PRO-SEMINAR
Department: Business
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will expose you to the research areas of the entire strategy and organizational behavior faculty at the Jones School and possible invited guests. Repeatable for Credit.

BUSI 550 - CORPORATE SOCIAL RESPONSIBILITY
Short Title: CORP SOCIAL RESPONSIBILITY
Department: Business
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
BUSI 551 - STRATEGY RESEARCH IN CORPORATE DEVELOPMENT:
STRATEGIC ALLIANCES AND ACQUISITIONS
Short Title: STRATEGY RESEARCH IN CORP DEV
Department: Business
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate

BUSI 800 - PHD RESEARCH
Short Title: PHD RESEARCH
Department: Business
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

BUSI 801 - PHD RESEARCH II
Short Title: PHD RESEARCH II
Department: Business
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment limited to students in the PHD-BUSI program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

Center for Civic Leadership (LEAD)

LEAD 102 - INTRODUCTION TO CIVIC LEADERSHIP
Short Title: INTRO TO CIVIC LEADERSHIP
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: LEAD 102 will increase students’ understanding of civic leadership in theory and practice. Simulations and case studies will examine how public leaders effect societal change while projects on campus and in the community will provide the opportunity to work in small groups to analyze and address leadership challenges and present findings to stakeholders.
Course URL: ccl.rice.edu

LEAD 150 - LEADERSHIP IN PROFESSIONAL CONTEXT
Short Title: LEADERSHIP IN PROF. CONTEXT
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course prepares students for self-selected internships by familiarizing them with essential leadership concepts and keys to success in professional contexts. Approval required by Leadership Rice. Pre-requisite: Leading Edge Workshop. Instructor Permission Required. Repeatable for Credit.
Course URL: leadership.rice.edu

LEAD 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Seminar, Lecture
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

LEAD 250 - LEADERSHIP AND PROFESSIONAL EXCELLENCE
Short Title: LEADERSHIP AND PROF EXCELLENCE
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course develops knowledge and skills to exercise civic leadership in professional settings. Students will strengthen capacities for recognizing how values, skills, and interests relate to the capacity to exercise effective leadership; for establishing meaningful relationships with mentors, co-workers, and cohort peers and for understanding the interconnectedness of civic leadership in professional contexts. Required of and limited to Leadership Rice Mentorship Experience Fellows placed in mandatory associated internship. Instructor Permission Required.
Course URL: leadership.rice.edu

LEAD 301 - HISTORICAL AND INTELLECTUAL FOUNDATIONS OF LEADERSHIP
Short Title: FOUNDATIONS OF LEADERSHIP
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The focus of this course is to construct a historically informed philosophy of leadership that encompasses not just what leadership is but why it is valued, when it is legitimate, what its moral purpose is, and how it both shapes and reflects societal norms. Cross-list: HUMA 312.
Course URL: leadership.rice.edu
LEAD 309 - LEADERSHIP: THEORY TO PRACTICE
Short Title: LEADERSHIP: THEORY TO PRACTICE
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is designed to help students develop a conceptual, practical, and personal understanding of leadership. By reviewing research and case studies, students will learn leadership skills such as building self-knowledge, dealing with ethical challenges, developing networks, and leading change. Students will also explore their own leadership capabilities and potential.
Course URL: leadership.rice.edu

LEAD 311 - LEADERSHIP AND CREATIVITY
Short Title: LEADERSHIP AND CREATIVITY
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Do creative people become leaders? Does the process of leadership require creativity? We will explore these questions by reviewing research and case studies and by engaging in experiential exercises. Students will also learn about the role of leadership in fostering creativity in groups, organizations, and within their own decision making.
Course URL: leadership.rice.edu

LEAD 313 - ENTREPRENEURIAL LEADERSHIP
Short Title: ENTREPRENEURIAL LEADERSHIP
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Entrepreneurial Leadership provides students with a survey of leadership issues and practices in an entrepreneurial business and social context, along with an understanding of fundamental business elements of importance to entrepreneurs and social entrepreneurs. Through discussions with established entrepreneurial leaders in the Houston community, ongoing readings, group discussions, and special presentations, students experience the challenging interplay between business demands and effective leadership. Delano Brissett is the Founder and CEO of Wynston, an online career and technical education start-up. He was recently named one of 50 under 40 emerging social entrepreneurs by the Social Enterprise Alliance and American Express.

LEAD 320 - RHETORIC OF LEADERSHIP
Short Title: RHETORIC OF LEADERSHIP
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores leadership theories as they relate to persuasive and informative communication strategies deployed by leaders. The class will focus on analyzing speeches, advertisement campaigns, political campaigns, and other leadership-oriented material in order to understand the rhetorical construction of leadership. Cross-list: HUMA 311.

LEAD 321 - LEADERSHIP COMMUNICATION
Short Title: LEADERSHIP COMMUNICATION
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Powerful communication skills are essential for effective leadership, and LEAD 321 equips students to articulate ideas with poise, confidence, and clarity. Students develop written, oral, interpersonal, and team skills while developing an understanding of leadership communication in different contexts, including specific fields of study. The Leadership Communication class gives students the opportunity to practice the types of communication that will be required of them in the workplace and that will be crucial for their success.

LEAD 325 - APPLIED LEADERSHIP: POWER, INFLUENCE, AND PERSUASION
Short Title: APPLIED LEADERSHIP
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This leadership skills development course focuses on practical applications in negotiations, consulting, and professional communication with the goal of helping students to motivate and collaborate with divers stakeholders in nonprofit or for profit organizations. Students practice conflict management, change management, and group facilitation. Recommended for Certificate in Civic Leadership.
LEAD 330 - LEADERSHIP IN HIGHER EDUCATION
Short Title: LEADERSHIP IN HIGHER EDUCATION
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Higher education is a challenging environment for leaders - when transformative changes are desired, the process of leadership offers the only possibility for change that is viewed as legitimate. This course uses a case study approach to understand leadership through the lenses of strategic choice, governance, organizational change, culture and values, leader transitions, and crisis.

LEAD 335 - CRISIS LEADERSHIP
Short Title: CRISIS LEADERSHIP
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: It feels like we live in perpetual whitewater these days. We lurch from crisis to crisis, many of which might have been avoided. This course examines major public crises resulting from low-probability, high-consequence events. The core premise is that effective leadership improves the likelihood of avoiding or mitigating the consequences of crises, and allows us to take advantage of the opportunities that disasters create.

LEAD 340 - PHILANTHROPY IN THEORY AND PRACTICE
Short Title: PHILANTHROPY T & L
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the history, philosophy, and practice of philanthropy in addressing public need with an introduction to ethics and importance of financial giving and community investment. Students will spend substantial time working with local nonprofits in order to select a recipient for a grant awarded by the class.

LEAD 350 - ADVANCED LEADERSHIP PRACTICUM
Short Title: ADVANCED LEADERSHIP PRACTICUM
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LEAD 150
Description: This course prepares teaching assistants to mentor and coach students enrolled in LEAD 150. TA's will develop a deep understanding of current leadership literature, analyze challenges facing young leaders today, develop ways to apply leadership concepts to build skills, and apply strategies for coaching and mentoring. Approval required by Leadership Rice. Instructor Permission Required.
Course URL: leadership.rice.edu

LEAD 545 - STRATEGIC THINKING FOR COMPLEX PROBLEM SOLVING
Short Title: STRATEGIC THINKING
Department: Center for Civic Leadership
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course shows how to solve complex, ill-defined, non-immediate problems. It explains how to combine innovative and critical thinking to: -1- frame the problem, -2- diagnose the problem, -3- identify potential solutions, and -4- choose a solution and implement it. The approach is based on cases, each student will work on a project of their choosing. The course is equally applicable to academic and non-academic projects (such as consulting) in an industry; as such, it is open to students from all schools and departments. It is a part of a larger professional development initiative at Rice to equip students with skills that employers are specifically asking for. Cross-list: ENG 545.

Chemical & Biomolecular Eng (CHBE)

CHBE 100 - INTRODUCTION TO CHEMICAL AND BIOMOLECULAR ENGINEERING
Short Title: INTRO TO CHEM&BIOMOLECULAR ENG
Department: Chemical & Biomolecular Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A series of lectures for freshman that outline how chemical and biomolecular engineers tackle today's major energy, health, environmental and economic challenges by working to provide sustainable and affordable energy, by designing new materials, biological products or medical therapeutics, and by developing production methods that are friendly to our environment.

CHBE 281 - ENGINEERING SUSTAINABLE COMMUNITIES
Short Title: ENGRG SUSTAINABLE COMMUNITIES
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Students will work in teams to develop sustainable solutions for energy or environmental problems affecting our Houston and Rice communities. Emphasis will be placed on the integration of engineering fundamentals with societal issues, environmental and safety considerations, sustainability and professional communications. Prerequisites: Introductory Engineering Courses, or Permission of Instructor. Cross-list: ENST 281.
CHBE 301 - CHEMICAL ENGINEERING FUNDAMENTALS
Short Title: CHEMICAL ENGR FUNDAMENTALS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (CHEM 122 or CHEM 152) and MATH 101 and MATH 102
Corequisite: CHBE 303
Description: Use of basic mathematical concepts and computer tools, physical laws, stoichiometry and the thermodynamic properties of matter to obtain material and energy balances for steady and unsteady state systems. Required for sophomores intending to major in chemical engineering.

CHBE 303 - COMPUTER PROGRAMMING IN CHEMICAL ENGINEERING
Short Title: COMP PROGRAMMING IN CHEM ENG
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Corequisite: CHBE 301
Description: An introduction to structured programming and computation taught by solving real-world chemical engineering problems.

CHBE 305 - COMPUTATIONAL METHODS IN CHEMICAL ENGINEERING
Short Title: COMP METHODS CHEMICAL ENGIN
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 301 and CHBE 303 and MATH 211
Description: Introduction to modern practice and chemical engineering applications of scientific computing: approximations and round-off errors; solution of nonlinear algebraic equations; solution of systems of linear equations; unconstrained and constrained optimization; least squares regression; interpolation; numerical solution of ordinary differential equations; chaos; boundary value problems. Principles illustrated through chemical engineering examples.

CHBE 310 - FUNDAMENTALS OF BIOMOLECULAR ENGINEERING
Short Title: INTRO BIOMOLECULAR ENGINEERING
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and CHBE 301 and CHBE 303

CHBE 343 - CHEMICAL ENGINEERING LAB I
Short Title: CHEMICAL ENGINEERING LAB I
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 390 and CHBE 401 and CHBE 411
Corequisite: CHBE 350
Description: Experiments demonstrating principles presented in core chemical engineering courses.

CHBE 350 - PROCESS SAFETY IN CHEMICAL ENGINEERING
Short Title: PROCESS SAFETY
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Corequisite: CHBE 343
Description: Examination of principles of chemical process safety through case studies and group discussions.

CHBE 382 - INNOVATION AND SUSTAINABILITY
Short Title: INNOVATION & SUSTAINABILITY
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics in development and environmental economics focusing on how innovation can improve underdeveloped economies and our environment. Introduction to a general framework for assessing the impact of humans on the environment. Environmental consequences of increasing energy use. Case studies showing how innovation information technologies can provide alternatives for sustainable growth. Graduate/Undergraduate Equivalency: CHBE 582. Mutually Exclusive: Credit cannot be earned for CHBE 382 and CHBE 582.

CHBE 390 - CHEMICAL KINETICS AND REACTOR DESIGN
Short Title: KINETICS & REACTOR DESIGN
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 301 and CHBE 305 and MATH 211 and (MATH 212 or MATH 222)
Description: General areas that are covered in this course are (1) principles of chemical kinetics; (2) analysis of reaction rate data; (3) heterogeneous catalysis; (4) ideal reactor design and sizing; and (5) heat effects in reactor designs.
### CHBE 401 - TRANSPORT PHENOMENA I
**Short Title:** TRANSPORT PHENOMENA I  
**Department:** Chemical & Biomolecular Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (CHBE 305 and MATH 211) and MATH 212 or MATH 222 and (PHYS 101 and PHYS 102) or (PHYS 112 and PHYS 111)  
**Description:** Fundamental principles of energy, mass, and momentum transport applied to the continuum; analysis of macroscopic physical systems based on the continuum equations; applications in chemical engineering practice.

### CHBE 402 - TRANSPORT PHENOMENA II
**Short Title:** TRANSPORT PHENOMENA II  
**Department:** Chemical & Biomolecular Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** CHBE 401 and CAAM 336 (may be taken concurrently)  
**Description:** Continuation of CHBE 401. Emphasis on energy and mass transport applied to the continuum. CAAM 336 and MATH 381 may be taken concurrently with CHBE 402.

### CHBE 403 - DESIGN FUNDAMENTALS
**Short Title:** DESIGN FUNDAMENTALS  
**Department:** Chemical & Biomolecular Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 4  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** CHBE 390 and CHBE 402 and CHBE 412  
**Description:** Design principles as applied to chemical engineering systems. Engineering economic principles. Costs of equipment, feedstocks, and utilities. Equipment design. Use of modern simulation tools. Graduate/Undergraduate Equivalency: CHBE 503. Mutually Exclusive: Credit cannot be earned for CHBE 403 and CHBE 503.

### CHBE 404 - CHEMICAL ENGINEERING DESIGN
**Short Title:** CHEMICAL ENGINEERING DESIGN  
**Department:** Chemical & Biomolecular Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 4  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** CHBE 403  
**Description:** Strategies for conceptual design of complex chemical engineering systems. Components include sustainability, heat and power integration. Students tackle engineering design projects in small groups.

### CHBE 411 - THERMODYNAMICS I
**Short Title:** THERMODYNAMICS I  
**Department:** Chemical & Biomolecular Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** CHBE 401 and CAAM 336 (may be taken concurrently)  
**Description:** Fundamental principles of energy and mass transport applied to the continuum. CAAM 336 and MATH 381 may be taken concurrently with CHBE 402.

### CHBE 412 - THERMODYNAMICS II
**Short Title:** THERMODYNAMICS II  
**Department:** Chemical & Biomolecular Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** CHBE 411  
**Description:** Advanced treatment of chemical and phase equilibria in multicomponent systems. Includes a detailed study of nonideal solutions.

### CHBE 420 - TRANSPORT PHENOMENA IN BIOENGINEERING
**Short Title:** TRANSPORT PHENOMENA BIOENG  
**Department:** Chemical & Biomolecular Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MATH 211 and MATH 212 and (BIOE 332 or CHBE 411) and BIOE 391  
**Description:** BIOE 420/CHBE 420 covers transport phenomena as applied to biological systems and biomedical devices. Conservation of momentum and mass equations are first derived and then used to analyze transport of momentum and mass in biology, physiology, and in biomedical devices. This course is designed for senior bioengineering students. Cross-list: BIOE 420.

### CHBE 443 - CHEMICAL ENGINEERING LAB II
**Short Title:** CHEMICAL ENGINEERING LAB II  
**Department:** Chemical & Biomolecular Engr  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** CHBE 343 and CHBE 402 and CHBE 412  
**Description:** Experiments demonstrating principles presented in core chemical engineering courses including transport phenomena, thermodynamics, and process control professionalism and engineering ethics.
CHBE 450 - PETROLEUM PHASE BEHAVIOR AND FLOW ASSURANCE
Short Title: PETRO PHASE BEHAV & FLOW ASSUR
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 305 and CHBE 412
Description: Reviews fundamentals of phase and chemical equilibria thermodynamics focusing on the application of experimental and advanced modeling techniques to characterize reservoir fluids and predict their phase behavior and thermo-physical properties. Intended for students who wish to develop expertise on PVT modeling and gain understanding of common petroleum flow assurance problems. Graduate/Undergraduate Equivalency: CHBE 550. Mutually Exclusive: Credit cannot be earned for CHBE 450 and CHBE 550.

CHBE 455 - TWO PHASE FLOW/MULTIPHASE FLOW IN PIPES
Short Title: TWO PHASE FLOW/MULTIPHASE FLOW
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course addresses the basics concepts, fundamentals, mathematical modeling and practical issues in multiphase fluid flow containing oil, water, gas and suspended solid particles in the oil and gas well columns, offshore and onshore production systems and pipelines. This course will have both an undergraduate and graduate level. Graduate/Undergraduate Equivalency: CHBE 555. Mutually Exclusive: Credit cannot be earned for CHBE 455 and CHBE 555.

CHBE 460 - BIOCHEMICAL ENGINEERING
Short Title: BIOCHEMICAL ENGINEERING
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252
Description: Design, operation, and analysis of processes in the biochemical industries. Topics include enzyme kinetics, cell growth kinetics, energetics, recombinant DNA technology, microbial, tissue and plant cell cultures, bioreactor design and operation, down stream processing. Cross-list: BIOE 460.

CHBE 465 - STATISTICAL PHYSICS WITH APPLICATIONS TO MOLECULAR NANOSCIENCE AND TECHNOLOGY
Short Title: STAT PHY W/MOL NANOSCI & TECH
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explains the foundations of modern statistical physics, including the renormalization group theory, and describes applications to phenomena at the molecular ("nano") scale in various disciplines including chemical engineering, physics, chemistry, electrical engineering, and material science. No knowledge of statistical physics is required, but fundamentals of thermodynamics are useful. Graduate/Undergraduate Equivalency: CHBE 565. Mutually Exclusive: Credit cannot be earned for CHBE 465 and CHBE 565.

CHBE 470 - PROCESS DYNAMICS AND CONTROL
Short Title: PROCESS DYNAMICS & CONTROL
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHBE 390 and CHBE 402 and CHBE 412

CHBE 490 - CHEMICAL CAR ENGINEERING AND DESIGN
Short Title: CHEM CAR ENG AND DESIGN
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An engineering design course focused on the design and fabrication of a car powered by a chemical reaction. Repeatable for Credit.

CHBE 495 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Discussion of advanced topics of interest. Students will spend time exploring special topics chosen with their advisor, and will participate in weekly discussion groups. The number of credits will vary and are awarded based on total time required to explore the chosen project. Instructor Permission Required. Repeatable for Credit.
CHBE 499 - UNDERGRADUATE RESEARCH
Short Title: UNDERGRADUATE RESEARCH
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent investigation of a specific topic or problem in modern chemical engineering research under the direction of a selected faculty member. Department Permission Required. Repeatable for Credit.

CHBE 501 - FLUID MECHANICS AND TRANSPORT PROCESSES
Short Title: FLUID MECH & TRANSPORT PROC
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced study in fluid mechanics and transport processes including analytical and numerical approximation methods, boundary layer theory, and potential flow theory.

CHBE 503 - DESIGN FUNDAMENTALS
Short Title: DESIGN FUNDAMENTALS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Design principles as applied to chemical engineering systems. Engineering economic principles. Costs of equipment, feedstocks, and utilities. Equipment design. Use of modern simulation tools. Graduate level course will include an advanced project as a separate requirement. Department Permission Required. Graduate/Undergraduate Equivalency: CHBE 403. Mutually Exclusive: Credit cannot be earned for CHBE 503 and CHBE 403.

CHBE 550 - PETROLEUM PHASE BEHAVIOR AND FLOW ASSURANCE
Short Title: PETRO PHASE BEHAV & FLOW ASSUR
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (CHBE 305 and CHBE 412)
Description: Reviews fundamentals of phase and chemical equilibria thermodynamics focusing on the application of experimental and advanced modeling techniques to characterize reservoir fluids and predict their phase behavior and thermo-physical properties. Intended for students who wish to develop expertise on PVT modeling and gain understanding of common petroleum flow assurance problems. At the graduate level (CHBE 550), a final project will be required. Graduate/Undergraduate Equivalency: CHBE 450. Mutually Exclusive: Credit cannot be earned for CHBE 550 and CHBE 450.

CHBE 555 - TWO PHASE FLOW/MULTIPHASE FLOW IN PIPES
Short Title: TWO PHASE FLOW/MULTIPHASE FLOW
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course addresses the basic concepts, fundamentals, mathematical modeling and practical issues in multiphase fluid flow containing oil, water, gas and suspended solid particles in the oil and gas well columns, offshore and onshore production systems and pipelines. This course will have both an undergraduate and graduate level. Graduate/Undergraduate Equivalency: CHBE 455. Mutually Exclusive: Credit cannot be earned for CHBE 555 and CHBE 455.

CHBE 558 - ADVANCES IN NUCLEASE-MEDIATED GENOME ENGINEERING
Short Title: ADV NUCLEASE-MEDIATED GEN ENG
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides a comprehensive understanding of advances in the nuclelease-mediated genome engineering field. Past and current stages of genome-editing technologies, the fundamental mechanisms of different classes of genome-editing nucleases, and cutting-edge strategies for engineering novel genome-editing agents and their applications in synthetic biology and therapeutics. Cross-list: BIOC 558.
CHBE 560 - COLLOIDAL AND INTERFACIAL PHENOMENA
Short Title: COLLOIDAL & INTERFACIAL PHENOM
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course will provide knowledge into the fundamentals of colloidal interactions (e.g., stabilisation, adsorption, self-assembly) and the techniques currently applied for their assessment. Apart from the theoretical background, the course will also provide applicable knowledge by covering current and emerging applications involving these phenomena. Interfacial tension, wetting and spreading, contact angle hysteresis, interaction between colloid particles, stability of interfaces, flow and transport near interfaces will be covered. NOTE: Offered in alternative year with MSNE 594/CHBE 594. Cross-list: MSNE 560.

CHBE 565 - STATISTICAL PHYSICS WITH APPLICATIONS TO MOLECULAR NANOSCIENCE AND TECHNOLOGY
Short Title: STAT PHY W/MOL NANOSCI & TECH
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explains the foundations of modern statistical physics, including the renormalization group theory, and describes applications to phenomena at the molecular ("nano") scale in various disciplines including chemical engineering, physics, chemistry, electrical engineering, and material science. No knowledge of statistical physics is required, but fundamentals of thermodynamics are useful. Graduate/Undergraduate Equivalency: CHBE 465. Mutually Exclusive: Credit cannot be earned for CHBE 565 and CHBE 465.

CHBE 570 - INDUSTRIAL CATALYSIS AND PETROCHEMICAL PROCESSES
Short Title: INDUSTRIAL CATALYSIS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers industrial applications of catalysis and petrochemical processes. It intends to bridge the gap between the fundamentals and theories of heterogeneous catalysis and the practical applications in petrochemical industries. It is suitable for graduate students and advanced undergraduate students with permission. Repeatable for Credit.

CHBE 571 - FLOW AND TRANSPORT THROUGH POROUS MEDIA I
Short Title: FLOW&TRANSPRT POROUS MEDIA I
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the geology, chemistry, and physics of multicomponent, multiphase fluids in porous media. Includes hydrostatic and hydrodynamic properties of fluids in soils and rocks and the simulation of fundamental transport processes in one dimension.
CHBE 593 - INTRODUCTION TO POLYMER PHYSICS AND ENGINEERING
Short Title: POLYMER PHYSICS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Prerequisite(s): CHEM 211 and CHEM 212
Description: The course focuses on demonstrating how the physical properties of polymers can be understood from simple models. Students will be introduced to the terminology and mathematics involved in the physical understanding of polymer systems. The course is intended for students who would like to gain an understanding of modern approaches to polymer physics. NOTE: Not offered every year. Cross-list: MSNE 593.

CHBE 594 - PROPERTIES OF POLYMERS
Short Title: PROPERTIES OF POLYMERS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (CHEM 211 or CHEM 251) and (MATH 211 or MATH 221)
Description: The course will introduce basic concepts in polymer science including the synthesis and chemical modification of polymers as well as physical properties of polymers. Topics include approaches to polymer synthesis, processing and characterization of polymer materials, and an introduction to mathematical models applied to describe the structure and dynamics of polymeric materials. NOTE: Offered in alternative year with MSNE 560/CHBE 560. Cross-list: MSNE 594. Repeatable for Credit.

CHBE 600 - MASTER OF CHEMICAL ENGINEERING RESEARCH
Short Title: MASTER CHEM ENGINEER RESEARCH
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Independent investigation of a topic or problem in modern chemical engineering research under the direction of a selected faculty member. Department Permission Required. Repeatable for Credit.

CHBE 602 - PHYSICO-CHEMICAL HYDRODYNAMICS
Short Title: PHYSICO-CHEMICAL HYDRODYNAMICS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics in hydrodynamics including areas such as waves on liquid surfaces, convection and diffusion in liquids, motion of drops and bubbles, and electrophoresis.

CHBE 603 - RHEOLOGY
Short Title: RHEOLOGY
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

CHBE 605 - TEACHING ASSISTANT
Short Title: TEACHING ASSISTANT
Department: Chemical & Biomolecular Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Registration for this class is required for all graduate students assigned as teaching assistants within the Department of Chemical and Biomolecular Engineering. Repeatable for Credit.

CHBE 606 - DEAN'S TEACHING ASSISTANT
Short Title: DEAN'S TEACHING ASSISTANT
Department: Chemical & Biomolecular Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Registration for this class is required for all graduate students assigned as Dean's teaching assistants within the Department of Chemical and Biomolecular Engineering. Repeatable for Credit.

CHBE 609 - RISK ASSESSMENT AND ASSET INTEGRITY IN OIL AND GAS PRODUCTION AND REFINING OPERATIONS I
Short Title: OIL AND GAS ASSET INTEGRITY I
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course integrates risk assessment and mitigation, asset integrity management, corrosion control and materials selection across the oil and gas value chain, from production to refining and retail. The full course covers 2 semesters. Session "I", to be delivered in the Spring 2017 semester. Session "II" will be delivered in the Fall 2017 semester. Instructor Permission Required. Cross-list: MSNE 609.
CHBE 610 - THERMODYNAMICS AND APPLICATIONS TO HYDROCARBON PRODUCTION AND CHEMICAL ENGINEERING PHENOMENA
Short Title: THERMO APP TO OIL PRODUCTION
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will learn how thermodynamics can be used to gain insights into hydrocarbon energy production processes. Classical thermo is covered in bulk phase equilibrium and stability, interfaces, and then liquid films areas. Some statistical thermo and molecular simulations. Effect of nano-size and charge on material properties, nucleation, species distribution, climate change, and shale gas/oil.

CHBE 611 - ADVANCED TOPICS-THERMODYNAMICS
Short Title: ADVANCED TOPICS-THERMODYNAMICS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An advanced treatment of the thermodynamics of pure and multicomponent systems. Topics range from classical thermodynamics to a discussion of modern developments, and include an introduction to statistical thermodynamics.

CHBE 615 - APPLICATION OF MOLECULAR SIMULATION AND STATISTICAL MECHANICS
Short Title: APPL MOLEC SIMULATN&STAT MECH
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to molecular simulation techniques and applications of statistical mechanics-based theory to engineering problems. Projects involve topics of current research. Students are expected to know thermodynamics and to have had some introduction to statistical mechanics.

CHBE 618 - RISK ASSESSMENT AND ASSET INTEGRITY IN OIL AND GAS PRODUCTION AND REFINING OPERATIONS II
Short Title: OIL AND GAS ASSET INTEGRITY II
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course integrates risk assessment and mitigation, asset integrity management, corrosion control and materials selection across the oil and gas value chain, from production to refining and retail. The full course covers 2 semesters. Session "I" to be delivered in the Spring 2017 semester. Session "II" will be delivered in the Fall 2017 semester. Instructor Permission Required. Cross-list: MSNE 618.

CHBE 620 - TISSUE ENGINEERING
Short Title: TISSUE ENGINEERING
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will focus on cell-cell interactions and the role of the extracellular matrix in the structure and function of normal and pathological tissues. Includes strategies to regenerate metabolic organs and repair structural tissues, as well as cell-based therapies to deliver proteins and other therapeutic drugs, with emphasis on issues related to cell and tissue transplantation such as substrate properties, angiogenesis, growth stimulation, cell differentiation, and immunoprotection. Cross-list: BIOE 620.

CHBE 630 - CHEMICAL ENGINEERING OF NANOSTRUCTURED MATERIALS
Short Title: CHEM ENG NANOSTRUCTURE MATRLS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of materials with structural features on the nanometer scale. Discussion of general concepts of synthesis, characterization and applications. Highlight advances found in recent literature.

CHBE 633 - SPECIAL TOPICS ON THE STATISTICAL FOUNDATIONS OF NON-EQUILIBRIUM MOLECULAR NANOSYSTEMS
Short Title: SPEC TOPICS:STAT FNDT MOL NANO
Department: Chemical & Biomolecular Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Selected topics in the foundations of the statistical physics of soft condensed matter, including colloidal, nanoscale, and macromolecular systems. Foundations of transport phenomena statistical theory; stochastic processes in macromolecular and colloidal systems; course-graining; modeling and simulation of intramolecular forces; stochastic differential equations; simulation techniques. Instructor Permission Required.

CHBE 640 - METABOLIC ENGINEERING
Short Title: METABOLIC ENGINEERING
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
CHBE 655 - THERMODYNAMICS AND APPLICATIONS TO HYDROCARBON PRODUCTION AND CHEMICAL ENGINEERING PHENOMENA
Short Title: THERMODYNAMICS & APPS HC PROD
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How thermodynamics can be used to gain fundamental insights into many chem-pee problems and hydrocarbon energy production processes. Course covers classical thermodynamics in the broad context of bulk phase equilibrium and stability, bulk phase irreversible phenomena, interfacial thermodynamics, and thermodynamics of thin liquid films; some statistical thermodynamics and molecular simulations.

CHBE 661 - GRADUATE SEMINAR
Short Title: GRADUATE SEMINAR
Department: Chemical & Biomolecular Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

CHBE 662 - GRADUATE SEMINAR
Short Title: GRADUATE SEMINAR
Department: Chemical & Biomolecular Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

CHBE 671 - FLOW AND TRANSPORT THROUGH POROUS MEDIA II
Short Title: FLOW&TRANSPORT POROUS MEDIA II
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Calculation of multicomponent-multiphase transport in one to three dimensions using finite difference methods. Includes development of multidimensional models of systems and representation and estimation of geological heterogeneity.

CHBE 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

CHBE 682 - SYSTEMS BIOLOGY OF HUMAN DISEASES
Short Title: SYS BIO OF HUMAN DISEASES
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to concepts necessary for application of systems - Biology Approaches to Human Diseases. Topics include transcriptional and metabolic design principles, introduction to various regulatory network motifs in diseases and potential treatments using embryonic stem cells. Analysis of complex diseases using engineering concepts such as optimality, nonequilibrium thermodynamics, multiscale analysis and spatiotemporal transport. Cross-list: BIOE 682.

CHBE 692 - APPLIED MATHEMATICS FOR CHEMICAL ENGINEERING
Short Title: APPL MATHEMATICS FOR CHEM ENG
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The class focuses on the numerical analysis of various times integration techniques for ordinary differential equations, as well as spatial and temporal discretization methods for hyperbolic and parabolic partial differential equations that describe processes in engineering and biology. Homework and projects aim at the comparative evaluation of the various schemes discussed in class. Recommended prerequisite(s): Knowledge of a programming language (Fortran preferably) elementary P.D.E.’s, basic concepts of calculus.

CHBE 695 - MCHE INDEPENDENT STUDY
Short Title: MCHE INDEPENDENT STUDY
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will do research and/or carry out independent study on a particular problem as agreed by the student and advisor. The number of credit hours granted will be determined in each case based upon work load. Students will be provided an outline (syllabus) of the expectations for hours and product that will be reviewed periodically with the advisor and course instructor. Instructor Permission Required.

CHBE 700 - M.S. RESEARCH AND THESIS
Short Title: M.S. RESEARCH AND THESIS
Department: Chemical & Biomolecular Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
CHBE 720 - SPECIAL TOPICS IN CHEMICAL ENGINEERING I
Short Title: SPECIAL TOPICS CHEM ENGRG I
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Description: A course which covers various special topics in chemical engineering. Offered at irregular intervals on demand. Instructor Permission Required. Repeatable for Credit.

CHBE 760 - BAYLOR/RICE MD/PHD PROGRAM
Short Title: BAYLOR/RICE MD/PHD PROGRAM
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.

CHBE 800 - GRADUATE RESEARCH
Short Title: GRADUATE RESEARCH
Department: Chemical & Biomolecular Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Description: Repeatable for Credit.

CHBE 801 - SPECIAL TOPICS IN CHEMICAL ENGINEERING II
Short Title: SPECIAL TOPICS CHEM ENGRG II
Department: Chemical & Biomolecular Engr
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Description: Summer internship in an area related to thesis research or professional broadening. Permission of thesis advisor and department chair required. Repeatable for Credit.

Chemistry (CHEM)
CHEM 101 - INTRODUCTION TO SCIENTIFIC RESEARCH
Short Title: INTRO SCIENTIFIC RESEARCH
Department: Chemistry
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 5
Restrictions: Graduate level students may not enroll.

CHEM 110 - FRESHMAN CHEMISTRY SEMINAR
Short Title: FRESHMAN CHEMISTRY SEMINAR
Department: Chemistry
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.

CHEM 121 - GENERAL CHEMISTRY I
Short Title: GENERAL CHEMISTRY I
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

CHEM 122 - GENERAL CHEMISTRY II
Short Title: GENERAL CHEMISTRY II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

CHEM 151 - GENERAL CHEMISTRY
Short Title: GENERAL CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
CHEM 122 - GENERAL CHEMISTRY II
Short Title: GENERAL CHEMISTRY II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHEM 121
Description: A continuation of CHEM 121. Either CHEM 122 or CHEM 152 may be taken as prerequisites for higher study in chemistry, but only one may be taken for credit. Students must also register for CHEM 124 General Chemistry Laboratory II. The course and the co-requisite lab are graded jointly.

CHEM 123 - GENERAL CHEMISTRY LABORATORY I
Short Title: GENERAL CHEMISTRY LAB I
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Distribution Group: Distribution Group III
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Required laboratory component of CHEM 121. Students must also register for CHEM 121. Credit may only be received for either CHEM 123 or CHEM 153 but not both. The course and the co-requisite lab are graded jointly.

CHEM 124 - GENERAL CHEMISTRY LABORATORY II
Short Title: GENERAL CHEMISTRY LAB II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Distribution Group: Distribution Group III
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHEM 123 or CHEM 153
Description: Required laboratory component of CHEM 122. Students must also register for CHEM 122. Credit may not be received for both CHEM 124 and CHEM 154. The course and the co-requisite lab are graded jointly.

CHEM 151 - HONORS CHEMISTRY I
Short Title: HONORS CHEMISTRY I
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Corequisite: CHEM 153
Description: An accelerated introduction to chemical phenomena emphasizing principles and theories in chemistry. Recommended strongly for students who plan to major in chemistry or have a strong high school background. Students with AP credit in Chemistry who intend to pursue advanced study in Chemistry are strongly encouraged to take CHEM 151 and CHEM 152. Students must also register for CHEM 153, which is laboratory that meets once per week. Either CHEM 121 or CHEM 151 may be taken as a prerequisite for higher study in chemistry, but only one of these may be taken for credit. The course and the co-requisite lab are graded jointly. Recommended prerequisite(s): high school chemistry and physics.

CHEM 152 - HONORS CHEMISTRY II
Short Title: HONORS CHEMISTRY II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHEM 151
Corequisite: CHEM 154
Description: A continuation of CHEM 151. Students with AP credit in Chemistry who intend to pursue advanced study in Chemistry are strongly encouraged to take CHEM 151 and CHEM 152. Students must also register for CHEM 154 which is a laboratory that meets once per week. Either CHEM 122 or CHEM 152 may be taken as a prerequisite for higher study in chemistry, but only one of these may be taken for credit. The course and the co-requisite are graded jointly.

CHEM 153 - HONORS CHEMISTRY LABORATORY I
Short Title: HONORS CHEMISTRY LABORATORY I
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Distribution Group: Distribution Group III
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Corequisite: CHEM 151
Description: Required laboratory component of CHEM 151. Students must also register for CHEM 151. The course and the co-requisite lab are graded jointly.
CHEM 154 - HONORS CHEMISTRY LABORATORY II
Short Title: HONORS CHEMISTRY LABORATORY II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Distribution Group: Distribution Group III
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHEM 153 or CHEM 123
Corequisite: CHEM 152
Description: Required laboratory component of CHEM 152. Students must also register for CHEM 152. The course and the co-requisite lab are graded jointly.

CHEM 176 - THE CHEMISTRY OF ART
Short Title: THE CHEMISTRY OF ART
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The chemistry of the materials and methods used to create, conserve and authenticate art objects will be presented. Topics will include sculpture, painting, photography, textiles, jewelry, furniture, etc. Taught in conjunction with the Conservation Department and Staff of the MFAH. Some classes will be held at the MFAH or HMNS.

CHEM 178 - THE CHEMISTRY OF COOKING
Short Title: THE CHEMISTRY OF COOKING
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines the chemistry involved in the composition, transformation, and consumption of food. Topics include chemical properties and reactions of food, cooking tools, and techniques, sensory perception, and nutrition. Lectures and hands-on kitchen experiments are taught in conjunction with Rice Dining Service. Knowledge of high school chemistry is expected.

CHEM 201 - ADVANCED TOPICS IN GENERAL CHEMISTRY
Short Title: ADV TOPICS IN GEN CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: CHEM 201 is a one-semester lecture course intended for 1st-year undergraduates who have completed a high school AP Chem course (or equivalent) and wish to reinforce or deepen their understanding of challenging core topics. Focus areas include: quantum descriptions of atoms and molecules, chemical thermodynamics, and reaction kinetics and dynamics. Completion of AP Calculus or concurrent enrollment in Math 101 or 111 is expected.

CHEM 210 - WILD TOPICS IN CHEMISTRY AND NANOTECHNOLOGY
Short Title: WILD TOPICS CHEM AND NANOTECH
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A variety of topics related to chemistry and nanotechnology will be discussed. Some topics are classical while others are current. Topics may include nanocars, molecular electronics, how to form a start-up company. Grades will be based upon attendance and quizzes. Cross-list: CEVE 210, MSNE 210. Repeatable for Credit.

CHEM 211 - ORGANIC CHEMISTRY I
Short Title: ORGANIC CHEMISTRY I
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHEM 122 or CHEM 152
Corequisite: CHEM 213
Description: Organic chemistry of aliphatic and aromatic compounds with emphasis on structure, functional groups, bonding, stereochemistry, and reaction mechanisms. CHEM 211 may be taken as a prerequisite for higher study in chemistry. CHEM 211 and CHEM 213 are co-requisites and must be taken together in the same semester.

CHEM 212 - ORGANIC CHEMISTRY II
Short Title: ORGANIC CHEMISTRY II
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CHEM 211
Corequisite: CHEM 214
Description: Continuation of CHEM 211 with an emphasis on aromatic compounds, reactivity and biologically relevant molecules. Either CHEM 212 or CHEM 320 may be taken as a prerequisite for higher study in chemistry, but only one of these may be taken for credit. CHEM 212 and CHEM 214 are co-requisites and must be taken together the same semester. Mutually Exclusive: Credit cannot be earned for CHEM 212 and CHEM 320.

CHEM 213 - ORGANIC CHEMISTRY DISCUSSION
Short Title: ORGANIC CHEM DISCUSSION
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 0
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Corequisite: CHEM 211
Description: CHEM 211 and CHEM 213 are co-requisites and must be taken together in the same semester.
CHEM 214 - ORGANIC CHEM DISCUSSION II  
Short Title: ORGANIC CHEM DISCUSSION II  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 0  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Corequisite: CHEM 212  
Description: CHEM 212 and CHEM 214 are co-requisites and must be taken together in the same semester. Repeatable for Credit.

CHEM 220 - UNDERGRADUATE CHEMISTRY SEM  
Short Title: UNDERGRADUATE CHEM SEM  
Department: Chemistry  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: An introduction to modern chemical research through seminars and/or directed reading.

CHEM 311 - PHYSICAL CHEMISTRY I  
Short Title: PHYSICAL CHEMISTRY I  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): (CHEM 122 or CHEM 152) and MATH 212  
Description: An introduction to the principles of thermodynamics, statistical thermodynamics, kinetic theory of gases, chemical kinetics and the statistical mechanics.

CHEM 312 - PHYSICAL CHEMISTRY II  
Short Title: PHYSICAL CHEMISTRY II  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): (CHEM 122 or CHEM 152) and MATH 212  
Description: An introduction to fundamental principles in quantum chemistry, chemical bonding and molecular spectroscopy.

CHEM 320 - ORGANIC CHEMISTRY II  
Short Title: ORGANIC CHEMISTRY II  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): CHEM 211 (and (CHEM 232 or CHEM 365 (may be taken concurrently))  
Description: A continuation of CHEM 211 that is in greater depth than CHEM 212. Primarily for chemistry majors and science or engineering students with a strong interest in chemistry research. Either CHEM 212 or CHEM 320 completes the two-semester organic chemistry sequence and may be taken as a prerequisite for higher study in chemistry, but only one may be taken for credit. The pre-req CHEM 232 or CHEM 365 may be taken concurrently with CHEM 320. For registration instructions and additional course information, please see the course web page in Owlspace. Instructor Permission Required. Mutually Exclusive: Credit cannot be earned for CHEM 320 and CHEM 212.

CHEM 330 - ANALYTICAL CHEMISTRY  
Short Title: ANALYTICAL CHEMISTRY  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): CHEM 211  
Description: A treatment of modern analytical chemistry with an emphasis on instrumentation. Applications of analytical chemistry as applied to areas of medicine, forensics, and material. Taught in the Fall.
CHEM 360 - INORGANIC CHEMISTRY
Short Title: INORGANIC CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Corequisite: CHEM 362
Description: Survey of the periodic table; atomic and molecular structure; bonding in covalent, ionic, and electron deficient systems; thermochemical principles and experimental techniques for analysis, structure determination, and synthesis.

CHEM 362 - INORGANIC CHEMISTRY DISCUSSION
Short Title: INORGANIC CHEMISTRY DISCUSSION
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 0
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Corequisite: CHEM 360
Description: Repeatable for Credit.

CHEM 365 - ORGANIC CHEMISTRY LAB
Short Title: ORGANIC CHEMISTRY LAB
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 211
Description: Experiments illustrating techniques in synthetic organic chemistry and instrumental methods of analysis. Normally taken in conjunction with CHEM 212 or CHEM 320. NOTE: only one of CHEM 232 and CHEM 365 may be taken for credit.

CHEM 366 - INORGANIC CHEMISTRY LAB
Short Title: INORGANIC CHEMISTRY LAB
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 211
Description: Advanced techniques in inorganic and organometallic chemistry will be covered including air sensitive manipulations using Schlenk line, vacuum lines and dry box. Graduate students may register with an approved Special Registration form.

CHEM 367 - MATERIALS CHEMISTRY LAB
Short Title: MATERIALS CHEMISTRY LAB
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Provides a hands-on experience for undergraduate student interested in the synthesis and structural characterization of nanostructured materials. Synthetic methods will include wet chemistry techniques and lithographic preparation of nanostructures. The course will provide understanding of and exposure to modern analysis and characterization techniques, including spectroscopy, X-ray methods, and microscopy.

CHEM 368 - CHEMICAL MEASUREMENT LAB
Short Title: CHEMICAL MEASUREMENT LAB
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to Experimental Physical Chemistry. NOTE: only one of CHEM 381 and CHEM 368 may be taken for credit. Mutually Exclusive: Credit cannot be earned for CHEM 368 and CHEM 381.

CHEM 369 - ADVANCED INORGANIC SYNTHESIS
Short Title: ADVANCED INORGANIC SYNTHESIS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced techniques in inorganic and organometallic synthesis will be covered including air sensitive manipulations using Schlenk line, vacuum lines and dry box. Graduate students may register with an approved Special Registration form.

CHEM 391 - RESEARCH FOR UNDERGRADUATES
Short Title: RESEARCH FOR UNDERGRADUATES
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-5
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent chemical research at Rice or in other Texas Medical Center groups. Students spend at least 3 hours per week in the laboratory for each semester hour of credit, in addition to other requirements. If taken for 3 or more hours, counts toward the CHEM 391 requirement for the BS degree in chemistry. Instructor permission required. Students are expected to complete CHEM 391 before the end of their junior year; permission is not normally granted for students in their final year of undergraduate study. Prior to enrollment, students must secure a position in a laboratory. Application materials found on the department website must be submitted by August 1st for Fall term and December 1st for the Spring term. Instructor Permission Required.
CHEM 398 - ADVANCED MODULE: DEVELOPMENT OF EXPERIMENTS FOR UNDERGRADUATE CHEMISTRY LABS
Short Title: ADV MOD DEV EXP UG CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An advanced laboratory module open to exceptional majors to develop laboratory experiments under the supervision of a chemistry faculty member. Each student will design an experiment to be included in an undergraduate teaching lab. Required is a written document, which should include an experimental protocol, background information and possible pre- and post-lab questions. Instructor Permission Required.

CHEM 401 - ADVANCED ORGANIC CHEMISTRY
Short Title: ADVANCED ORGANIC CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 212 or CHEM 320
Description: The principles of structure and bonding are used to explain and predict reactivity in organic chemistry. Extensive practice with reaction mechanism and curved-arrow formalism. Topics include conformational analysis, acidity/basicity, functional group preparation, stereoselective synthesis, and organo-element chemistry. Graduate/Undergraduate Equivalency: CHEM 501. Mutually Exclusive: Credit cannot be earned for CHEM 401 and CHEM 501.

CHEM 415 - CHEMICAL KINETICS & DYNAMICS
Short Title: CHEMICAL KINETICS & DYNAMICS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 212 and (PHYS 102 or PHYS 112) and CHEM 310
Description: Description and analysis of the rates of unimolecular, bimolecular and composite chemical reactions in gas and solution phases. Both macroscopic kinetics and microscopic reaction dynamics are covered. Graduate/Undergraduate Equivalency: CHEM 515. Mutually Exclusive: Credit cannot be earned for CHEM 415 and CHEM 515.

CHEM 420 - CLASSICAL AND STATISTICAL THERMODYNAMICS
Short Title: CLASSICAL & STAT THERMODYNAMICS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 212 and (PHYS 102 or PHYS 112) and CHEM 310 or (CHEM 311 and CHEM 312)
Description: A review of the principles of classical thermodynamics and an introduction to the theories and methods of statistical thermodynamics with applications to problems in chemistry. Graduate/Undergraduate Equivalency: CHEM 520. Mutually Exclusive: Credit cannot be earned for CHEM 420 and CHEM 520.

CHEM 425 - ORGANIC GEOCHEMISTRY
Short Title: ORGANIC GEOCHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course covers the organic geochemistry of the natural environment. Topics include: production, transport, decomposition, and storage of organic matter in the marine and terrestrial environments, use of isotopes to track biogeochemical processes, and natural and perturbed carbon cycle issues, including past and recent climate shifts. Cross-list: ENST 425, ESCI 425.

CHEM 430 - QUANTUM CHEMISTRY
Short Title: QUANTUM CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (CHEM 310 or CHEM 312) and MATH 212 and (PHYS 102 or PHYS 112)
Description: The purpose of this course is to provide the student with a working knowledge of the basic concepts and mathematical formalism of quantum mechanics. Topics include the mathematics of quantum mechanics, one-dimensional problems, central field problems, the harmonic oscillator, angular momentum, perturbation theory, spin, and introduction to methods of modern electronic structure theory, with applications in atomic and molecular structures, spectroscopy, and chemical bonding. Graduate/Undergraduate Equivalency: CHEM 530. Mutually Exclusive: Credit cannot be earned for CHEM 430 and CHEM 530.

CHEM 475 - PHYSICAL METHODS IN INORGANIC CHEMISTRY
Short Title: PHYS METH INORGANIC CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 360
Description: A survey course of research techniques used in modern inorganic chemistry. Topics covered will include X-ray diffraction, mass spectrometry, magnetism, and various spectroscopies (IR, Raman, UV-Vis, NMR, EPR, XPS, and Mossbauer). Graduate/Undergraduate Equivalency: CHEM 575. Mutually Exclusive: Credit cannot be earned for CHEM 475 and CHEM 575.
CHEM 491 - RESEARCH FOR UNDERGRADUATES
Short Title: RESEARCH FOR UNDERGRADUATES
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-5
Restrictions: Graduate level students may not enroll.
Prerequisite(s): CHEM 391
Description: Independent chemical research at Rice or in other Teams Medical Center groups. Ordinarily taken by students who have taken CHEM 391. Students spend at least 3 hours per week in the laboratory for each semester hour of credit, in addition to other requirements. Instructor permission required. Prior to enrollment, students must secure a position in a laboratory. Application materials, found on the department website, must be submitted by August 1st for Fall term, December 1st for Spring term, or April 1st for Summer term. Instructor Permission Required. Repeatable for Credit.

CHEM 492 - UNDERGRADUATE HONORS RESEARCH
Short Title: UNDERGRADUATES HONORS RESEARCH
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 5
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 391
Description: The 1st half of the Honors Research Program. CHEM 492 and CHEM 493 function as a pair and must be taken in the same academic year. Registration for CHEM 492 requires a commitment to register for CHEM 493. Requirements include at least 15 hours of laboratory research per week and written and/or oral progress reports. The sequence will culminate in the completion of a thesis (research report) in the spring ter. Instructor permission required; for approved students only. Applications must be submitted to the course instructor February 1 - August 1. Students are encouraged to apply early. Students who complete the Chemistry Honors Research Program are given primary consideration for "Distinction in Research and Creative Work," a university award for select undergraduates, chosen by the department and granted at commencement, which appears on the transcript and diploma. Ordinarily offered Fall term. Instructor Permission Required.

CHEM 493 - UNDERGRADUATE HONORS RESEARCH
Short Title: UNDERGRADUATES HONORS RESEARCH
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 5
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 391
Description: The 2nd half of the Honors Research Program. CHEM 492 and CHEM 493 function as a pair and must be taken in the same academic year. Requirements include at least 15 hours or laboratory research per week and a thesis (research report). Students who complete the Chemistry Honors Research Program are given primary consideration for "Distinction in Research and Creative Work," a university award for select undergraduates, chosen by the department and granted at commencement, which appears on the transcript and diploma. Ordinarily offered in Spring. Instructor Permission Required.

CHEM 495 - TRANSITION METAL CHEMISTRY
Short Title: TRANSITION METAL CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Prerequisite(s): CHEM 211 and CHEM 360
Description: Structure, bonding and reactivity of coordination and organometallic compounds; ligand field theory; electronic spectroscopy; magnetism; reaction mechanisms; catalysis. Graduate/Undergraduate Equivalency: CHEM 595. Mutually Exclusive: Credit cannot be earned for both CHEM 495 and CHEM 595.

CHEM 501 - ADVANCED ORGANIC CHEMISTRY
Short Title: ADVANCED ORGANIC CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The principles of structure and bonding are used to explain and predict reactivity in organic chemistry. Extensive practice with reaction mechanism and curved-arrow formalism. Topics include conformational analysis, acidity/basicity, functional group preparation, stereoselective synthesis, and organo-element chemistry. Graduate/Undergraduate Equivalency: CHEM 401. Mutually Exclusive: Credit cannot be earned for both CHEM 501 and CHEM 401.

CHEM 511 - SPECTRAL METHODS ORGANIC CHEMISTRY
Short Title: SPECTRAL METHODS ORGANIC CHEM
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHEM 212 or CHEM 320
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. Elucidation of organic structures by physical techniques. Interpretation of infrared, ultraviolet, nuclear magnetic resonance, and mass spectral.

CHEM 515 - CHEMICAL KINETICS AND DYNAMICS
Short Title: CHEMICAL KINETICS & DYNAMICS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Description and analysis of the rates of unimolecular, bimolecular, and composite chemical reactions in gas and solution phases. Both macroscopic kinetics and microscopic reaction dynamics are covered. Graduate/Undergraduate Equivalency: CHEM 415. Mutually Exclusive: Credit cannot be earned for both CHEM 515 and CHEM 415.
CHEM 520 - CLASSICAL AND STATISTICAL THERMODYNAMICS  
**Short Title:** CLASSICAL & STAT THERMODYNAMIC  
**Department:** Chemistry  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** CHEM 310 or (CHEM 311 or CHEM 312) and MATH 212 and (PHYS 102 or PHYS 112)  
**Description:** A review of the principles of classical thermodynamics and an introduction to the theories and methods of statistical thermodynamics with applications to problems in chemistry. Graduate/Undergraduate Equivalency: CHEM 420. Mutually Exclusive: Credit cannot be earned for CHEM 520 and CHEM 420.  

CHEM 523 - ADVANCED ANALYSIS METHODS FOR MOLECULAR DYNAMICS FROM STATISTICAL MECHANICS TO MACHINE LEARNING  
**Short Title:** MOLECULAR DYNAMICS METHODS  
**Department:** Chemistry  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. Modern methods to extract physical and chemical information from molecular dynamics simulation will be presented, including the determination of reaction coordinates, free energies calculations, and estimation of experimentally measurable observables. The theoretical background and different applications will be discussed. The students will apply the methods on practical examples.  

CHEM 525 - FUNDAMENTAL PHOTOLUMINESCENCE SPECTROSCOPY  
**Short Title:** FUND PHOTOLUM SPECT  
**Department:** Chemistry  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. This course aims to cover basic topics in photoluminescence spectroscopy such as instrumentation, different photoluminescent species, solvent relaxation, photoluminescence quenching, energy transfer and anisotropy. Novel applications of photoluminescence spectroscopy such as sensing, multiphoton excitation and the fluorescence of proteins will also be discussed. Undergraduates may register for this course by a Special Registration form.  

CHEM 530 - QUANTUM CHEMISTRY  
**Short Title:** QUANTUM CHEMISTRY  
**Department:** Chemistry  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** The purpose of this course is to provide the student with a working knowledge of the basic concepts and mathematical formalism of quantum mechanics. Topics include the mathematics of quantum mechanics, one-dimensional problems, central field problems, the harmonic oscillator, angular momentum, perturbation theory, spin, and introduction to methods of modern electronic structure theory, with applications in atomic and molecular structures, spectroscopy, and chemical bonding. Graduate/Undergraduate Equivalency: CHEM 430. Mutually Exclusive: Credit cannot be earned for CHEM 530 and CHEM 430.  

CHEM 531 - ADVANCED QUANTUM CHEMISTRY  
**Short Title:** ADV QUANTUM CHEMISTRY  
**Department:** Chemistry  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. A hands-on approach to the methods of computational quantum chemistry and their application.  

CHEM 533 - NANOSCIENCE AND NANOTECHNOLOGY I  
**Short Title:** NANO SCIENCE & NANO TECHNOLOGY  
**Department:** Chemistry  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. An introduction to the basic principles of nanoscience and nanotechnology. Size dependent physical properties of nanoscopic solids will be described using solid state physics and molecular orbital theory as a foundation. Wet chemical techniques that produce nanoscale materials (e.g. carbon nanotubes, semiconductor and metallic nanocrystals, dendrimers...) will be introduced in the second half of the semester. Expected to be taught Spring 2019. Cross-list: CEVE 533, MSNE 534.
CHEM 541 - MOLECULES THAT CHANGED THE WORLD
Short Title: MOLECULES CHANGED THE WORLD
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHEM 212 or CHEM 320
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. This course will expand on our learned knowledge of some of the Nature's most intriguing molecules and the ability of Man to discover, synthesize, modify and use them to our advantage in what areas were not formerly envisioned. Undergraduates may register for the course by filling out a special registration form. These forms can be brought to DBH 243 for processing.

CHEM 542 - MEDICINAL CHEMISTRY I
Short Title: MEDICINAL CHEMISTRY I
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (CHEM 212 or CHEM 320) and BIOC 301
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. An introductory course intended to provide the student with an overview of the elements of drug discover, design and development. Targets for drug discovery will be discussed, as well as considerations of drug optimization with respect to the biological target and drug metabolism. A summary of the FDA and patent processes will also be included. Undergraduates may register for the course by filling out a special registration form. These forms can be brought to DBH 243 for processing.

CHEM 547 - SUPRAMOLECULAR CHEMISTRY
Short Title: SUPRAMOLECULAR CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHEM 212 or CHEM 320
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. This course will cover the mechanism and strategic applications of approximately 150 widely used named reactions in organic synthesis. The students will learn how to navigate the vast chemical literature effectively using sophisticated search engines like SciFinder and Reaxys and will get the opportunity to prepare and give 10-minute presentations on 5 recent named rxns. Recommended Prerequisite(s): CHEM 211 and CHEM 212. Repeatable for Credit.
CHEM 557 - NANOCARBONS  
Short Title: NANOCARBONS  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. This course will survey the chemistry, physics, and selected applications of carbon nanostructures. Fullerenes, carbon nanotubes, and graphene will be the main focus. Students are expected to have a solid background in physical chemistry. Undergraduate students may register for this course by Special Registration form.

CHEM 558 - NANOCRYSTALS  
Short Title: NANOCRYSTALS  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will provide a detailed investigation into the chemical and physical principles of inorganic nanocrystals. Topics will include nucleation and growth, crystal faceting, surface ligand chemistry, size-dependent properties and scaling relationships, interparticle forces, and nanoparticle self-assembly. Proficiency in physical chemistry and inorganic materials is strongly encouraged.

CHEM 559 - SPECTROSCOPY AT THE SINGLE MOLECULE/PARTICLE LIMIT  
Short Title: SPEC SINGLE MOLECULE/PARTICLE LIMIT  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): CHEM 310 or (CHEM 311 and CHEM 312)  
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. This course will cover principles of electronic spectroscopy of molecules and nanoparticles with emphasis on single molecule/particle spectroscopy methods and analysis techniques.

CHEM 570 - NANOTECHNOLOGY FOR TEACHERS, TEACHING CHEMICAL CONCEPTS VIA INQUIRY I  
Short Title: TEACHING CHEMICAL CONCEPTS  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Using the Concept Development Approach, this course will teach teachers how to engage students in inquiry science and provide teachers with in depth conceptual knowledge about chemical fundamentals. The course will include hands-on activities and discussions about chemical concepts that include atomic molecular theory, atomic structure, quantum energy levels, thermodynamics, equilibrium, and bonding. Nanotechnology research with environmental applications will be highlighted throughout the course. Instructor Permission Required.

CHEM 571 - TEACHING CHEMICAL CONCEPTS VIA INQUIRY II, NANOTECHNOLOGY FOR TEACHERS  
Short Title: CHEMICAL CONCEPTS - INQUIRY II  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Using the Concept Development Approach, this course will teach teachers how to engage students in inquiry science and provide teachers with in depth conceptual knowledge about chemical fundamentals. The course will include hands-on activities and discussions about chemical concepts that include gas laws, kinetic molecular theory, acid base equilibrium, and phase equilibrium. Nanotechnology research with biological applications will be highlighted throughout the course. Instructor Permission Required. Recommended Prerequisite(s): CHEM 570.

CHEM 575 - PHYSICAL METHODS IN INORGANIC CHEMISTRY  
Short Title: PHYS METH INORGANIC CHEMISTRY  
Department: Chemistry  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A survey course of research techniques used in modern inorganic chemistry. Topics covered will include X-ray diffraction, matrix isolation, mass spectrometry, magnetism, electrochemistry, and various spectroscopies (IR, Raman, UV-Vis, NMR, EPR, XPS, EXAFS, and Mossbauer). Graduate/Undergraduate Equivalency: CHEM 475. Mutually Exclusive: Credit cannot be earned for CHEM 575 and CHEM 475.
CHEM 580 - MICROSCOPY METHODS IN MATERIALS SCIENCE

Short Title: MICROSCOPY METHODS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers theory and applications of electron microscopy techniques with an emphasis on transmission and scanning transmission electron microscopy (TEM, STEM). Topics include modern instrumentation and hardware, electron diffraction, imaging modes, tomography, and spectroscopy (energy dispersive x-ray spectroscopy (EDS), electron-energy loss spectroscopy (EELS), cathodoluminescence (CL)). Previous experience with electron microscopes recommended. Can be taken alone or concurrently with lab course MSNE 582. Instructor Permission Required. Cross-list: MSNE 580.

CHEM 582 - ELECTRON MICROSCOPY CENTER LAB

Short Title: ELECTRON MICROSCOPY CENTER LAB
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Corequisite: CHEM 580
Description: Hands-on laboratory using the instruments in the electron microscopy center. The students will gain the knowledge necessary to operate the instruments and analyze data independently. Must be taken concurrently with CHEM 580. Instructor Permission Required. Cross-list: MSNE 582.

CHEM 586 - CHEMICAL TOOLS FOR BIOLOGY

Short Title: CHEMICAL TOOLS FOR BIOLOGY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. Selected topics in modern chemical biology. The development and application of chemical methods to probe, perturb, and understand biological systems. Topics include protein and DNA chemistry, classical and quantum phase transitions in condensed matter will be presented. The principles underlying the structure and dynamics of condensed phase and biological matter. Both experimental phenomenology and theoretical approaches will be used. Starting with a review of intermolecular forces, the course will describe the structure and thermodynamics of clusters, crystalline solids, metals, liquids, glasses and biomolecules. A unified picture of reactions and classical and quantum phase transitions in condensed matter will be presented. The energy landscape theory of the dynamics of glasses and protein folding will also be covered. Expected to be taught Fall 2018. Mutually Exclusive: Credit cannot be earned for CHEM 650 and CHEM 450.

CHEM 588 - ELECTRON MICROSCOPY CENTER LAB

Short Title: ELECTRON MICROSCOPY CENTER LAB
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Corequisite: CHEM 580
Description: Hands-on laboratory using the instruments in the electron microscopy center. The students will gain the knowledge necessary to operate the instruments and analyze data independently. Must be taken concurrently with CHEM 580. Instructor Permission Required. Cross-list: MSNE 582.

CHEM 595 - TRANSITION METAL CHEMISTRY

Short Title: TRANSITION METAL CHEMISTRY
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Structure, bonding and reactivity of coordination and organometallic compounds; ligand field theory; electronic spectroscopy; magnetism; reaction mechanisms; catalysis. Graduate/Undergraduate Equivalency. CHEM 495. Mutually Exclusive: Credit cannot be earned for CHEM 595 and CHEM 495. Repeatable for Credit.

CHEM 600 - GRADUATE SEMINAR

Short Title: GRADUATE SEMINAR
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Section 1: PHYSICAL CHEMISTRY-NANO Section 2: ORGANIC AND BIOLOGICAL CHEMISTRY Section 3: NANOCHEMISTRY Section 4: CARBON NANO CHEMISTRY. This seminar series is open to all chemistry graduate students or graduate students whose home department is chemistry. Students from other departments may audit the course with instructor permission. Repeatable for Credit.

CHEM 650 - CHEMICAL PHYSICS OF CONDENSED AND BIOLOGICAL MATTER

Short Title: CHEM PHYS CONDENSED&BIO MATTER
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The principles underlying the structure and dynamics of condensed phase and biological matter. Both experimental phenomenology and theoretical approaches will be used. Starting with a review of intermolecular forces, the course will describe the structure and thermodynamics of clusters, crystalline solids, metals, liquids, glasses and biomolecules. A unified picture of reactions and classical and quantum phase transitions in condensed matter will be presented. The energy landscape theory of the dynamics of glasses and protein folding will also be covered. Expected to be taught Fall 2018. Mutually Exclusive: Credit cannot be earned for CHEM 650 and CHEM 450.

CHEM 655 - CLASSICS IN TOTAL SYNTHESIS

Short Title: CLASSICS IN SYNTHESIS
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (CHEM 211 and CHEM 212 and CHEM 401 and CHEM 442)
Description: Selected total synthesis will be discussed. Special emphasis will be placed on retro-synthetic analysis, synthetic strategies and technologies, asymmetric synthesis and catalysis.

CHEM 700 - TEACHING PRACTICUM

Short Title: TEACHING PRACTICUM
Department: Chemistry
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Open to graduate students in chemistry and only in exceptional circumstances to undergraduates. Repeatable for Credit.
## Chinese (CHIN)

### CHIN 141 - FIRST YEAR CHINESE I
Short Title: FIRST YEAR CHINESE I  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Development of interactional competence in Chinese (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Chinese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Recommended Prerequisite(s): Placement Test. Mutually Exclusive: Credit cannot be earned for CHIN 141 and CHIN 101/CHIN 222.  
Course URL: clicchinese.blogs.rice.edu

### CHIN 142 - FIRST YEAR CHINESE II
Short Title: FIRST YEAR CHINESE II  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Continuation of CHIN 141, for students whose home language is not Chinese. Development of interactional competence in Chinese, (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Chinese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition.  
Course URL: clicchinese.blogs.rice.edu

### CHIN 211 - ACCELERATED ELEMENTARY CHINESE I
Short Title: ACCEL ELEMENTARY CHINESE I  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: For students with some background in spoken Chinese but with limited reading and writing ability. Introduces the Chinese writing system and the use of Chinese dictionaries. Students will be familiar with approximately 350 characters at the end of the course, and able to perform communicative tasks appropriate to this range of characters. Placement Test is Required.  
Course URL: clicchinese.blogs.rice.edu

### CHIN 212 - ACCELERATED ELEMENTARY CHINESE II
Short Title: ACCEL ELEMENTARY CHINESE II  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Increasing attention paid to more formal narrative texts. Writing focused on personal needs, with some attention to social correspondence. Students will be familiar with approximately 500 characters at the end of the course, and able to perform communicative tasks appropriate to this range of characters.  
Course URL: clicchinese.blogs.rice.edu

### CHIN 222 - AP/OTH CREDIT IN CHINESE LANGUAGE
Short Title: AP/OTH CREDIT CHINESE LANGUAGE  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Transfer  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Credit cannot be earned for CHIN 222 and CHIN 101/CHIN 141.  
Course URL: clicchinese.blogs.rice.edu

### CHIN 263 - SECOND YEAR CHINESE I
Short Title: SECOND YEAR CHINESE I  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Continuation of CHIN 142, for students whose home language is not Chinese. Development of interactional competence in Chinese, (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Chinese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for CHIN 263 and CHIN 201.  
Course URL: clicchinese.blogs.rice.edu
CHIN 264 - SECOND YEAR CHINESE II  
Short Title: SECOND YEAR CHINESE II  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): CHIN 263  
Description: Continuation of CHIN 263, for students whose native language is not Chinese. Development of interactional competence in Chinese (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Chinese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for CHIN 264 and CHIN 202.  
Course URL: clicchinese.blogs.rice.edu  

CHIN 301 - THIRD YEAR CHINESE I  
Short Title: THIRD YEAR CHINESE I  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): CHIN 264  
Description: Continuation of Chinese 264, for students whose home language is not Chinese. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced. Upon completion students are expected to be able to write approximately 650 characters and be able to perform communicative tasks appropriate to this range of tasks.  
Course URL: clicchinese.blogs.rice.edu  

CHIN 302 - THIRD YEAR CHINESE II  
Short Title: THIRD YEAR CHINESE II  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): CHIN 301  
Description: Continuation of CHIN 301, for students whose home language is not Chinese. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced. Upon completion, students expected to be able to write approximately 800 characters and perform communicative tasks appropriate to this range of characters.  
Course URL: clicchinese.blogs.rice.edu  

CHIN 311 - ACCELERATED INTERMEDIATE CHINESE I  
Short Title: ACCEL INTERMEDIATE CHINESE I  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): CHIN 212  
Description: Emphasis on reading narrative texts, and understanding authentic oral texts. Writing assignments stress skills necessary for basic personal needs and tasks necessary for writing social correspondence. At the completion of 311, students will be able to write approximately 800 Chinese characters, and be able to perform communicative tasks appropriate to this range of characters.  

CHIN 312 - ACCELERATED INTERMEDIATE CHINESE II  
Short Title: ACCEL INTERMEDIATE CHINESE II  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): CHIN 311  
Description: Continuation of CHIN 311. More emphasis on reading narratives, comprehending authentic oral texts, and speaking in more formal contexts. Writing assignments stress skills necessary for expressing arguments on socio-cultural topics. At the completion of CHIN 312, students will be able to write approximately 1000 Chinese characters. Repeatable for Credit.  

CHIN 319 - SPECIAL TOPICS: ADVANCED CHINESE I  
Short Title: SPECIAL TOPICS: ADV CHINESE I  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): CHIN 301 or CHIN 311  
Description: This course helps students develop an advanced level of proficiency in Chinese through the analysis and use of the target language in the context of specific topics of interest that will vary.  

CHIN 320 - SPECIAL TOPICS: ADVANCED CHINESE II  
Short Title: SPECIAL TOPICS: ADV CHINESE II  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): CHIN 319  
Description: This is a continuation of CHIN 319. This course helps students develop an advanced level of proficiency in Chinese through the analysis and use of the target language in the context of specific topics of interest that will vary.
CHIN 330 - INTRODUCTION TO TRADITIONAL CHINESE POETRY
Short Title: INTRO TO TRAD CHINESE POETRY
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course seeks to decode enchanting features of traditional Chinese poetry through examining the transformation of poetic genres, the interaction between poetic creation and political, social and cultural changes, and the close association of poetry with art. Thus, this course also serves to understand Chinese culture and history through poetic perspectives. All readings in English translation. Cross-list: ASIA 330, MDEM 370.

CHIN 332 - CHINESE LITERATURE AND ITS MOVIE ADAPTATIONS
Short Title: FILM & CHINESE LITERATURE
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Exploration of modern Chinese literature through the visual imagery of Chinese films to show how and why different time periods and different media affect the theme of a story. One third covers movie adaptations of classical Chinese literature. Films subtitled in English, shown outside of class. All readings in English translation. Cross-list: ASIA 332.

CHIN 334 - TRADITIONAL CHINESE TALES AND SHORT STORIES
Short Title: TRADITIONAL CHINESE TALES
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Learning Chinese literature and culture through reading vernacular stories, fantastic tales, biographies, and philosophical parables. Discussion topics: literature and Confucianism, Taoism and Buddhism; literature and history; self and other; fantastic world and reality; women as domestic aliens and aliens portrayed as women, etc. Readings are in English translation. Cross-list: ASIA 334.

CHIN 335 - INTRODUCTION TO CLASSICAL CHINESE NOVELS
Short Title: CLASSICAL CHINESE NOVELS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examination of the basic characteristics of classical Chinese novels, primarily through six important works from the 16th to 18th centuries: Water Margin, Monkey, Golden Lotus, Scholars, Romance of the Three Kingdoms, and Dream of the Red Chamber. Cross-list: ASIA 335, MDEM 375.

CHIN 399 - CHINESE TEACHING PRACTICUM
Short Title: CHINESE TEACHING PRACTICUM
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course gives students with advanced proficiency in Chinese the opportunity to acquire teaching experience in tutorial format. For each credit hour registered, the student must tutor for two hours. Regular meetings with supervising faculty member. Must be familiar with the Pinyin system. Instructor Permission Required. Repeatable for Credit.

CHIN 401 - FOURTH YEAR CHINESE I
Short Title: FOURTH YEAR CHINESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHIN 302
Description: Continuation of CHIN 302, emphasis on developing oral fluency at the discourse level and cultivating advanced writing skill. Students will read and discuss a variety of social, political and economic issues. Upon completion, students are expected to be able to write approx. 1000 characters.

CHIN 402 - FOURTH YEAR CHINESE II
Short Title: FOURTH YEAR CHINESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHIN 401
Description: Continuation of CHIN 401, emphasis on strengthening speaking and writing skills at the advance level with more authentic readings selected from newspapers, literary works and academic texts. Upon completion, students are expected to be able to write approx. 1200 characters.

CHIN 422 - THE ORIGINAL BEAUTY OF CHINESE LITERATURE
Short Title: ORIGINAL BEAUTY OF CHINESE LIT
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course will expose students to the best literary works created in the Chinese tradition, both classical and modern, and give them a general introduction to different genres, including poetry, fiction, drama, and philosophical essays. It will improve their language proficiency through reading original texts of Chinese literature. Cross-list: ASIA 422.
Civil and Environmental Eng (CEVE)

CEVE 100 - AP/OTH CREDIT IN ENVIRONMENTAL SCIENCE
Short Title: AP/OTH CR ENVIRONMENTAL SCIENCE
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

CEVE 101 - FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING
Short Title: FUNDAMENTAL OF CIVIL & ENVIRONMENTAL ENGINEERING
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This introduction will cover the essential topics and quantitative techniques in civil and environmental engineering. General engineering, engineering math, fluid mechanics, hydrology, statistics, and mass balance techniques will be presented followed by applications.

CEVE 201 - ENGINEERING PROJECT MANAGEMENT AND ECONOMICS
Short Title: ENG ECONOMICS & PROJECT MANAGEMENT
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): CEVE 101
Description: Life cycle economics analysis to project development, project economic analysis, contracting, network scheduling, risk management, organizational structures and cases. Mutually Exclusive: Credit cannot be earned for CEVE 201 and CEVE 479/CEVE 505/ENGI 505.

CEVE 210 - WILD TOPICS IN CHEMISTRY AND NANOTECHNOLOGY
Short Title: WILD TOPICS CHEM AND NANOTECHNOLOGY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A variety of topics related to chemistry and nanotechnology will be discussed. Some topics are classical while others are current. Topics may include nanocars, molecular electronics, how to form a start-up company. Grades will be based upon attendance and quizzes. Cross-list: CHEM 210, MSNE 210. Repeatable for Credit.

CEVE 211 - ENGINEERING MECHANICS
Short Title: ENGINEERING MECHANICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and MATH 101 and MATH 102
Description: The study of equilibrium of static systems, the dynamics of a particle and particle systems, and rigid-body dynamics. Required for mechanical engineering and materials science and engineering majors. Cross-list: MECH 211.

CEVE 302 - SUSTAINABLE DESIGN
Short Title: SUSTAINABLE DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 101
Description: The objective of this course is to develop skills in formulating and solving problems of societal development and advancement in light of increasing material, energy and water demands and decreasing resource availability. Sustainable design requires balancing economic, ecological/environmental and social issues to create physical as well as social structures that will work for current and future generations. In addition to learning to apply sustainable design principles to individual engineering and developing projects, students will be challenged to understand the application of sustainable design thinking at the municipal and corporate level. Cross-list: ENGI 302. Graduate/Undergraduate Equivalency: CEVE 502. Mutually Exclusive: Credit cannot be earned for CEVE 302 and CEVE 502.

CEVE 304 - STRUCTURAL ANALYSIS I
Short Title: STRUCTURAL ANALYSIS I
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 211 or MECH 211
Description: Analysis of statically determinate structures; stability and determinacy, influence lines and deflections. Introduction to analysis of indeterminate structures by force and displacement methods.
CEVE 307 - ENERGY AND THE ENVIRONMENT
Short Title: ENERGY AND THE ENVIRONMENT
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores the physical principles of energy use and its impacts on Earth's environment and climate. Topics will include energy mechanics, climate change, and the environmental impacts and future prospects of various fossil fuel and alternative energy sources. Cross-list: ENST 307, ESCI 307. Graduate/Undergraduate Equivalency: CEVE 507. Mutually Exclusive: Credit cannot be earned for CEVE 307 and CEVE 507.

CEVE 308 - INTRODUCTION TO AIR POLLUTION CONTROL
Short Title: INTRO TO AIR POLLUTION CONTROL
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (CHEM 122 or CHEM 152) and MATH 102 and (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141)
Description: This course will discuss the history of air pollution and its effects as motivation for control of anthropogenic emissions to the atmosphere. Topics will include air pollution control strategies and regulations, predictive pollution concentration models, general ideas to reduce air pollution, and specific technologies to limit emissions of criteria pollutants and their precursors. Graduate/Undergraduate Equivalency: CEVE 508. Mutually Exclusive: Credit cannot be earned for CEVE 308 and CEVE 508.

CEVE 310 - PRINCIPLES OF ENVIRONMENTAL ENGINEERING
Short Title: PRINCIPLES OF ENVI ENGINEERING
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course covers principles of water quality engineering, air pollution control and solid and hazardous waste management. Elements of risk assessment, global atmospheric change, and pollution prevention are also addressed to contribute to adequate-level competency in Environmental Engineering. Graduate students will write a term paper and prepare a lecture. Graduate/Undergraduate Equivalency: CEVE 510. Mutually Exclusive: Credit cannot be earned for CEVE 310 and CEVE 510.

CEVE 311 - MECHANICS OF SOLIDS AND STRUCTURES
Short Title: MECHANICS OF SOLIDS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 211 or MECH 211
Description: Analysis of stress and the deformation of solids with applications to beams, circular shafts, and columns. Open only to mechanical engineering and civil engineering majors. Required for mechanical engineering majors. Cross-list: MECH 311.

CEVE 312 - STRENGTH OF MATERIALS LAB
Short Title: STRENGTH OF MATERIALS LAB
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 304 (may be taken concurrently) and (CEVE 311 (may be taken concurrently) or MECH 311 (may be taken concurrently))
Description: Instruction in standard tension, compression, and torsion tests of ferrous and nonferrous metals. Includes experimental techniques and the behavior of structural elements. Prerequisites may be taken concurrently.

CEVE 313 - UNCERTAINTY AND RISK IN URBAN INFRASTRUCTURES
Short Title: UNCERT & RISK IN URBAN INFRAST
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 312 or STAT 310 or ECON 307 or ECON 382 or STAT 331 or ELEC 331
Description: This course explores methods for practical risk-based decision support, particularly for infrastructure systems. Uncertainty quantification (UQ) to external events including natural hazards is at the core of risk-informed design, operation, and mitigation actions. UQ will also guide engineering practice in the future as established by ASCE. The course emphasizes decision theory, Bayesian approaches, risk analysis tools, and infrastructure safety. Cross-list: STAT 313. Repeatable for Credit.
CEVE 314 - SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD
Short Title: SUST WTR PURIF FOR DEV WORLD
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is an overview of sustainable strategies for safe water supply in off-the-grid, low-income regions. Topics covered include water quality and treatment, sustainability and WASH (water, sanitation and hygiene). A major element of the course is a project to solve a water-related issue in a real-world context. Cross-list: BIOE 365, GLHT 314. Repeatable for Credit.

CEVE 320 - ETHICS AND ENGINEERING LEADERSHIP
Short Title: ETHICS & ENGINRNG LEADERSHIP
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Civil & Environmental Engineer, Civil Engineering or Environment Analysis&Decisions. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 101
Description: Seminar introduces students to a framework for discussing and making ethical engineering and professional decisions. Using case studies and exercises, students will look at their own profession and its Engineering Code of Ethics as well as at the issues and risks they may face as managers and executives. Cross-list: ENGI 320. Graduate/Undergraduate Equivalency: CEVE 529. Mutually Exclusive: Credit cannot be earned for CEVE 320 and CEVE 529.

CEVE 322 - ENGINEERING ECONOMICS
Short Title: ENGINEERING ECONOMICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to the evaluation of alternative investment opportunities with emphasis on engineering projects and capital infrastructure. Time value of money concepts are developed in the context of detailed project evaluation and presentations. In addition, concepts and applications of risk analysis and investment under uncertainty are introduced. Requires oral and written presentations by students. Cross-list: ENGI 303. Graduate/Undergraduate Equivalency: CEVE 528. Mutually Exclusive: Credit cannot be earned for CEVE 322 and CEVE 528.

CEVE 323 - APPLIED SUSTAINABLE PLANNING AND DESIGN
Short Title: APPL. SUST. PLANNNG & DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 302 or CEVE 502
Description: This course applies principles learned in CEVE 302/502 to real-world sustainability projects. Three to four case studies will comprise the class. These case studies will involve development of design solutions for (1) carbon neutral design, (2) ecosystem services transactions, (3) sustainable industrial applications and/or (4) air pollution and environmental justice. Graduate/Undergraduate Equivalency: CEVE 523. Mutually Exclusive: Credit cannot be earned for CEVE 323 and CEVE 523.

CEVE 363 - APPLIED FLUID MECHANICS
Short Title: APPLIED FLUID MECHANICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 212 and (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141)
Description: Study of fluid properties, fluid statics, and incompressible fluid steady flow. Includes energy and momentum equations with many applications, similitude and dimensional analysis, and viscous fluid flow in pipe networks. Required for B.S.C.E.

CEVE 400 - ADVANCED MECHANICS OF MATERIALS
Short Title: ADV MECHANICS OF MATERIALS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MECH 211 or CEVE 211) and (MECH 311 or CEVE 311)
Description: Advanced topics in solid mechanics and strength of materials including energy methods, principle of virtual work, conservation laws, constitutive modeling, aspects of elasticity theory, stability and fracture mechanics with application to the analysis and design of reliable structures. Cross-list: MECH 400. Graduate/Undergraduate Equivalency: CEVE 500. Mutually Exclusive: Credit cannot be earned for CEVE 400 and CEVE 500.
CEVE 401 - CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE LAB
Short Title: ENVIRONMENTAL CHEMISTRY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics include: introductory concepts of general chemistry; applied physical chemistry; and organic and biochemical concepts as used in the profession. Undergraduate lab covers basic statistics and EPA-certified software for inorganic and organic property estimations needed for data reduction and report writing. Most common measures of water quality are performed by students including pH, Alkalinity, dissolved oxygen, spectroscopic methods, and soils extraction. Graduate/Undergraduate Equivalency: CEVE 501. Mutually Exclusive: Credit cannot be earned for CEVE 401 and CEVE 501.

CEVE 404 - ATMOSPHERIC PARTICULATE MATTER
Short Title: ATMOSPHERIC PARTICULATE MATTER
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (CHEM 122 or CHEM 152) and MATH 102 and (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141)
Description: Description and examination of the processes determining the chemical and physical characteristics of atmospheric aerosol particles. Important focal points include aerosol measurements and control techniques and aerosol climate effects. Most attention will be paid to processes active in the troposphere, but important differences between the troposphere and stratosphere are addressed. Graduate/Undergraduate Equivalency: CEVE 504. Mutually Exclusive: Credit cannot be earned for CEVE 404 and CEVE 504.

CEVE 405 - STEEL DESIGN
Short Title: STEEL DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 311 or MECH 311
Description: Study of the chemical and physical processes that govern the formation, transformation, and transport of gases and particles in the atmosphere. Overview of urban and regional air pollution, including tropospheric ozone formation and particulate matter; stratospheric chemistry; and global climate change. Graduate/Undergraduate Equivalency: CEVE 511. Mutually Exclusive: Credit cannot be earned for CEVE 411 and CEVE 511.

CEVE 407 - REINFORCED CONCRETE DESIGN
Short Title: REINFORCED CONCRETE DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 311
Corequisite: CEVE 408
Description: Instruction in data analysis, design of concrete mix, testing of concrete cylinders, testing of concrete steel: beams; columns; and frames.

CEVE 408 - CONCRETE AND STEEL STRUCTURES LABORATORY
Short Title: CONCRETE LABORATORY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Corequisite: CEVE 407
Description: Instruction in data analysis, design of concrete mix, testing of concrete cylinders, testing of concrete steel: beams; columns; and frames.

CEVE 411 - ATMOSPHERIC PROCESSES
Short Title: ATMOSPHERIC PROCESSES
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 121 and CHEM 122 and MATH 101 and MATH 102 and (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141)
Description: Study of the chemical and physical processes that govern the formation, transformation, and transport of gases and particles in the atmosphere. Overview of urban and regional air pollution, including tropospheric ozone formation and particulate matter; stratospheric chemistry; and global climate change. Graduate/Undergraduate Equivalency: CEVE 511. Mutually Exclusive: Credit cannot be earned for CEVE 411 and CEVE 511.
CEVE 412 - HYDROLOGY AND WATER RESOURCES ENGINEERING
Short Title: HYDROLOGY & WATER RESOURCES ENG
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Fundamentals of the hydrologic cycle, meteorology, rainfall-runoff, flood routing, urban system design, and open channel flow are covered. Topics in ground water flow and well mechanics are also included. Applications include computational hydrology, floodplain analysis, watershed behavior, and low impact development. Group presentations are required. Graduate/Undergraduate Equivalency: CEVE 509. Mutually Exclusive: Credit cannot be earned for CEVE 412 and CEVE 509.

CEVE 417 - FINITE ELEMENT ANALYSIS
Short Title: FINITE ELEMENT ANALYSIS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 212 or MATH 222) and (CAAM 210 or CAAM 211)
Description: An introduction to finite element analysis by Galerkin’s method and the method of least squares as applied to both ordinary and partial differential equations common in engineering applications. Element interpolations, numerical integration, computational considerations for efficient solution and post-processing methods. Application of the commercial codes to ANSYS and Cosmosworks. Cross-list: MECH 417.

CEVE 418 - QUANTITATIVE HYDROGEOLOGY
Short Title: QUANTITATIVE HYDROGEOLOGY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced course that will provide a quantitative overview of groundwater hydrology. Emphasis will be placed on mastering concepts in fluid mechanics and applying these concepts to water supply, environmental, and geological problems. Cross-list: ESCI 418.

CEVE 420 - ENVIRONMENTAL REMEDIATION RESTORATION
Short Title: ENVI REMEDIATION RESTORATION
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Remediation principles and application of full-scale remediation technologies for restoration of contaminated soil, groundwater, and surface water. Topics include mass balances and distribution of chemicals in environmental media; development of remediation goals through risk assessment; treatment technology selection criteria and costs; groundwater, soil, and surface water restoration technologies; and regulatory considerations. Graduate/Undergraduate Equivalency: CEVE 520. Mutually Exclusive: Credit cannot be earned for CEVE 420 and CEVE 520.

CEVE 424 - TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS
Short Title: SYSTEM RELIABILITY METHODS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students will learn computational simulation and theoretical techniques for the reliability assessment of engineered systems as a function of their component failure probabilities. We will explore time-dependent and algorithmic system reliability, and will use modern structural infrastructure systems as case studies, including power systems, wind turbines, bridges, and buildings. Graduate/Undergraduate Equivalency: CEVE 524. Mutually Exclusive: Credit cannot be earned for CEVE 424 and CEVE 524.

CEVE 427 - COMPUTATIONAL STRUCTURAL MECHANICS AND FEM
Short Title: COMPUTATIONAL STR MECH & FEM
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 311 or MECH 311
Description: Introduction to matrix structural analysis, trusses, beams, frames. Use of computer programs for structural analysis of Civil, Mechanical, and Aerospace Structures. Cross-list: MECH 427.
CEVE 434 - FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT
Short Title: FATE/TRANSPORT OF CONTAMINANTS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Physical and chemical principles governing the fate and transport of contaminants in the aqueous environment, and the applications of such principles in environmental engineering. Emphasis is put on mass transport and transportation processes in natural and engineered systems. Previous course work in fluid mechanics and calculus through differential equations is strongly suggested. Graduate/Undergraduate Equivalency: CEVE 534. Mutually Exclusive: Credit cannot be earned for CEVE 434 and CEVE 534.

CEVE 442 - WATER REUSE AND RESOURCE RECOVERY
Short Title: WATER REUSE AND RESOURCE RECOV
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will focus on concepts of resource recovery and water reuse from wastewater and associated processes treatment needs. Students will understand the function and design of key biological, physical, and chemical treatment processes for wastewater treatment and resource recovery and water reuse applications.

CEVE 444 - ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY
Short Title: ENVIRON MICROBIOL & ECOLOGY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Fundamentals of microbiology and the ecology of microbes, highlighting their interactions with each other and the environment, and integration of these principles in the context of important natural and engineered environmental systems. Graduate/Undergraduate Equivalency: CEVE 544. Mutually Exclusive: Credit cannot be earned for CEVE 444 and CEVE 544.

CEVE 450 - REMOTE SENSING
Short Title: REMOTE SENSING
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to electromagnetic remote sensing of the earth and other planets using passive and active methods. The course includes a computer lab component involving processing and interpretation of remote sensing imagery, and an individual project. Cross-list: ES CI 450.

CEVE 452 - URBAN TRANSPORTATION SYSTEMS
Short Title: URBAN TRANSPORTATION SYSTEMS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Survey of operation characteristics of transport modes the elements of transportation planning, and the design of stationary elements.

CEVE 453 - GEOGRAPHIC INFORMATION SCIENCE
Short Title: GEOGRAPHIC INFORMATION SCIENCE
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to geographic information systems (GIS) technology, mapping sciences, and spatial analysis. The course will include extensive computer use and the completion of a major individual project on a topic selected by the student. Cross-list: ESCI 454.

CEVE 454 - COMPUTATIONAL FLUID MECHANICS
Short Title: COMPUTATIONAL FLUID MECHANICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 371 (may be taken concurrently) or CEVE 363 (may be taken concurrently) or CHBE 401 (may be taken concurrently)
Description: Fundamental concepts of finite element methods in fluid mechanics, including spatial discretization and numerical integration in multi-dimensions, time-integration, and solution of nonlinear ordinary differential equation systems. Advanced numerical stabilization techniques designed for fluid mechanics problems. Strategies for solution of complex, real-world problems. Topics in large-scale computing, parallel processing, and visualization. Prerequisites may be taken concurrently. Cross-list: BIOE 454, MECH 454. Graduate/Undergraduate Equivalency: CEVE 554. Mutually Exclusive: Credit cannot be earned for CEVE 454 and CEVE 554.

CEVE 460 - BRIDGE ENGINEERING AND EXTREME EVENTS
Short Title: BRIDGE ENG. & EXTREME EVENTS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course integrates information from various engineering and scientific disciplines to provide a rational basis for bridge design under regular and extreme loading. It provides an introduction to bridge engineering, including bridge systems, construction material, loading, and reliability-based design. Design, analysis, and retrofit for seismic and coastal threats will be introduced. Graduate/Undergraduate Equivalency: CEVE 560. Recommended Prerequisite(s): CEVE 304 and CEVE 311 and CEVE 407. Mutually Exclusive: Credit cannot be earned for CEVE 460 and CEVE 560.
CEVE 470 - PRINCIPLES OF SOIL MECHANICS
Short Title: PRINCIPLES OF SOIL MECHANICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Index and classification properties of soil including soil classification systems; clay minerals and soil structure; compaction theory; engineering behavior and properties of soils including permeability, compressibility and strength; design considerations. Required for B.S.C.E.

CEVE 476 - STRUCTURAL DYNAMIC SYSTEMS
Short Title: STRUCTURAL DYNAMIC SYSTEMS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 311 or MECH 311
Description: Introduction to structural dynamic systems. Linear SDOF and MDOF discrete systems, undamped and damped systems, free and forced vibration, dynamic response to periodic and arbitrary excitations, numerical evaluation of dynamic response, response spectrum and modal analysis. Additional topics for graduate version 576: Linear systems theory, transform methods, state space methods, feedback control, observers and identification. Applications using MATLAB. Demonstrations and laboratory examples. Students will be required to do more advanced assignments and a project. Graduate/Undergraduate Equivalency: CEVE 576. Mutually Exclusive: Credit cannot be earned for CEVE 476 and CEVE 576.

CEVE 479 - ENGINEERING PROJECT MANAGEMENT AND ECONOMICS
Short Title: ENGINEERING PROJ MGMT & ECON
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 101
Description: Life cycle economic analysis approach to project development and management, project planning, and project economic analysis, contracting network scheduling techniques, risk management, organizational structures, and cases. Graduate/Undergraduate Equivalency: CEVE 505. Mutually Exclusive: Credit cannot be earned for CEVE 479 and CEVE 201.

CEVE 480 - SENIOR DESIGN
Short Title: SENIOR DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The capstone designed course in the Spring Semester will provide senior engineering students with a complete designed experience including fundamental design issues in the major areas of the curriculum, small team experiences, project proposals, progress reports and presentations, design software and computations, major report writing, and a final presentation to the CEE faculty and an external jury of professional engineers. An established local firm will assist in teaching practical design methods and consultation with other faculty is required as part of the overall experience.

CEVE 481 - INTRODUCTION TO SENIOR DESIGN
Short Title: INTRODUCTION TO SENIOR DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Semester. Lectures will focus on various engineering design topics and CAD training. Potential design projects will be introduced and students will form interdisciplinary design teams. Design teams will present before jury to win their design projects.

CEVE 484 - ENVIRONMENTAL RISK ASSESSMENT & HUMAN HEALTH
Short Title: ENVIRON RISK ASSESS&HUMAN HLTH
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 280 or STAT 305
Description: Learn and apply quantitative risk assessment methodology to estimate human health risk from environmental exposure to contamination in air, soil and water. Students will conduct a series of team projects focused on toxicology, risk based screening levels, exposure concentration estimation and risk characterization. Cross-list: STAT 484. Graduate/Undergraduate Equivalency: CEVE 684. Mutually Exclusive: Credit cannot be earned for CEVE 484 and CEVE 684.
CEVE 492 - MODELING AND ANALYSIS OF NETWORKED SYSTEMS
Short Title: MODELING & ANALYSIS OF NET SYS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course introduces methods for modeling, characterizing and predicting the behavior of complex infrastructure and technological systems. The discussed analysis methods rely on network science optimization, and computational complexity principles so as to unravel the emergent features of structural and infrastructure systems. Topological properties, ranking tools, dynamic processes, and percolation-based resilience are studied from analytical, algorithmic, and numerical simulation perspectives. The course also explores interdependencies and mitigation actions for spatially and temporally evolving systems. The graduate level course includes advanced exercises in homework and exams, as well as a research-oriented final project. Graduate/Undergraduate Equivalency: CEVE 592. Mutually Exclusive: Credit cannot be earned for CEVE 492 and CEVE 592. Repeatable for Credit.

CEVE 496 - OFFSHORE AND MARINE SYSTEMS
Short Title: OFFSHORE AND MARINE SYSTEMS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to dynamics of offshore and marine systems, structures, drill strings, marine risers, fluid forces, hydrodynamic forces, wind and earthquake forces. MATLAB programming and use of computer software. Demonstrations and laboratory examples. Graduate/Undergraduate Equivalency: CEVE 596. Mutually Exclusive: Credit cannot be earned for CEVE 496 and CEVE 596.

CEVE 499 - SPECIAL PROBLEMS
Short Title: SPECIAL TOPICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-12
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of selected topics including individual investigations special lectures, and seminars. Offered upon mutual agreement of faculty and student. Repeatable for Credit.

CEVE 500 - ADVANCED MECHANICS OF MATERIALS
Short Title: ADV MECHANICS OF MATERIALS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (MECH 211 or CEVE 211) and (MECH 311 or CEVE 311)
Description: Advanced topics in solid mechanics and strength of materials including energy methods, principle of virtual work, conservation laws, constitutive modeling, aspects of elasticity theory, stability and fracture mechanics with application to the analysis and design of reliable structures. Cross-list: MECH 500. Graduate/Undergraduate Equivalency: CEVE 400. Mutually Exclusive: Credit cannot be earned for CEVE 500 and CEVE 400.

CEVE 501 - CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE
Short Title: ENVIRONMENTAL CHEMISTRY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics include: introductory concepts of general chemistry; applied physical chemistry; and organic and biochemical concepts as used in the profession. Graduate students are required to write and present an advanced paper. Graduate/Undergraduate Equivalency: CEVE 401. Mutually Exclusive: Credit cannot be earned for CEVE 501 and CEVE 401.

CEVE 502 - SUSTAINABLE DESIGN
Short Title: SUSTAINABLE DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The objective of this course is to develop skills in formulating and solving problems of societal development and advancement in light of increasing material, energy and water demands and decreasing resource availability. Sustainable design requires balancing economic, ecological/environmental and social issues to create physical as well as social structures that will work for current and future generations. In addition to learning to apply sustainable design principles to individual engineering and developing projects, students will be challenged to understand the application of sustainable design thinking a the municipal and corporate level. Graduate students will be required to undertake additional assignments relative to sustainable design. Graduate/Undergraduate Equivalency: CEVE 302. Mutually Exclusive: Credit cannot be earned for CEVE 502 and CEVE 302.
CEVE 503 - NONLINEAR FINITE ELEMENT ANALYSIS
Short Title: NONLINEAR FEM
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

CEVE 504 - ATMOSPHERIC PARTICULATE MATTER
Short Title: ATMOSPHERIC PARTICULATE MATTER
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (CHEM 122 or CHEM 152) and MATH 102 and (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141)
Description: Description and examination of the processes determining the chemical and physical characteristics of atmospheric aerosol particles. Important focal points include aerosol measurements and control techniques and aerosol climate effects. Most attention will be paid to processes active in the troposphere, but important differences between the troposphere and stratosphere are addressed. Extra work required for graduate students. Graduate/Undergraduate Equivalency: CEVE 404. Mutually Exclusive: Credit cannot be earned for CEVE 504 and CEVE 404.

CEVE 505 - ENGINEERING PROJECT MANAGEMENT AND ECONOMICS
Short Title: ENGINEERING PROJ MGMT & ECON
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Life cycle economic analysis approach to project development and management, project planning, and project economic analysis, contracting network scheduling techniques, risk management, organizational structures, and cases. 505 requires an additional paper. Cross-list: ENGI 505. Graduate/Undergraduate Equivalency: CEVE 479. Mutually Exclusive: Credit cannot be earned for CEVE 505 and CEVE 201.

CEVE 507 - ENERGY AND THE ENVIRONMENT
Short Title: ENERGY AND THE ENVIRONMENT
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores the physical principles of energy use and its impacts on Earth's environment and climate. Topics will include energy mechanics, climate change, and the environmental impacts and future prospects of various fossil fuel and alternative energy sources. Additional problems will be assigned to graduate students. Graduate/Undergraduate Equivalency: CEVE 307. Mutually Exclusive: Credit cannot be earned for CEVE 507 and CEVE 307.

CEVE 508 - INTRODUCTION TO AIR POLLUTION CONTROL
Short Title: INTRO TO AIR POLLUTION CONTROL
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will discuss the history of air pollution and its effects as motivation for control of anthropogenic emissions to the atmosphere. Topics will include air pollution control strategies and regulations, predictive pollution concentration models, general ideas to reduce air pollution, and specific technologies to limit emissions of criteria pollutants and their precursors. Additional paper is required for graduate students. Graduate/Undergraduate Equivalency: CEVE 308. Mutually Exclusive: Credit cannot be earned for CEVE 508 and CEVE 308.

CEVE 509 - HYDROLOGY AND WATER RESOURCES ENGINEERING
Short Title: HYDROLOGY & WATER RESOURCES ENG
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Fundamentals of the hydrologic cycle, meteorology, rainfall-runoff, flood routing, urban system design, and open channel flow are covered. Topics in ground water flow and well mechanics are also included. Applications include computational hydrology, floodplain analysis, watershed behavior, and low impact development. Group presentations are required. The graduate level course includes an extra paper. Graduate/Undergraduate Equivalency: CEVE 412. Mutually Exclusive: Credit cannot be earned for CEVE 509 and CEVE 412.
CEVE 510 - PRINCIPLES OF ENVIRONMENTAL ENGINEERING
Short Title: PRINCIPLES OF ENVI ENGINEERING
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers principles of water quality engineering, air pollution control and solid and hazardous waste management. Elements of risk assessment, global atmospheric change, and pollution prevention are also addressed to contribute to adequate-level competency in Environmental Engineering. Graduate students will write a term paper and prepare a lecture. Graduate/Undergraduate Equivalency: CEVE 310. Mutually Exclusive: Credit cannot be earned for CEVE 510 and CEVE 310.

CEVE 511 - ATMOSPHERIC PROCESSES
Short Title: ATMOSPHERIC PROCESSES
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHEM 121 and CHEM 122 and MATH 101 and MATH 102 and (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141)
Description: Study of the chemical and physical processes that govern the formation, transformation, and transport of gases and particles in the atmosphere. Overview of urban and regional air pollution, including tropospheric ozone formation and particulate matter; stratospheric chemistry; and global climate change. Extra work required for graduate students. Graduate/Undergraduate Equivalency: CEVE 411. Mutually Exclusive: Credit cannot be earned for CEVE 511 and CEVE 411.

CEVE 512 - ADVANCED HYDROLOGY AND HYDRAULICS
Short Title: ADV HYDROLOGY & HYDRAULICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CEVE 502 or CEVE 302
Description: This course covers principles and applications of the GIS programs, theory and implementation of advanced hydrologic and hydraulic models, and the linkage of these models to engineering analysis of important water problems. GIS software is covered in detail. Each class consists of an advanced theory lecture followed by modeling tutorials using Hec-HMS, VFLO, and Hec-RA5 codes. A semester group project addresses a full watershed analysis with class presentations and engineering reports required.

CEVE 518 - CONTAMINANT HYDROGEOLOGY
Short Title: CONTAMINANT HYDROGEOLOGY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Groundwater hydrology, well mechanics, hydraulics. Contaminant transport issues in aquifer systems, numerical models, of large aquifers. Topics in water resources engineering and aquifer water management. Use of major computer models is covered in detail.

CEVE 519 - ELASTICITY, PLASTICITY AND DAMAGE MECHANICS
Short Title: ELASTICITY/PLASTICITY/DAMAGE
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An overview of phenomena that determine the response of solids to deformation and loading: elasticity, plasticity, damage mechanics and cracking. Review of continuum mechanics with emphasis on the physical mechanisms of deformation and fracture. Classification of the behavior of solids. Modeling of different types of material behavior. The physics underlying the phenomena and methods for the numerical analysis of the resulting equations are discussed. Cross-list: MECH 519.

CEVE 520 - ENVIRONMENTAL REMEDIATION RESTORATION
Short Title: ENVI REMEDIATION RESTORATION
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CEVE 523 and CEVE 323.
Description: Remediation principles and application of full-scale remediation technologies for restoration of contaminated soil, groundwater, and surface water. Topics include mass balances and distribution of chemicals in environmental media; development of remediation goals through risk assessment; treatment technology selection criteria and costs; groundwater, soil, and surface water restoration technologies; and regulatory considerations. Graduate students receive additional, more challenging assignments. Graduate/Undergraduate Equivalency: CEVE 420. Mutually Exclusive: Credit cannot be earned for CEVE 520 and CEVE 420.

CEVE 523 - APPLIED SUSTAINABLE PLANNING AND DESIGN
Short Title: APPL. SUST. PLANNING & DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CEVE 302 or CEVE 502
Description: This course applies principles learned in CEVE 302/502 to real-world sustainability projects. Three to four case studies will comprise the class. These case studies will involve development of design solutions for (1) carbon neutral design, (2) ecosystem services transactions, (3) sustainable industrial applications and/or (4) air pollution and environmental justice. Graduate/Undergraduate Equivalency: CEVE 323. Mutually Exclusive: Credit cannot be earned for CEVE 523 and CEVE 323.
CEVE 524 - TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS
Short Title: SYSTEM RELIABILITY METHODS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will learn computational simulation and theoretical techniques for the reliability assessment of engineered systems as a function of their component failure probabilities. We will explore time-dependent and algorithmic system reliability, and will use modern structural infrastructure systems as case studies, including power systems, wind turbines, bridges, and buildings. Extra provisions for graduate students in assignments, exams, and projects. Graduate/Undergraduate Equivalency: CEVE 424. Mutually Exclusive: Credit cannot be earned for CEVE 524 and CEVE 424.

CEVE 527 - COMPUTATIONAL STRUCTURAL MECHANICS AND FEM
Short Title: COMPUTATIONAL STR MECH & FEM
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to differential and integral formulations, minimum principles, variational principles, weighted residuals, energy principles, and principle of virtual work. Boundary, initial, and eigenvalue problems. Finite element and finite difference methods for structural mechanics. Applications to static and dynamic truss beams and frame problems. MATLAB programming and use of computer software. Students in CEVE 527 (GR version) will be required to do more advanced assignments and a project. Cross-list: MECH 527.

CEVE 528 - ENGINEERING ECONOMICS
Short Title: ENGINEERING ECONOMICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the evaluation of alternative investment opportunities with emphasis on engineering projects and capital infrastructure. Time value of money concepts are developed in the context of detailed project evaluation and presentations. In addition, concepts and applications of risk analysis and investment under uncertainty are developed. Requires oral and written presentations by students. Grad students will have an additional case study to perform beyond CEVE 322 requirements. Cross-list: ENGI 528. Graduate/Undergraduate Equivalency: CEVE 322. Mutually Exclusive: Credit cannot be earned for CEVE 528 and CEVE 322.

CEVE 529 - ETHICS AND ENGINEERING LEADERSHIP
Short Title: ETHICS & ENGINEERING LEADERSHIP
Department: Civil & Environmental Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Civil Engineering or its equivalent. Credit cannot be earned for a course that is identical to ENGI 529. Graduate/Undergraduate Equivalency: CEVE 320. Mutually Exclusive: Credit cannot be earned for CEVE 529 and CEVE 320.

CEVE 530 - CONCRETE BUILDING DESIGN
Short Title: CONCRETE BUILDING DESIGN
Department: Civil & Environmental Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Design of reinforced concrete building structures and floor slab systems. Case histories will be discussed.

CEVE 533 - NANOSCIENCE AND NANOTECHNOLOGY
Short Title: NANOSCIENCE & NANOTECHNOLOGY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Undergraduate enrollment requires instructor permission via special registration form. An introduction to the basic principles of nanoscience and nanotechnology. Size dependent physical properties of nanoscopic solids will be described using solid state physics and molecular orbital theory as a foundation. Wet chemical techniques that produce nanoscale materials (e.g. carbon nanotubes, semiconductor and metallic nanocrystals, dendrimers...) will be introduced in the second half of the semester. Expected to be taught in Spring 2019. Cross-list: CHEM 533, MSNE 534.

CEVE 524 - TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS
Short Title: SYSTEM RELIABILITY METHODS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will learn computational simulation and theoretical techniques for the reliability assessment of engineered systems as a function of their component failure probabilities. We will explore time-dependent and algorithmic system reliability, and will use modern structural infrastructure systems as case studies, including power systems, wind turbines, bridges, and buildings. Extra provisions for graduate students in assignments, exams, and projects. Graduate/Undergraduate Equivalency: CEVE 424. Mutually Exclusive: Credit cannot be earned for CEVE 524 and CEVE 424.

CEVE 527 - COMPUTATIONAL STRUCTURAL MECHANICS AND FEM
Short Title: COMPUTATIONAL STR MECH & FEM
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to differential and integral formulations, minimum principles, variational principles, weighted residuals, energy principles, and principle of virtual work. Boundary, initial, and eigenvalue problems. Finite element and finite difference methods for structural mechanics. Applications to static and dynamic truss beams and frame problems. MATLAB programming and use of computer software. Students in CEVE 527 (GR version) will be required to do more advanced assignments and a project. Cross-list: MECH 527.

CEVE 528 - ENGINEERING ECONOMICS
Short Title: ENGINEERING ECONOMICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the evaluation of alternative investment opportunities with emphasis on engineering projects and capital infrastructure. Time value of money concepts are developed in the context of detailed project evaluation and presentations. In addition, concepts and applications of risk analysis and investment under uncertainty are developed. Requires oral and written presentations by students. Grad students will have an additional case study to perform beyond CEVE 322 requirements. Cross-list: ENGI 528. Graduate/Undergraduate Equivalency: CEVE 322. Mutually Exclusive: Credit cannot be earned for CEVE 528 and CEVE 322.
CEVE 534 - FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT
Short Title: FATE/TRANSPORT OF CONTAMINANTS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Physical and chemical principles governing the fate and transport of contaminants in the aqueous environment, and the applications of such principles in environmental engineering. Emphasis is put on mass transport and transportation processes in natural and engineering systems. Previous course work in fluid mechanics and calculus through differential equations is strongly suggested. Extra work required, for Graduate Students. Graduate/Undergraduate Equivalency: CEVE 434. Mutually Exclusive: Credit cannot be earned for CEVE 534 and CEVE 434. Repeatable for Credit.

CEVE 535 - PHYSICAL CHEMICAL PROCESSES FOR WATER QUALITY CONTROL
Short Title: PHYS CHEM PROC WATER QUAL CTRL
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Principles, modeling and design aspects of physical chemical treatment processes in drinking water, wastewater and groundwater remediation applications. Modern treatment technologies such as membrane separation, advanced oxidation, and photocatalysis will be covered.

CEVE 536 - ENVIRONMENTAL BIOTECHNOLOGY AND BIOREMEDIATION
Short Title: ENVIRONMENTAL BIOTECHNOLOGY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Theory and application of biochemical processes in environmental engineering.

CEVE 538 - COMPUTATIONAL NANOSCIENCE FOR GREEN INFRASTRUCTURE
Short Title: COMPUTATIONAL NANOSCIENCE
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Computational methods such as first principles, kinetic Monte Carlo (KMC), classical MC (in Canonical, Grand Canonical, and isobaric-isothermal ensembles), and classic MD in predicting materials formation and properties. Case studies include cementitious materials, metals, and thermoelectric materials. Other case studies are possible depending on the student’s background and instructor’s approval. Cross-list: MSNE 538.

CEVE 540 - STEEL BUILDING DESIGN
Short Title: STEEL BUILDING DESIGN
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CEVE 405
Description: Exploration of practical design form conceptual stage to final analysis. Includes design parameters and serviceability limitations.

CEVE 544 - ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY
Short Title: ENVIRON MICROBIOL & ECOLOGY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Fundamentals of microbiology and the ecology of microbes, highlighting their interactions with each other and the environment, and integration of these principles in the context of important natural and engineered environmental systems. Graduate/Undergraduate Equivalency: CEVE 444. Mutually Exclusive: Credit cannot be earned for CEVE 544 and CEVE 444.

CEVE 550 - ENVIRONMENTAL ORGANIC CHEMISTRY
Short Title: ENVIRONMENTAL ORGANIC CHEM
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course covering parameter estimation methods, thermodynamics, and kinetic needed to predict the fate, transports, and reactivity of organic compounds in air, water, and soils. Topics: volatilization, solubility, sorption, partitioning, diffusion, aquatic reactivity, photochemistry, and transport modeling.

CEVE 554 - COMPUTATIONAL FLUID MECHANICS
Short Title: COMPUTATIONAL FLUID MECHANICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MECH 371 (may be taken concurrently) or CEVE 363 (may be taken concurrently) or CHBE 401 (may be taken concurrently)
Description: Additional work required. Cross-list: BIOE 554, MECH 554. Graduate/Undergraduate Equivalency: CEVE 454. Mutually Exclusive: Credit cannot be earned for CEVE 554 and CEVE 454.
CEVE 555 - NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS
Short Title: NUMERICAL METHODS FOR PDES
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers various numerical methods for solving partial differential equations: aspects of finite difference methods, finite element methods, finite volume methods, mixed methods, discontinuous Galerkin methods, and meshless methods. Both theoretical convergence and practical implementation of the methods are studied for elliptic and parabolic problems. May receive credit for only one of the following courses: CAAM 452/CEVE 455/CAAM 536/CEVE 555. Cross-list: CAAM 536. Recommended Prerequisite(s): CAAM 336 Mutually Exclusive: Credit cannot be earned for CEVE 555 and CEVE 455.

CEVE 560 - BRIDGE ENGINEERING AND EXTREME EVENTS
Short Title: BRIDGE ENG. & EXTREME EVENTS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course integrates information from various engineering and scientific disciplines to provide a rational basis for bridge design under regular and extreme loading. It provides an introduction to bridge engineering, including bridge systems, construction material, loading, and reliability-based design. Design, analysis, and retrofit for seismic and coastal threats will be introduced. Graduate/Undergraduate Equivalency: CEVE 460. Recommended Prerequisite(s): CEVE 304 and CEVE 311. Mutually Exclusive: Credit cannot be earned for CEVE 560 and CEVE 460.

CEVE 565 - NANOTECHNOLOGY ENVIRONMENTAL ENGINEERING FOR TEACHERS (NEET)
Short Title: NANOENVIRONMENTL ENGR-TEACHERS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Nano-Environmental Engineering for Teachers (NEET) course is designed to serve AP environmental science teachers. The purpose of the program is to increase the current knowledge of educators to empower them in implementing rigorous project-based engineering activities on the topic of water sustainability. Instructor Permission Required.

CEVE 570 - FOUNDATION ENGINEERING
Short Title: FOUNDATION ENGINEERING
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CEVE 470
Description: Subsurface exploration methods and techniques; lateral earth pressures and design of retaining walls; bearing capacity and shallow foundation design; settlement considerations; design of deep foundations; temporary excavations and dewatering.

CEVE 576 - STRUCTURAL DYNAMIC SYSTEMS
Short Title: STRUCTURAL DYNAMIC SYSTEMS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to structural dynamic systems. Linear SDOF and MDOF discrete systems, undamped and damped systems, free and forced vibration, dynamic response to periodic and arbitrary excitations, numerical evaluation of dynamic response, response spectrum and modal analysis. Additional topics for graduate version 576: Linear systems theory, transform methods, state space methods, feedback control, observers and identification. Applications using MATLAB. Demonstrations and laboratory examples. Students will be required to do more advanced assignments and a project. Cross-list: MECH 576. Graduate/Undergraduate Equivalency: CEVE 476. Mutually Exclusive: Credit cannot be earned for CEVE 576 and CEVE 476.

CEVE 578 - EARTHQUAKE ENGINEERING
Short Title: EARTHQUAKE ENGINEERING
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Characteristics of ground motion, analysis methods for linear and nonlinear base excited structures, and principles of seismic design including case studies and performance based engineering concepts. Probabilistic methods in earthquake engineering including seismic hazard analysis, fragility modeling, and risk assessment and mitigation. Recommended Prerequisite(s): CEVE 576 or equivalent course in Structural Dynamics.

CEVE 590 - MCEE SPECIAL STUDY
Short Title: MCEE SPECIAL STUDY
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 2-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Professional master Project course involves the following (1) a project of practical relevance to the practice of Civil and Environmental Engineering, and (2) detailed project report. Students need to work with a faculty advisor. Instructor Permission Required. Repeatable for Credit.
CEVE 592 - MODELING AND ANALYSIS OF NETWORKED SYSTEMS
Short Title: MODELING & ANALYSIS OF NET SYS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces methods for modeling, characterizing and predicting the behavior of complex infrastructure and technological systems. The discussed analysis methods rely on network science optimization, and computational complexity principles so as to unravel the emergent features of structural and infrastructure systems. Topological properties, ranking tools, dynamic processes, and percolation-based resilience are studied from analytical, algorithmic, and numerical simulation perspectives. The course also explores interdependencies and mitigation actions for spatially and temporally evolving systems. The graduate level course includes advanced exercises in homework and exams, as well as a research-oriented final project. Graduate/Undergraduate Equivalency: CEVE 492. Mutually Exclusive: Credit cannot be earned for CEVE 592 and CEVE 492. Repeatable for Credit.

CEVE 596 - OFFSHORE AND MARINE SYSTEMS
Short Title: OFFSHORE AND MARINE SYSTEMS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to dynamics of offshore and marine systems, structures, drill strings, marine risers, fluid forces, hydrodynamic forces, wind and earthquake forces. MATLAB programming and use of computer software. Students in CEVE 596 (GR version) will be required to do more advanced assignments and a project. Graduate/Undergraduate Equivalency: CEVE 496. Mutually Exclusive: Credit cannot be earned for CEVE 596 and CEVE 496.

CEVE 599 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces methods for modeling, characterizing and predicting the behavior of complex infrastructure and technological systems. The discussed analysis methods rely on network science optimization, and computational complexity principles so as to unravel the emergent features of structural and infrastructure systems. Topological properties, ranking tools, dynamic processes, and percolation-based resilience are studied from analytical, algorithmic, and numerical simulation perspectives. The course also explores interdependencies and mitigation actions for spatially and temporally evolving systems. The graduate level course includes advanced exercises in homework and exams, as well as a research-oriented final project. Graduate/Undergraduate Equivalency: CEVE 492. Mutually Exclusive: Credit cannot be earned for CEVE 592 and CEVE 492. Repeatable for Credit.

CEVE 599 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces methods for modeling, characterizing and predicting the behavior of complex infrastructure and technological systems. The discussed analysis methods rely on network science optimization, and computational complexity principles so as to unravel the emergent features of structural and infrastructure systems. Topological properties, ranking tools, dynamic processes, and percolation-based resilience are studied from analytical, algorithmic, and numerical simulation perspectives. The course also explores interdependencies and mitigation actions for spatially and temporally evolving systems. The graduate level course includes advanced exercises in homework and exams, as well as a research-oriented final project. Graduate/Undergraduate Equivalency: CEVE 492. Mutually Exclusive: Credit cannot be earned for CEVE 592 and CEVE 492. Repeatable for Credit.

CEVE 602 - SEMINAR
Short Title: SEMINAR
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will introduce NEWT graduate students to the basic scientific concepts behind NEWT research. It is also intended to develop a common language for NEWT students in different research areas, and to contribute to the development of a center culture. Instructor Permission Required. Repeatable for Credit.

CEVE 603 - NANOTECHNOLOGY-ENABLED WATER TREATMENT (NEWT) CORE CONCEPTS SEMINAR
Short Title: NEWT CORE COURSE
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will introduce NEWT graduate students to the basic scientific concepts behind NEWT research. It is also intended to develop a common language for NEWT students in different research areas, and to contribute to the development of a center culture. Instructor Permission Required. Repeatable for Credit.

CEVE 604 - ADVANCED TOPICS IN BIOREMEDIATION
Short Title: ADV TOPICS IN BIOREMEDIATION
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Basic principles of Microbial Physiology, Metabolism, Stoichiometry, Thermodynamics and Kinetics applied to the selection, design and performance evaluation of engineered and intrinsic bioremediation systems. Repeatable for Credit.

CEVE 605 - ADVANCED TOPICS IN ENVIRONMENTAL ENGINEERING SCIENCES
Short Title: ADV TOPICS/ENVIRONMENTAL ENG
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will introduce NEWT graduate students to the basic scientific concepts behind NEWT research. It is also intended to develop a common language for NEWT students in different research areas, and to contribute to the development of a center culture. Instructor Permission Required. Repeatable for Credit.
CEVE 641 - ADVANCED TOPICS IN ENVIRONMENTAL ENGINEERING
Short Title: ADV TOPICS/ENVIRONMENTAL ENG
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced topics in Graduate Study.

CEVE 651 - M.S. RESEARCH AND THESIS
Short Title: M.S. RESEARCH AND THESIS
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

CEVE 652 - M.S. RESEARCH AND THESIS
Short Title: M.S. RESEARCH AND THESIS
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

CEVE 654 - ADVANCED COMPUTATIONAL MECHANICS
Short Title: ADV COMPUTATIONAL MECHANICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CEVE 554 or BIOE 554 or MECH 554 or BIOE 454 or MECH 454

CEVE 678 - ADVANCED STOCHASTIC MECHANICS
Short Title: ADV STOCHASTIC MECHANICS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Nonlinear random vibrations, Statistical Linearization, ARMA filters modeling, Monte Carlo Simulation, Wiener-Volterra series, time-variant structural reliability, and Stochastic Finite Elements are presented from a perspective of usefulness to aerospace, civil, marine, and mechanical applications. Cross-list: MECH 678.

CEVE 679 - APPLIED MONTE CARLO ANALYSIS
Short Title: APPLIED MONTE CARLO ANALYSIS
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Probability density and power spectrum based simulation concepts and procedures are discussed. Scalar and vectorial simulation are addressed. Spectral decomposition and digital filter algorithms are presented. Applications from aerospace, earthquake, marine, and wind engineering, and from other applied science disciplines are included. Cross-list: MECH 679.

CEVE 684 - ENVIRONMENTAL RISK ASSESSMENT & HUMAN HEALTH
Short Title: ENVIR RISK ASSESS & HUMAN HLTH
Department: Civil & Environmental Engr
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 280 or STAT 305
Description: Learn and apply quantitative risk assessment methodology to estimate human health risk from environmental exposure to contamination in air, soil and water. Students will conduct a series of team projects focused on toxicology, risk based screening levels, exposure concentration estimation and risk characterization. Cross-list: STAT 684. Graduate/Undergraduate Equivalency: CEVE 484. Mutually Exclusive: Credit cannot be earned for CEVE 684 and CEVE 484.

CEVE 736 - ADVANCED RESEARCH TOPICS: ENVIRONMENTAL BIOTECHNOLOGY AND NANOTECHNOLOGY
Short Title: ADV TOPICS: ENVIR BIOTECH & NAN
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research oriented presentations and discussions of landmark papers and experimental methods for doctoral students in the Alvarez research group. Repeatable for Credit.

CEVE 800 - PH.D. RESEARCH AND THESIS
Short Title: PH.D. RESEARCH AND THESIS
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

CEVE 801 - PH.D. RESEARCH AND THESIS
Short Title: PH.D. RESEARCH AND THESIS
Department: Civil & Environmental Engr
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
Classical Studies (CLAS)

CLAS 101 - FRESHMAN SEMINAR: SOCRATES: THE MAN AND HIS PHILOSOPHY
Short Title: FRESHMAN SEMINAR: SOCRATES
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This discussion-style seminar will consider how Socrates practiced philosophy, how Plato represented Socrates and Socratic philosophy in writing, and what effect Socrates had on Athens and his fellow Athenians. Readings will consist mainly of Plato’s Socratic dialogues, with emphasis on the “Apology” and “Gorgias.” In addition to papers, each participant will make one presentation and lead one discussion. This course is limited to first-year students only; any others will be removed from this course. Cross-list: FSEM 101.

CLAS 102 - INTRODUCTION TO THE HISTORY OF WESTERN ART I: PREHISTORIC TO GOTHIC
Short Title: INTRO TO HIST OF WESTERN ART I
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A survey of painting, sculpture, and architecture from Antiquity through the 15th century. Students will also attend a one-hour weekly tutorial with a teaching assistant. Cross-list: HART 101, MDEM 111.

CLAS 103 - THE PARTHENON AND PERIKLEAN ATHENS
Short Title: THE PARTHENON
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, we will trace the history and mythology of the Parthenon. We begin with the dawn of sacred tradition on the Acropolis, then explore the classical recreation of the city, the conversion of the Parthenon into a church, its subsequent destruction and the current debate over restoration. This course is limited to first-year students only, any others will be removed from this course. Cross-list: ARCH 110, FSEM 113, HART 110.

CLAS 107 - GREEK CIVILIZATION AND ITS LEGACY
Short Title: GREEK CIVILIZATION & LEGACY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An examination of the literary, artistic, and intellectual achievements of classical Greek civilization from Homer through the golden age of classical Athens to the spread of Greek culture in the Hellenistic world. The influence of ancient Greece on Western culture will be a focus. Case studies in the later reception of classical Greek literature (e.g., tragedy), philosophy (e.g., Socrates), history (e.g., democracy), and art (e.g., The Parthenon) will be examined. Cross-list: HUMA 107.
Course URL: classicallegacy.rice.edu

CLAS 108 - ROMAN CIVILIZATION AND ITS LEGACY
Short Title: ROMAN CIVILIZATION &ITS LEGACY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will investigate central aspects of Roman civilization: politics, religion, law, oratory, private life, public entertainment, literature, and visual art and architecture. We will also examine the place of ancient Rome in the western imagination, and the influence of ancient Rome on later politics, literature, and art. Cross-list: HUMA 111.
Course URL: classicallegacy.rice.edu/

CLAS 179 - ROMAN VS GREEK: QUESTIONING THE DEFINITION OF ART IN THE ANCIENT MEDITERRANEAN WORLD
Short Title: ROMAN VS GREEK
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: What’s in a name? Apparently a lot. For 500 years—since the Renaissance—scholars have cleaved Roman and Greek art from one another and this division has defined how we think about art in antiquity. In this freshman seminar, we will question this paradigm. Looking at art from around the Mediterranean and reading the very scholarship that has both created these definitions and questioned them, we will work toward a new way of conceiving the art of the Ancient Mediterranean world. This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 179, HART 179.
CLAS 201 - HISTORY OF PHILOSOPHY I  
Short Title: HISTORY OF PHILOSOPHY I  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Survey of the major philosophers and philosophical systems of ancient Greece, from Parmenides to the Stoics. Cross-list: MDEM 201, PHIL 201.

CLAS 205 - GREEK TRAGEDY IN TRANSLATION  
Short Title: GREEK TRAGEDY IN TRANSLATION  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Participants draft short papers (3 pp. double-spaced) weekly and read them aloud in class to receive constructive criticism. A different Greek play provides the focus for discussion and writing each week. No secondary literature, exams or quizzes. The final paper is a revised and extended version of a previously written draft.

CLAS 207 - LOVE LIFE IN CLASSICAL ANTIQUITY  
Short Title: LOVE LIFE IN ANTIQUITY  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Love, sex, marriage and eroticism were important aspects of ancient Greek and Roman culture as they are of our own, though they were sometimes conceived of very differently. In this course we will consider the evidence for various aspects of sexual relationships in poetry, art, inscriptions, philosophy, and more.

CLAS 210 - HOMER AND VIRGIL AND THEIR RECEPTION  
Short Title: HOMER AND VIRGIL  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course reads Homer’s ILIAD and ODYSSEY and Virgil’s AENEID in translation. Topics include the nature of oral poetry, the history of the epic genre, Virgilian intertextuality, the cultural and political contexts in which the poems arose, and case studies in the poets’ reception.

Course URL: classicallegacy.rice.edu

CLAS 218 - CITIES, SANCTUARIES, CIVILIZATIONS: INTRODUCTION TO GREEK ART AND ARCHAEOLOGY  
Short Title: GREEK ART AND ARCHAEOLOGY  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: An introduction to the art and archaeology of the ancient Greek world. Artistic media, such as sculpture and vase painting will be examined in a broad range of the material culture ancient Greeks created and used. Consideration of these materials within their cultural, social and religious contexts will be discussed. Cross-list: HART 216.

CLAS 219 - OLD ENGLISH: READINGS IN BEOWULF  
Short Title: OLD ENGLISH  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: We will read selections from Beowulf in the original Old English, and discuss its literary and historical importance. No prior knowledge of Old English required.

CLAS 225 - WOMEN IN GREECE AND ROME  
Short Title: WOMEN IN GREECE AND ROME  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Survey of the depiction of women in Greek and Roman mythology, literature, and art. Includes a study of the lives of Greek and Roman women as evidenced by archaeological as well as literary materials. Cross-list: SWGS 225.

Course URL: classicallegacy.rice.edu

CLAS 235 - CLASSICAL MYTHOLOGY: INTERPRETATION, ORIGINS, AND INFLUENCE  
Short Title: CLASSICAL MYTHOLOGY  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: We will read and analyze some of the most influential Greek myths (including their parallels and permutations in other cultures). Employing insights from a variety of theoretical approaches to myth, we will identify typical story patterns, characters, and events, and the values, anxieties, and aspirations for which they stand.

Course URL: classicallegacy.rice.edu
CLAS 235 - ART AND POLITICS IN ANCIENT ROME
Short Title: ART & POLITICS IN ANCIENT ROME
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, you will learn to navigate the testy waters of artistic and political design in ancient Rome, when monumental architecture and exquisite art was often created for personal gain. Throughout the semester we will explore how would-be rulers used visual culture for professional self-aggrandizement. Cross-list: HART 214.

CLAS 237 - ARISTOTLE'S POETICS IN ANCIENT GREEK TRAGEDY AND MODERN FILM
Short Title: ARISTOTLE'S POETICS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Aristotle's seminal account of tragic drama still intrigues screenwriters, theatre students, and literary scholars - who often disagree about its interpretation and relevance. In this discussion-based course we will read the Poetics closely (in translation), compare specific Greek tragedies with Aristotle's model, and evaluate the model's usefulness for modern film criticism.

CLAS 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

CLAS 301 - ANCIENT AND MEDIEVAL PHILOSOPHY
Short Title: ANCIENT & MEDIEVAL PHILOSOPHY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics in the history of philosophy from the 4th century B.C. through the 14th century. Graduate students require permission of instructor. Cross-list: MDEM 301, PHIL 301. Mutually Exclusive: Credit cannot be earned for CLAS 301 and MDEM 481. Repeatable for Credit.

CLAS 309 - THE DAWN OF ROME: GENERATING THE URBAN, SOCIAL AND POLITICAL LIFE OF THE ETERNAL CITY
Short Title: THE DAWN OF ROME
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this course you will uncover the roots of the Eternal City, Rome. Through analysis of archaeological remains, art historical methodologies and theories of social space, intentionality, structuration and agency, you will question how and why Rome became a city and a culture the reshaped the world. The course will focus on the first 500 years of Roman art and society, ca. 800-300 BCE, looking closely at the kingship of Rome, the genesis of the Roman Republic, and the ability to understand a distant culture through artistic manufacture, materiality and philosophical shift. Cross-list: HART 309.

CLAS 316 - DEMOCRACY AND POLITICAL THEORY IN ANCIENT GREECE
Short Title: DEMOCRACY & POLITICAL THEORY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The Greeks created political society and studied political society in order to understand and improve it. One particular form of political society, democracy, reached its pinnacle in Athens. We shall attempt to understand how ancient Greeks thought about politics from the rudimentary beginnings in Homer to the complex, incisive arguments of Aristotle. Cross-list: PLST 316.

CLAS 317 - THE SELF IN GREEK AND ROMAN THOUGHT
Short Title: SELF IN GREEK&ROMAN THOUGHT
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores conceptions of the self from Homer to Augustine of Hippo, focusing especially on views of the mind or soul and its relation to the body, thought or reason and its relation to desire, human agency and responsibility, and the individual self in relation to others.

CLAS 318 - THE INVENTION OF PAGANISM IN THE ROMAN EMPIRE
Short Title: INVENTION OF PAGANISM
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This interdisciplinary course examines the development of the concept of "paganism" in the Roman empire during the first through seventh centuries AD. We will examine the mutually tolerant character of the many religions of the Roman world and see how the category of paganism was invented and applied by Christians to all the polytheists of the empire and beyond. Cross-list: HIST 316.
CLAS 319 - ANCIENTS VERSUS MODERNS  
Short Title: ANCIENTS VERSUS MODERNS  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Ancients and moderns have participated in constant dialogue – sometimes friendly, sometimes hostile – that still shapes the complexities of our own approaches to the past. This seminar traces approximately two millennia of conflict and compromise between so-called “ancients” and “moderns” from ancient Greece and Rome to the French Revolution and beyond.

CLAS 321 - SPECIAL TOPICS IN ANCIENT ART  
Short Title: ROME: THE ETERNAL CITY  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course will introduce you to the major monuments of Rome, Pompeii, and Herculaneum. We will focus not only on the history and functions of these monuments in antiquity but also on how their meaning and representation has changed and evolved in the post-classical world. Instructor Permission Required. Cross-list: HART 318. Repeatable for Credit.

CLAS 323 - (RE)DEFINING (CLASSICAL) ART HISTORY: DIVISION, CONNECTIVITY AND SHIFT IN THE ANCIENT MEDITERRANEAN  
Short Title: REDEFINING CLASSICAL ART HIST  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course will begin with a brief survey of the Indo-European languages, followed by a detailed reconstruction of Proto-Indo-European phonology, morphology, and syntax. The second half of the course will deal with Indo-European culture, laws, society and poetics, together with a consideration of advanced topics in the individual branches. Cross-list: LING 336.

CLAS 324 - THE GENESIS OF ROMAN ART  
Short Title: THE GENESIS OF ROMAN ART  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course explores the roots of the art and architecture of ancient Rome (ca. 600-200 BCE). In it we will examine the earliest vestiges of sculpture, painting and architecture from the Archaic and Classical periods to the twisted forms of Hellenistic conquest. You will grapple with the questions of cultural agency, connoisseurship, cultural interaction, network and object theories and spatial imagination to question standard narratives that divide Rome in this time from neighboring Greek polities. Cross-list: HART 327.

CLAS 326 - MATERIAL, FORM, SPACE, TIME: CONCRETE AND THE REVOLUTION OF SPACE IN ANCIENT ROME  
Short Title: MATERIAL, FORM, SPACE, TIME  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: “Architectural Revolution” has been tied to Le Corbusier, the Eiffel Tower, the Louvre, Brunelleschi and to towering Gothic cathedrals. At the foundation of all these endeavors is the Concrete Revolution in Roman Architecture. In this course we’ll look at the four essential elements of this revolution from the fourth century BCE to the fifth century CE, and we’ll investigate how shifts in application and experience created a background that informs design to this day. Cross-list: ARCH 326, HART 326.

CLAS 336 - INTRO TO INDO-EUROPEAN  
Short Title: INTRO TO INDO-EUROPEAN  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: For 500 years scholars have cleaved Roman and Greek art from one another in order to define the heart of antiquity. The scholarship that created such division is the very scholarship that created the discipline of Art History and redefined it through iconographical, social historical and broadly theoretical analysis. Windelmann, Droysen, Brendel, Deleuze, Gell. In this seminar, we will question the disciplinary paradigm. Looking at art from around the Mediterranean and reading the very scholarship that has both created these definitions and questioned them, we will work toward a new way of conceiving the art of the Ancient Mediterranean world. Cross-list: HART 369.
### CLAS 417 - ARCHITECTURE AND DYNASTIC ASPIRATION IN THE EARLY ROMAN EMPIRE

**Short Title:** ARCH AND DYNASTIC ASPIRATIONS  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Nero is often remembered as the tyrannical emperor who let the city burn and gorged on ill-gotten luxury; his successors are conceived as good emperors who built the Coliseum, Imperial Palace and the vast majority of Rome's remaining monuments. In this course you will question whether things were so straightforward. Cross-list: HART 410.

### CLAS 477 - SPECIAL TOPICS

**Short Title:** SPECIAL TOPICS  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum, Lecture, Laboratory, Seminar  
**Credit Hours:** 1-4  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

### CLAS 482 - CAESAR'S PALACE: AUTHOR(ITY) AND MEANING IN THE ROMAN IMPERIAL RESIDENCE

**Short Title:** CAESAR'S PALACE  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Described as both a "Hall of Despotism" and a "Citadel of Majesty," the palace of the Roman emperors is one of the great enigmas of antiquity. Its vast remains (larger than Versailles) are relatively well preserved, but it is poorly understood as part of the concept of emperors. In this course we will examine the palace within the context of Imperial Roman art and politics; then we will dissect its meaning(s), the intentions of those who created it, and generally deconstruct it, brick by brick, to question agency and spatial experience from a macro-historical perspective. Cross-list: HART 482.

### CLAS 492 - SPECIAL TOPICS

**Short Title:** SPECIAL TOPICS  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** CLAS 493  
**Description:** Continuation of CLAS 493. Open to Classical Studies majors in their final year. Thesis, approximately 7,500-15,000 words (30-60 pages), on a topic of the student's choice in consultation with a faculty member. CLAS 493 and CLAS 494 form a two semester sequence. Requirements for 493 include a detailed prospectus with annotated bibliography. Instructor Permission Required.

### CLAS 493 - SENIOR THESIS

**Short Title:** SENIOR THESIS  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** CLAS 492  
**Description:** Open to Classical Studies majors in their final year. Thesis, approximately 7,500-15,000 words (30-60 pages), on a topic of the student's choice in consultation with a faculty member. Instructor Permission Required.

### Cntr Lang & Intercultural Comm (CLIC)

### CLIC 369 - INTERCULTURAL COMMUNICATION:IC LANGUAGE INTERACTION

**Short Title:** IC LANGUAGE IN INTERACTION  
**Department:** Cntr Lang & Intercultural Comm  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ARAB 264 or CHIN 264 or FREN 264 or GERM 264 or HEBR 264 or HIND 264 or ITAL 264 or JAPA 264 or KORE 264 or PORT 264 or RUSS 264 or SPAN 264  
**Description:** This course centers on the development of intercultural communicative competence in the context of learning a L2 with special focus on language uses, sociolinguistic strategies and structures of interactional discourses in spoken and written languages. This course is taught in English.
CLIC 385 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students will engage in an in depth study of topics related to language study and intercultural communication under the guidance of CLIC faculty. Topics will vary but will develop the students' ability to communicate in the target language. Department Permission Required.

CLIC 399 - TEACHING PRACTICUM
Short Title: TEACHING PRACTICUM
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Gives students with advanced proficiency in a language taught at the Rice in Country programs the opportunity to acquire teaching and research experience in a study abroad setting. Students will facilitate class discussions in Rice in Country courses; collect, analyze and classify samples of interactional and sociolinguistic data in various settings. Meet regularly with supervising faculty member. Instructor Permission Required. Recommended Prerequisite(s): Experience in Rice in Country Program. Repeatable for Credit.

Cognitive Sciences (CSCI)

CSCI 390 - SUPERVISED RESEARCH IN COGNITIVE SCIENCES
Short Title: SUPERV RESRCH COGNITIVE SCI
Department: Cognitive Sciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Supervised research on topics relevant to the cognitive sciences. Limited to majors in Cognitive Sciences. Instructor Permission Required. Repeatable for Credit.

CSCI 481 - HONORS PROJECT
Short Title: HONORS PROJECT
Department: Cognitive Sciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent directed research toward preparation of an undergraduate honors project or thesis. Instructor Permission Required. Repeatable for Credit.

College Course (COLL)

COLL 108 - SURVIVOR: STRATEGIES AND SOCIAL IMPLICATION (SID RICH)
Short Title: SURVIVOR: SOCIAL STRATEGIES
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survivor: Strategies and Social Implications asks students to reflect back on the successful and unsuccessful strategies used in the show “Survivor” and relevant scholarly psychological papers and apply them in practicing social interaction and interpreting world conflicts and solutions in real life.

COLL 116 - INTRO TO CANTONESE AND CULTURE (MARTEL)
Short Title: INTRO TO CANTONESE AND CULTURE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will teach students about the politics of Cantonese, including basic expressions, greetings, grammar patterns and essential words used by the native speakers. This course will primarily focus on the speaking of Cantonese.

COLL 117 - WIKIPEDIA EMPOWERMENT KNOWLEDGE (MARTEL)
Short Title: WIKIPEDIA EMPOWERMENT KNOWLWDGE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will teach students the fundamentals of research on topics relevant to the cognitive sciences. Limited to majors in Cognitive Sciences. Instructor Permission Required. Repeatable for Credit.

COLL 125 - VITICULTURE AND VINICULTURE: THE SHAPING FORCES BEHIND WINE (MCMURTRY)
Short Title: VITICULTURE AND VINICULTURE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course addresses the impact of viticulture and viniculture on wine. To ground our discussions in real-world examples, we will taste and compare important regionally distinct wines. As we explore the choices involved in winemaking, students will also determine how a wine's attributes suit it to pairing with certain foods. Students must be 21+.
COLL 126 - INTERNSHIPS, INTERVIEWS AND MORE: COMMUNICATION FOR YOUR CAREER (HANSZEN)

Short Title: INTERNSHIPS, INTERVIEWS & MORE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course focuses on basic career skills. The majority of class time is dedicated for students to practice career skills with their peers. Students will conduct mock interviews and developed their resumes. This course is intended for students without previous experience going through the interview process.

COLL 127 - SEAFOOD FOR THOUGHT: A FISHY INVESTIGATION OF MARINE RESOURCE USE (MCMURTRY)

Short Title: SEAFOOD FOR THOUGHT
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will examine contemporary issues in marine science as they relate to the seafood industry and associated resource use sectors. In other words, what kind of relationships do individuals and societies have to the ocean through diet, and how does that translate to effective conservation efforts?

COLL 128 - BOARD GAME THEORY (DUNCAN)

Short Title: BOARD GAME THEORY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: How is game strategy developed? In Board Game Theory, students will use Settlers of Catan to learn the fundamentals of board game strategy formulation. All members of the class will learn to analyze game rules, apply mathematics and statistics to gameplay, and isolate variables in order to develop successful strategies.

COLL 129 - WHAT’S THE CRAIC: CULTURAL LANDSCAPES OF IRELAND (JONES)

Short Title: INTRO TO IRISH CULTURE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course is an introduction to how cultural landscapes define Ireland. Topics will include music, mythology, language, food, and pubs, among others. The course will help students develop a framework to evaluate the anthropological concept of culture, specifically through studying the Emerald Isle.

COLL 130 - THE LANGUAGE AND CULTURE OF THE CHINESE RESTAURANT IN THE UNITED STATES (LOVETT)

Short Title: RESTAURANT CHINESE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will develop the reading and speaking skills necessary to read, understand and order most common items on a Chinese restaurant's menu, as well as understand the cultural background of regional cuisines, festival foods. No prior experience Chinese experience required. Includes trip to a Chinatown restaurant.

COLL 131 - NARRATIVE IN INTERACTIVE MEDIA: THE MECHANICS OF STORYTELLING IN VIDEO GAMES (MCMURTRY)

Short Title: NARRATIVE IN INTERACTIVE MEDIA
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: How does one convey narrative in an inherently interactive medium? In this course, students will engage with video games through an analytical lens to explore how game designers use mechanics, content, and the mind of the player to shape a game's central thesis.

COLL 132 - BEATS BY YOU: AN INTRODUCTION TO BEATBOXING (BROWN)

Short Title: INTRO TO BEATBOX
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will focus on becoming a beatboxer, and will include a brief history of beatbox and the basic music theory behind it. Students will study the social and musical contexts of beatbox, and learn beatbox techniques.

COLL 133 - HOW THE WEB WORKS: AN INTRODUCTION TO INTERNET TECHNOLOGIES (MARTEL)

Short Title: HOW THE WEB WORKS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class will present modern internet technologies in the context of a user, rather than a developer. The skills and knowledge learned in the class will culminate in the design and publication of a resume website. The course is designed for students with no prior experience and limited knowledge.
COLL 135 - INTRODUCTION TO CHESS STRATEGY (MCMURTRY)
Short Title: INTRODUCTION TO CHESS STRATEGY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will provide an introduction to the world of chess, including topics such as its history, strategy, and the field of chess computers. Students will learn not only how to play, but also broader learning strategies to give them the tools to improve beyond the class. No experience necessary!

COLL 137 - PHILOSOPHY OF COFFEE (MCMURTRY)
Short Title: PHILOSOPHY OF COFFEE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Through this course, coffee and espresso aficionados will gain a deeper understanding of the intricate flavors, colorful history, popular brewing methods, and diverse cultures that go into making every cup of coffee.

COLL 138 - LET'S TALK ABOUT POP: CRITIQUING AND UNDERSTANDING POP MUSIC (WIESS)
Short Title: PHILOSOPHY OF POP
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, music lovers and casual listeners will examine pop music as an art form and the arguments on its legitimacy, as well as discussing and refining their opinions on multiple works of pop.

COLL 139 - PHILOSOPHY OF COFFEE (MCMURTRY)
Short Title: INTRODUCTION TO MUSIC PRODUCTION (BROWN)
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Using a variety of computer-based software, students taking this course will learn how to produce their own music. The course will cover sound design, music theory, mixing, mastering, as well as the history of computer music production and the technologies involved.

COLL 140 - INTRODUCTION TO MUSIC PRODUCTION (BROWN)
Short Title: INTRO TO MUSIC PRODUCTION
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Through this course students will learn how to decipher and implement the hidden structure behind freestyle-rap. Students will partake in in-class workshops targeted at developing the different skills required when freestyling. These skills include but are not limited to random generation, word association, rhyme schemes, freestyle etiquette, and delivery.

COLL 141 - FREESTYLE RAP: ITS HIDDEN STRUCTURE (BROWN)
Short Title: HANDS-ON WITH MAKER MOVEMENT (JONES)
Short Title: INTRO TO IMPROMPTU POETRY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course seeks to give students a general understanding of tools and fabrication techniques while also introducing them to the maker movement.

COLL 142 - HANDS-ON WITH THE MAKER MOVEMENT (JONES)
Short Title: HANDS-ON WITH MAKER MOVEMENT
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will learn how to produce their own music. The course will cover sound design, music theory, mixing, mastering, as well as the history of computer music production and the technologies involved.

COLL 143 - THE ULTIMATE POTENTIAL OF VIRTUAL REALITY: AN EXPLORATION (BROWN)
Short Title: ULTIMATE POTENTIAL OF VR
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Virtual reality (VR) can be a powerful tool. This class explores the application and potential of VR in multiple domains through guest lectures, interviews, papers, discussions, and most importantly, experiences in VR. Topics covered include art, medical, industrial training, psychology, education, and more. All majors are encouraged to enroll.
COLL 144 - WEB APP DEVELOPMENT FOR NON-MAJORS (DUNCAN)
Short Title: WEB DEV FOR NON-MAJORS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course explores topics in web-based app development with an emphasis on front-end. By the end of the course, students will have an understanding of how web-based applications function and the knowledge necessary to build simple applications. This course is only for students not intending to major in CS/ECE.

COLL 145 - FROM RENT TO HAMILTON: SOCIAL ISSUES IN MODERN MUSICALS (BROWN)
Short Title: SOCIAL ISSUES MODERN MUSICALS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Through analysis of recent productions (such as Next to Normal, Billy Elliot, and Hamilton), students will explore how the Broadway musical's storytelling conventions and contemporary cultural and commercial contexts inform its representation of race, class, gender, disability, and social change. No previous music or theater experience needed.

COLL 146 - HUMAN CENTERED DESIGN FOR SOCIAL IMPACT: CREATING IMPACTFUL CHANGE IN HOUSTON, TX (BROWN)
Short Title: DESIGN FOR SOCIAL IMPACT
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will engage students in learning and actively applying the design thinking process to solve social problems in Houston. Students will define a social problem they want to solve, ideate potential solutions, create a prototype of their solution, and present it before the class in a mock “pitch” competition.

COLL 147 - UNDERSTANDING THE FEDERALIST PAPERS (DUNCAN)
Short Title: THE FEDERALIST PAPERS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The object of this course is to read the papers, understand the context in which they were written, and the significance that the work has in a broader sense. Really, all we want to know is, what were the Federalist Papers and in how are they applicable to government today?

COLL 148 - THE MEMES OF PRODUCTION: INVESTIGATING THE SOCIAL PHENOMENON OF INTERNET MEMES (DUNCAN)
Short Title: MEMES OF PRODUCTION
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Internet culture has largely adopted meme usage as an avenue of communication, a rallying point for communities, and a way to express personal humor. In this course, we will bridge the gap between academic and popular discourse on internet memes by studying the interdependence between meme culture and society.

COLL 149 - INTRODUCTION TO STAND UP COMEDY (HANSZEN)
Short Title: INTRO TO STAND UP
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: We will be studying famous comedians such as Aziz Ansari, Bo Burnham, and Sarah Silverman to analyze their technical aspects and their critical analysis of society. We will ask: What does it mean to be funny? We will apply what we learn to create our own stand up comedy sets.

COLL 150 - STEM CELL BIOLOGY AND RESEARCH (HANSZEN)
Short Title: STEM CELL BIOLOGY & RESEARCH
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will provide students with biological information on stem cells, furthering their knowledge of human biology. Students will also be introduced to current research and clinical trials being done in the field, through guest lectures from TMC, and encouraged to analyze the validity of sensationalist news articles.

COLL 151 - REALITY TV AND THE MODERN MIND (HANSZEN)
Short Title: REALITY TV AND THE MODERN MIND
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Are reality TV shows merely mindless entertainment, or can we use them to better understand our own desires, actions, and motivations? This course delves into ten reality TV shows, supplemented by class discussions and short academic articles. Students will become critical consumers of reality TV and the ideas it purports.
COLL 152 - MAPPING DANCE ACROSS SOUTH ASIA (HANSZEN)
Short Title: DANCE ACROSS SOUTH ASIA
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will study dance vignettes across South Asia and how dance reflects historical alterations in South Asian society. Students will analyze the intricate political and economic history of South Asians portrayed in a dance framework through case studies of regional dances from both a performer and audience standpoint.

COLL 153 - SOCIALIZATION THROUGH SPORTS: HOW SPORTS SHAPE WHO WE ARE (HANSZEN)
Short Title: SOCIALIZATION THROUGH SPORTS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This seminar investigates the social function of sports, its importance to society, and how sports shape our understanding of self and others. Readings and viewings address sports as it relates to social theory, youth and aging, identity formation, high school and college, race, class, gender, deviance, bodily capital, activism.

COLL 154 - INSIGHTS INTO MODERN ANIME: A CHARACTER STUDY (HANSZEN)
Short Title: INSIGHTS INTO MODERN ANIME
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will focus on the analysis of characters and identity throughout anime. Students will watch five shows, including Neon Genesis Evangelion and Madoka Magica, and draw conclusions about the characters and the world in the shows from a philosophical, psychological and sociological viewpoint.

COLL 155 - PERFORMING THE CLASSICAL ARTS OF SOUTH INDIA (WIESS/LOVETT)
Short Title: SOUTH INDIAN PERFORMING ARTS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Performing arts are part of a long-standing tradition in South Indian communities for expressing identity, faith, mythology, and social issues. This course examines the performance of classical arts, specifically Carnatic music and bharathanatyam dance. Students will choose avenues of performance (dance/vocal/instrumental) to develop, culminating in a short group piece.

COLL 156 - KNITS AND PIECES (JONES)
Short Title: KNITS AND PIECES
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Ready, set, cast on! Through beginner projects, tutorials, and knitting circles, master the basic components of knitting and learn how to tackle any pattern. Weekly practice, along with discussions on the cultural relevance and benefits of knitting, will build your skills and appreciation for this yarn art.

COLL 157 - THE ART OF MAKING A VISUAL NOVEL (MCMURTRY)
Short Title: VISUAL NOVEL ANALYSIS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Visual novels are the chimera children of books, comics, movies, games, and choose-your-own-adventures. Through playing a variety of visual novels, students will analyze the anatomy of the visual novel for how components work together to seize the reader's attention and make it stand out among others.

COLL 158 - HOW MUSIC PLAYS THE BRAIN - THE NEUROSCIENCE OF A UNIVERSAL HUMAN OBSESSION (LOVETT)
Short Title: HOW MUSIC PLAYS THE BRAIN
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: What can music teach us about the human brain? In this course, students will examine music through the lens of neuroscience by studying how music influences human behavior and brain function. Students will constantly be engaged in dialogues between an age-old art and a budding field of science.

COLL 159 - POLICY AND THE PATIENT: UNDERSTANDING AND CRAFTING HEALTH POLICY (WILL RICE)
Short Title: POLICY AND THE PATIENT
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: What differentiates an effective health policy from a failed one? How does policy drive decisions in medicine at the local, state and national levels? Students will explore contemporary health policies across the world, and craft their own policy proposal to address a specific issue in healthcare. No prior knowledge necessary!
COLL 160 - SCREWTAPE AND THE ART OF SELF-REFLECTION  
**Short Title:** SCREWTAPE AND SELF-REFLECTION  
**Department:** College Courses  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Why do I do the things I do, and how does it affect who I am and who I will be? In this class, students interact with C.S. Lewis’ The Screwtape Letters, short articles, classmates, and pens on a self-reflective, psychological, and spiritual journey into their own minds and souls.

COLL 161 - TEAELOR’S DECLASSIFIED, FITNESS SURVIVAL GUIDE  
**Short Title:** FITNESS PROGRAMMING  
**Department:** College Courses  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Lecture  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Student’s will acquire the knowledge necessary for creating effective workout and nutrition programs intended to achieve various fitness goals including general health, endurance improvement, muscle gain, and strength gain.

COLL 162 - NARRATIVE THEORY OF DISNEY  
**Short Title:** DISNEY & NARRATIVE THEORY  
**Department:** College Courses  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Lecture  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Introduction to narrative theory using Disney films as explanatory texts. Each week we will examine the narrative inner-workings of a different Disney animated film, discussed in conjunction with the history of the corporation, our experiences with the Disney brand, and our own storytelling intuitions.

COLL 163 - CONTEMPORARY SOCIAL MOVEMENTS  
**Short Title:** CONTEMPORARY SOCIAL MOVEMENTS  
**Department:** College Courses  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Lecture  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course is about the social and political conditions recent social movements respond to, and how they respond using legal, media, or protest tactics.

COLL 164 - CRITICISM AND PROFESSIONAL WRESTLING  
**Short Title:** CRITICISM AND PRO WRESTLING  
**Department:** College Courses  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Lecture  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course will introduce students to professional wrestling from an academic standpoint. Students will learn to think and write critically about wrestling through various academic lenses, including philosophy, psychology, race, gender, sexuality, and drama.

COLL 165 - SKATEBOARDING ON FILM  
**Short Title:** SKATEBOARDING ON FILM  
**Department:** College Courses  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Lecture  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course will explore the intersections of skateboarding and film through watching skate films from the past 30 years and learning how to skate (with optional skate park field trips). Films will explore themes of gender, coming of age, invention, creativity, and counter culture. Final project will be an original skate film.

COLL 166 - X-MEN AS SOCIAL COMMENTARY  
**Short Title:** X-MEN AS SOCIAL COMMENTARY  
**Department:** College Courses  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Lecture  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** X-Men is a Marvel comic book series featuring allegorical depictions of discrimination and "otherness", such as the 60’s Civil Rights Movement, the Holocaust, and homophobia. Students will read highlights from X-Men’s 50 years of publication and related essays, as well as contemplate the ethics and occasional hypocrisy of such depictions.

COLL 167 - ISSA CLASS: HISTORY OF HIP HOP  
**Short Title:** THE HISTORY OF HIP HOP  
**Department:** College Courses  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Lecture  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course will examine the development of hip-hop and its power to create counternarratives to the prevailing misrepresentations of oppressed groups. Students will analyze primary and secondary sources to examine the arc of hip hop in America.
COLL 175 - DREAMWORK THROUGH DOTA (WILL RICE)
Short Title: DREAMWORK THROUGH DOTA
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Dreamwork through Dota presents a long-term group project that focuses on building a team dynamic, and offering numerous opportunities for teams to test what they have learned. Students will be assigned to teams of five and learn, as a team, to play Dota 2, an arena free-to-play "e-sport" that is conceptually very similar to traditional sports like soccer and basketball. This course will provide a low-pressure environment for all students (regardless of prior gaming experience) to become comfortable communicating with others and working in groups.

COLL 179 - GETTING SCHOOLED: COLLEGE SOCIAL CULTURE (WILL RICE)
Short Title: COLLEGE SOCIAL CULTURE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class will study the college social experience primarily through the disciplines of sociology and history. Students will examine how perceptions and reality of college life differ. The class will ultimately seek to help students understand their own experiences better by discovering the context behind them in an academic manner.

COLL 187 - AN INTRODUCTION TO THE MODERN GREEK LANGUAGE (MCMURTRY)
Short Title: INTRODUCTION TO MODERN GREEK
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course is designed to teach students the fundamentals of speaking, reading, and writing Modern Greek. The course will cover the Greek alphabet, pronunciation, and basic expressions. Further, it will cover useful vocabulary for various situations including family, food, restaurants, shopping, etc. Simple grammatical concepts will also be discussed.

COLL 189 - CRITICAL THINKING IN FEMALE SEXUALITY (WILL RICE)
Short Title: FEMALE SEXUALITY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: While sex and sexuality are ubiquitous, female sexuality remains less understood. This class integrates biology, psychology, history and sociology to explore the nuances of female sexuality. Students will be encouraged to think critically about female sexuality by applying their findings across various disciplines.

COLL 193 - LEARNING THE GUITAR - THEORY, TECHNIQUE, AND PRACTICE (MARTEL)
Short Title: GUITAR THEORY
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The guitar is one of the most popular and versatile instruments and is used extensively in popular music. Students will learn the basic essentials in theory and technique necessary to play modern popular music, write original music, and solo over diatonic chord progressions.

COLL 198 - HANDS-ON ELECTRONICS (BROWN)
Short Title: HANDS-ON ELECTRONICS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: What is inside an electronic device and how does it work? Upon completion, students will be able to interpret electronic datasheets and design and fabricate their own simple electronic devices. Students will work on an electronic device disassembly project and a final creative reconstruction project. No prior electronics experience required.

COLL 199 - APPLIED PEER LEADERSHIP AND ORGANIZATIONAL DEVELOPMENT
Short Title: APPLIED PEER LEADERSHIP
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Course Level: Undergraduate Lower-Level
Description: This class is designed to assist O-Week Coordinators in the critique, design, development and execution of a comprehensive presentation and new student transition program for freshmen and transfer students. Instructor Permission Required.

COLL 200 - TEACHING PRACTICUM
Short Title: TEACHING PRACTICUM
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Student instructors gain mastery of their subject of interest by practical application in teaching a course. Students are supervised by the faculty sponsor as approved by the Dean of Undergraduates. Students must have taken COLL 300 in developing the course. Instructor Permission Required. Repeatable for Credit.
COLL 201 - INTRODUCTION TO LAW (LOVETT)
Short Title: INTRODUCTION TO LAW
Department: College Courses
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class is to introduce students to the legal system. This class should give them a preview of what life is like for first year law students. It will include classes from first year law, including the basic principles of Tort, Contract, Criminal, and Criminal Procedure Law.

COLL 202 - COOKING WITH CHEF ROGER (DUNCAN)
Short Title: COOKING WITH CHEF ROGER
Department: College Courses
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Cooking with Chef Roger teaches the students the fundamentals of cooking and help them to cook healthy delicious meals. The class also gives the students a clear idea about shopping for fresh ingredients and how to host successful parties. Students must pay a $50.00 fee on the first day of class. The second week of classes is the last day to withdraw with a refund.

COLL 203 - CYBERCRIME (LOVETT)
Short Title: CYBERCRIME
Department: College Courses
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class will introduce students to the current issues in cybercrime. It will include topics such as auction fraud, hacking, and identity theft. Students will read and discuss the statutes and cases that govern each area. Each class will have a fact scenario that will be analyzed using Federal and State law.

COLL 205 - PRACTICAL APPROACH TO PERSONAL FINANCE (HANSZEN)
Short Title: PERSONAL FINANCE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class will introduce students to the current issues in cybercrime. It will include topics such as auction fraud, hacking, and identity theft. Students will read and discuss the statutes and cases that govern each area. Each class will have a fact scenario that will be analyzed using Federal and State law.

COLL 202 - COOKING WITH CHEF ROGER (DUNCAN)
Short Title: COOKING WITH CHEF ROGER
Department: College Courses
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Cooking with Chef Roger teaches the students the fundamentals of cooking and help them to cook healthy delicious meals. The class also gives the students a clear idea about shopping for fresh ingredients and how to host successful parties. Students must pay a $50.00 fee on the first day of class. The second week of classes is the last day to withdraw with a refund.

COLL 203 - CYBERCRIME (LOVETT)
Short Title: CYBERCRIME
Department: College Courses
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class will introduce students to the current issues in cybercrime. It will include topics such as auction fraud, hacking, and identity theft. Students will read and discuss the statutes and cases that govern each area. Each class will have a fact scenario that will be analyzed using Federal and State law.

COLL 205 - PRACTICAL APPROACH TO PERSONAL FINANCE (HANSZEN)
Short Title: PERSONAL FINANCE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class will introduce students to the current issues in cybercrime. It will include topics such as auction fraud, hacking, and identity theft. Students will read and discuss the statutes and cases that govern each area. Each class will have a fact scenario that will be analyzed using Federal and State law.

COLL 212 - BLACK MEN WRITING ABOUT THEIR WORLD: DU BOIS, BALDWIN, AND THEIR HEIRS (WIESS)
Short Title: BLACK MEN WRITING
Department: College Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: For Black men, what good are essays? This course explores the writerly activism, historical imagination, and the consequence of some of the best known work of W.E.B. Du Bois, James Baldwin, and several of their 21st century heirs. Taking cues from the subjects of the course, students will also get ample practice using the essay as a way to describe, analyze, and affect the contemporary black male condition. Permission of Instructor required. Instructor Permission Required.

COLL 217 - BUSINESS WORKSHOP FOR HUMANITIES STUDENTS (BAKER)
Short Title: BUSINESS WRKSHP F HUM STUDENTS
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Companies are looking for candidates with the skills that Humanities students develop at Rice. This workshop provides an overview of how businesses work, which career prospects provide the most opportunity, and how to interview successfully.

COLL 218 - TO SERVE: LIVING A LIFE OF PUBLIC AND CIVIC SERVICE (BAKER)
Short Title: TO SERVE:PUBLIC &CIVIC SERVICE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: For Black men, what good are essays? This course explores the writerly activism, historical imagination, and the consequence of some of the best known work of W.E.B. Du Bois, James Baldwin, and several of their 21st century heirs. Taking cues from the subjects of the course, students will also get ample practice using the essay as a way to describe, analyze, and affect the contemporary black male condition. Permission of Instructor required. Instructor Permission Required.

COLL 299 - SCIENTIA: LECTURES IN SCIENCE AND CULTURE
Short Title: SCIENTIA SCIENCE & CULTURE
Department: College Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Annual lecture series, panel discussions and discussion talks on topics bridging science, culture and art. 4 lectures plus 2 discussion talks. Lectures are on specified dates, usually Tuesdays. Discussion talks scheduled at semester beginning. Topics vary year to year. Cross-list: UNIV 299. Repeatable for Credit.
**Communication (COMM)**

**COLL 300 - PEDAGOGY FOR STUDENT INSTRUCTORS**  
**Short Title:** PEDAGOGY FOR STDNT INSTRUCTORS  
**Department:** College Courses  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** In the first three weeks we will guide each student in the development of a proposal for a Student Taught Course. In the remaining four weeks we will learn and practice techniques of effective instruction.  
**Course URL:** [www.caam.rice.edu/~cox/coll300](http://www.caam.rice.edu/~cox/coll300)

**COMM 300 - COMMUNICATION IN THE DIGITAL AGE**  
**Short Title:** COMMUNICATION IN DIGITAL AGE  
**Department:** Ctr Communication Excellence  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Students will develop writing skills by maintaining a blog, generating Webpage content, and using social media. We will also produce video and audio content while remaining aware of how the form of the work impacts its content.

**COMM 415 - MEDICAL COMMUNICATION**  
**Short Title:** MEDICAL COMMUNICATION  
**Department:** Ctr Communication Excellence  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a class of Junior or Senior. Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course introduces students to key issues, theories, and debates related to medical communication, while also helping students develop and reflect on their own communication strategies, and skills as future health care professionals. Sophomores and Freshmen who have fulfilled Rice’s First-Year Writing-Intensive Seminar requirement for graduation may register by a Special Registration Form. Recommended Prerequisite(s): Successfully completed one course, FWIS 101 to 199, to fulfill the Rice's First-year Writing-Intensive Seminar requirement for graduation.

**Comp. & Applied Mathematics (CAAM)**

**CAAM 210 - INTRODUCTION TO ENGINEERING COMPUTATION**  
**Short Title:** INTRO TO ENG COMPUTATION  
**Department:** Computational & Applied Math  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Modeling, Simulation, and Visualization via MATLAB. Numerical methods: Newton’s method in one and several dimensions. Gaussian elimination and optimization. Application to problems in science and engineering. Lectures are held Monday and Wednesdays. In a laboratory component held on Fridays, students work in small groups on computational projects led by a Rice Learning Assistant. Recommended Prerequisite(s): MATH 101.

**CAAM 335 - MATRIX ANALYSIS**  
**Short Title:** MATRIX ANALYSIS  
**Department:** Computational & Applied Math  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Equilibria and the solution of linear systems and linear least squares problems. Dynamical systems and the eigenvalue problem with the Jordan form and Laplace transform via complex integration. Recommended Prerequisite(s): (MATH 212 or MATH 222) AND CAAM 210.

**CAAM 336 - DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING**  
**Short Title:** DIFF EQUATIONS SCI & ENG  
**Department:** Computational & Applied Math  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Classical and numerical solution techniques for ordinary and partial differential equations. Fourier series and the finite element method for initial and boundary value problems arising in diffusion and wave propagation phenomena. Recommended Prerequisite(s): (MATH 212 or MATH 222) AND CAAM 210.
CAAM 378 - INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION
Short Title: INTRO TO O.R. AND OPTIMIZATION
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formulation and solution of mathematical models in management, economics, engineering and science applications in which one seeks to minimize or maximize an objective function subject to constraints, including models in linear, nonlinear and integer programming; basic solution methods for these optimization models; problem solving using a modeling language and optimization software. Recommended Prerequisite(s): MATH 212 and (CAAM 335 OR MATH 211 OR MATH 355).

CAAM 415 - THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS
Short Title: THEORETICAL NEUROSCIENCE
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: We present the theoretical foundations of cellular and systems neuroscience from distinctly quantitative point of view. We develop the mathematical and computational tools as they are needed to model, analyze, visualize and interpret a broad range of experimental data. Cross-list: ELEC 488, NEUR 415. Graduate/Undergraduate Equivalency: CAAM 615. Recommended Prerequisite(s): CAAM 210 or MATH 211 or CAAM 335 or MATH 355. Mutually Exclusive: Credit cannot be earned for CAAM 415 and CAAM 615.

CAAM 416 - NEURAL COMPUTATION
Short Title: NEURAL COMPUTATION
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How does the brain work? Understanding the brain requires sophisticated theories to make sense of the collective actions of billions of neurons and trillions of synapses. Word theories are not enough; we need mathematical theories. The goal of this course is to provide an introduction to the mathematical theories of learning and computation by neural systems. These theories use concepts from dynamical systems (attractors, oscillations, chaos) and concepts from statistics (information, uncertainty, inference) to relate the dynamics and functions of neural networks. We will apply these theories to sensory computation, learning and memory, and motor control. Students will learn to formalize and mathematically answer questions about neural computations, including "what does a network compute?", "how does it compute?", and "why does it compute that way?" Prerequisites: knowledge of calculus, linear algebra, and probability and statistics. Cross-list: ELEC 489, NEUR 416.

CAAM 423 - PARTIAL DIFFERENTIAL EQUATIONS I
Short Title: PARTIAL DIFFERENTIAL EQNS I
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level

CAAM 435 - DYNAMICAL SYSTEMS
Short Title: DYNAMICAL SYSTEMS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Existence and uniqueness for solutions of ordinary differential equations and difference equations, linear systems, nonlinear systems, stability, periodic solutions, bifurcation theory. Theory and theoretical examples are complemented by computational, model driven examples from biological and physical sciences. Cross-list: MATH 435. Recommended Prerequisite(s): CAAM 210 AND MATH 212 AND (CAAM 335 OR MATH 355) AND (MATH 302 OR MATH 321).

CAAM 436 - PARTIAL DIFFERENTIAL EQUATIONS OF MATHEMATICAL PHYSICS
Short Title: PDE OF MATH PHYSICS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Derivation and properties of solutions of the partial differential equations of continuum physics. Basic concepts of continuum mechanics, ideal fluids, Navier-Stokes equations, linear elasticity, acoustics, basic principles of thermodynamics, Newtonian heat flow, porous flow, Maxwell's equations, electrical circuits. Recommended Prerequisite(s): CAAM 336.
CAAM 440 - APPLIED MATRIX ANALYSIS  
Short Title: APPLIED MATRIX ANALYSIS  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: A second course in matrix analysis that presents advanced theoretical results alongside motivating applications. Topics include: properties of Hermitian, positive definite, nonnegative and stochastic matrices; Perron-Frobenius Theorem; spectral perturbation theory; singular value inequalities; generalized eigenvalue problems; functions of matrices; Lyapunov, Sylvester, and Riccati matrix equations. Applications include dynamical systems, control theory, and Markov chains.

CAAM 453 - NUMERICAL ANALYSIS I  
Short Title: NUMERICAL ANALYSIS I  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): CAAM 335 and CAAM 336  

CAAM 454 - NUMERICAL ANALYSIS II  
Short Title: NUMERICAL ANALYSIS II  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Iterative methods for linear systems of equations including Krylov subspace methods; Newton and Newton-like methods for nonlinear systems of equations; Gradient and Newton-like methods for unconstrained optimization and nonlinear least squares problems; techniques for improving the global convergence of these algorithms; linear programming duality and primal-dual interior-point methods. Graduate/Undergraduate Equivalency: CAAM 554. Recommended Prerequisite(s): CAAM 453. Mutually Exclusive: Credit cannot be earned for CAAM 454 and CAAM 554.

CAAM 471 - LINEAR AND INTEGER PROGRAMMING  
Short Title: LINEAR AND INTEGER PROGRAMMING  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Linear and integer programming involve formulating and solving fundamental optimization models widely used in practice. This course introduces the basic theory, algorithms, and software of linear and integer programming. Topics studied in the linear programming part include polyhedron concepts, simplex methods, duality, sensitivity analysis and decomposition techniques. Building on linear programming, the second part of this course introduces modeling with integer variables and solution methodologies in integer programming including branch-and-bound and cutting-plane techniques. This course will provide a basis for further studies in convex and combinatorial optimization. Graduate/Undergraduate Equivalency: CAAM 571. Recommended Prerequisite(s): CAAM 335 and CAAM 378 Mutually Exclusive: Credit cannot be earned for CAAM 471 and CAAM 571.

CAAM 472 - PEDAGOGY FOR CAAM 210 RICE LEARNING ASSISTANTS  
Short Title: PEDAGOGY FOR RLAs  
Department: Computational & Applied Math  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 2  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course is designed to support Rice Learning Assistants (RLAs) as they instruct their own lab sections of CAAM 210. Topics include analysis of computational science and engineering concepts, issues of problem-based learning (PBL), theories of learning, and fundamental teaching skills. Required for CAAM 210 RLAs. Instructor Permission Required. Repeatable for Credit.

CAAM 490 - UNDERGRADUATE RESEARCH PROJECTS  
Short Title: UNDERGRAD RESEARCH PROJECTS  
Department: Computational & Applied Math  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Research  
Credit Hours: 1-6  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Semester-long undergraduate-level research on a topic in Computational and Applied Mathematics. Instructor Permission Required. Repeatable for Credit.

CAAM 491 - UNDERGRADUATE RESEARCH PROJECTS  
Short Title: UNDERGRAD RESEARCH PROJECTS  
Department: Computational & Applied Math  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Research  
Credit Hours: 1-6  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Semester-long undergraduate-level research on a topic in Computational and Applied Mathematics. Instructor Permission Required. Repeatable for Credit.
CAAM 495 - SENIOR DESIGN PROJECT I
Short Title: SENIOR DESIGN PROJECT I
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students engage in team-oriented year-long design projects that utilize modeling, analysis, and scientific computing skills to solve a problem motivated by an application in engineering or the physical, biological, or social sciences. Participants attend regular seminars addressing research techniques and effective written and verbal presentation of mathematics.

CAAM 496 - SENIOR DESIGN PROJECT II
Short Title: SENIOR DESIGN PROJECT II
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CAAM 495
Description: Continuation of CAAM 495. Seminars focus on the presentation of results from design groups and provide guidance on the composition of a substantial project report.

CAAM 498 - RESEARCH THEMES IN THE MATHEMATICAL SCIENCES
Short Title: RESEARCH THEMES IN MATH. SCI.
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A seminar course that will cover a selected theme of general research in the mathematical sciences from the perspectives of mathematics, computational and applied mathematics and statistics. The course may be repeated multiple times for credit. Cross-list: MATH 498, STAT 498. Graduate/Undergraduate Equivalency: CAAM 698. Mutually Exclusive: Credit cannot be earned for CAAM 498 and CAAM 698. Repeatable for Credit.

CAAM 499 - COMPUTATIONAL AND APPLIED MATHEMATICS SEMINAR
Short Title: COMP & APPLIED MATH SEMINAR
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course prepares a student for research in the mathematical sciences on a specific topic. Each section is dedicated to a different topic. Current topics include eigenvalues, model reduction, combinatorial optimization, optimization algorithms, scientific computing, and numerical analysis. The topics may vary each semester. Graduate/Undergraduate Equivalency: CAAM 699. Mutually Exclusive: Credit cannot be earned for CAAM 499 and CAAM 699. Repeatable for Credit.

CAAM 501 - ANALYSIS I
Short Title: ANALYSIS I
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Real numbers, completeness, sequences and convergence, compactness, continuity, the derivative, the Riemann integral, fundamental theorem of calculus. Vector spaces, dimension, linear maps, inner products and norms, derivatives in $\mathbb{R}^d$, inverse function theorem, implicit function theorem, multiple integration, change of variable theorem. Instructor Permission Required. Recommended Prerequisite(s): CAAM 501. Mutually Exclusive: Credit cannot be earned for CAAM 501 and CAAM 401.

CAAM 502 - ANALYSIS II
Short Title: ANALYSIS II
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Vector spaces of functions, sequences and series, convergence. Continuity and differentiability of functions of several variables, the derivative as a linear map, the contraction mapping principle, fundamental theorems on differential equations, multivariable integration, Stoke's theorem and relatives. Instructor Permission Required. Recommended Prerequisite(s): CAAM 501. Mutually Exclusive: Credit cannot be earned for CAAM 502 and CAAM 402.

CAAM 508 - NONLINEAR SYSTEMS: ANALYSIS AND CONTROL
Short Title: NONLINEAR SYSTEMS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
CAAM 519 - COMPUTATIONAL SCIENCE I
Short Title: COMPUTATIONAL SCIENCE I
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Scientific programming using high level languages, including C, Fortran, and C++. Emphasis on use of numerical libraries. Basic techniques of project planning, source management, documentation, program construction, i/o, visualization. Object-oriented design for numerical computing. Recommended Prerequisite(s): (CAAM 210 and CAAM 335) or CAAM 453. Mutually Exclusive: Credit cannot be earned for CAAM 519 and CAAM 420.

CAAM 520 - COMPUTATIONAL SCIENCE II
Short Title: COMPUTATIONAL SCIENCE II
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CAAM 420 or CAAM 519
Description: Theory and application of the message passing interface for programming scientific computing applications. Introduction to the architecture and programming of multicore and massively parallel processors, including general purpose graphics processing units, Insight for designing efficient numerical algorithms to improve parallelization of memory access and utilization of non-uniform memory architectures. Application interfaces include OpenMP, MPI, CUDA, OpenCL, and parallel numerical algorithm libraries. Instructor Permission Required. Recommended Prerequisite(s): CAAM 420.

CAAM 523 - PARTIAL DIFFERENTIAL EQUATIONS I
Short Title: PARTIAL DIFFERENTIAL EQNS I
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CAAM 402 or CAAM 502

CAAM 536 - NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS
Short Title: NUMERICAL METHODS FOR PDES
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers various numerical methods for solving partial differential equations: aspects of finite difference methods, finite element methods, finite volume methods, mixed methods, discontinuous Galerkin methods, and meshless methods. Both theoretical convergence and practical implementation of the methods are studied for elliptic and parabolic problems. May receive credit for only one of the following courses: CAAM 452/CEVE 455/CAAM 536/CEVE 555. Cross-list: CEVE 555. Recommended Prerequisite(s): CAAM 336 Mutually Exclusive: Credit cannot be earned for CAAM 536 and CAAM 452.

CAAM 540 - APPLIED FUNCTIONAL ANALYSIS
Short Title: APPLIED FUNCTIONAL ANALYSIS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CAAM 402 or CAAM 502
Description: Hilbert spaces, Banach spaces, spectral theory, and weak topologies with applications to signal processing, control, and partial differential equations. Biennial; Offered in Odd Years. Recommended Prerequisite(s): CAAM 402 and MATH 322.

CAAM 550 - NUMERICAL ANALYSIS I
Short Title: NUMERICAL ANALYSIS I
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CAAM 402 or CAAM 502
Description: Theory and application of the message passing interface for programming scientific computing applications. Introduction to the architecture and programming of multicore and massively parallel processors, including general purpose graphics processing units, Insight for designing efficient numerical algorithms to improve parallelization of memory access and utilization of non-uniform memory architectures. Application interfaces include OpenMP, MPI, CUDA, OpenCL, and parallel numerical algorithm libraries. Instructor Permission Required. Recommended Prerequisite(s): CAAM 420.

CAAM 552 - PARTIAL DIFFERENTIAL EQUATIONS II
Short Title: PARTIAL DIFFERENTIAL EQNS II
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CAAM 402 or CAAM 502
CAAM 551 - NUMERICAL LINEAR ALGEBRA
Short Title: NUMERICAL LINEAR ALGEBRA
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Prerequisite(s): CAAM 453 or CAAM 553 or CAAM 550
Description: Direct methods for large, sparse linear systems; regularization of ill-conditioned least squares problems; backward error analysis of basic algorithms for linear equations and least squares, sensitivity and conditioning of linear systems and least squares problems; condition estimation. Preconditioned iterative methods for linear systems (CG, GMRES, BiCGstab, QMR); multigrid methods. Matrix theory including spectral decompositions, Schur form, eigenvalue perturbation theory, and the geometry of subspaces. Eigenvalue algorithms, Sylvester and Lyapunov equations, the implicitly shifted QR algorithm, computation of the SVD, generalized eigenvalue problems. Introduction to large scale eigenvalue algorithms. Proficiency in MATLAB and acquaintance with one or more of C, F77, C++, F90 is required.

CAAM 552 - FOUNDATIONS OF FINITE ELEMENT METHODS
Short Title: FINITE ELEMENT METHODS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Prerequisite Level: Graduate
Description: This course addresses the theory and implementation of finite element methods. Topics include weak solutions of partial differential equations, Sobolev spaces, approximation theory, convergence and reliability of the numerical methods. Continuous and discontinuous finite element methods are considered.

CAAM 553 - ADVANCED NUMERICAL ANALYSIS I
Short Title: ADV NUMERICAL ANALYSIS I
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Prerequisite Level: Graduate
Prerequisite(s): CAAM 401 (may be taken concurrently) or CAAM 501 (may be taken concurrently)
Description: Construction and analysis of numerical algorithms for root finding, interpolation and approximation of functions, quadrature, and the solution of differential equations; fundamentals of computer arithmetic; solution of linear systems, least squares problems, and eigenvalue problems via matrix factorizations; the singular value decomposition (SVD) and basic sensitivity analysis. Computer programming in MATLAB is required. This course covers fewer topics than CAAM 453 with greater theoretical depth. Prerequisite CAAM 501 may be taken concurrently with CAAM 553. Instructor Permission Required.

CAAM 554 - NUMERICAL ANALYSIS II
Short Title: NUMERICAL ANALYSIS II
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers the same lecture material as CAAM 454, but fosters greater theoretical sophistication through more challenging problem sets and exams. Graduate/Undergraduate Equivalency: CAAM 454. Recommended Prerequisite(s): CAAM 550 or CAAM 553. Mutually Exclusive: Credit cannot be earned for CAAM 554 and CAAM 454.

CAAM 555 - OPTIMIZATION THEORY
Short Title: OPTIMIZATION THEORY
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Derivation and application of necessity conditions and sufficiency conditions for constrained optimization problems.

CAAM 556 - NUMERICAL OPTIMIZATION
Short Title: NUMERICAL OPTIMIZATION
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Numerical algorithms for constrained optimization problems in engineering and sciences, including simplex and interior-point methods for linear programming, penalty, barrier, augmented Lagrangian and SQP methods for nonlinear programming. Recommended Prerequisite(s): CAAM 560 (may be taken concurrently) and CAAM 454.

CAAM 564 - NUMERICAL OPTIMIZATION
Short Title: NUMERICAL OPTIMIZATION
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Numerical algorithms for constrained optimization problems in engineering and sciences, including simplex and interior-point methods for linear programming, penalty, barrier, augmented Lagrangian and SQP methods for nonlinear programming. Recommended Prerequisite(s): CAAM 560 (may be taken concurrently) and CAAM 454.
CAAM 567 - SIGNAL RECOVERY: THEORY AND SIMULATION
Short Title: SIGNAL RECOVERY
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces the theory and numerical algorithms for several fundamental signal recovery tasks. Topics include L1 minimization, sparse regression, compressed sensing, orthogonal matching pursuit, proximal operators, ADMM algorithms, Iterative Reweighted Least Squares. Nuclear norm minimization, matrix completion, robust Principal Component Analysis. Recommended Prerequisite(s): CAAM 378 or MATH 302 or STAT 310.

CAAM 570 - GRAPH THEORY
Short Title: GRAPH THEORY
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the structure and properties of graphs, together with a variety of applications. Includes paths, cycles, trees, connectivity, matchings, colorings, planarity, directed graphs, and algorithms. Some knowledge of linear algebra is recommended. Mutually Exclusive: Credit cannot be earned for CAAM 570 and CAAM 470.

CAAM 571 - LINEAR AND INTEGER PROGRAMMING
Short Title: LINEAR AND INTEGER PROGRAMMING
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers the same lecture material as CAAM 471, but fosters greater theoretical sophistication through more challenging problem sets and exams. Graduate/Undergraduate Equivalency: CAAM 471. Mutually Exclusive: Credit cannot be earned for CAAM 571 and CAAM 471.

CAAM 574 - COMBINATORIAL OPTIMIZATION
Short Title: COMBINATIONAL OPTIMIZATION
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: General theory and approaches for solving combinatorial optimization problems are studied. Specific topics include basic polyhedral theory, minimum spanning trees, shortest paths, network flow, matching and matroids. The course also covers the traveling salesman problem. A student may not receive credit for both CAAM 474 and CAAM 574. Mutually Exclusive: Credit cannot be earned for CAAM 574 and CAAM 474.

CAAM 581 - MATHEMATICAL PROBABILITY I
Short Title: MATHEMATICAL PROBABILITY I
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Course URL: statistics.rice.edu/feed/Courses.aspx

CAAM 583 - INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS
Short Title: INTRO RANDOM PROCESSES & APPL
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of basic probability; Sequences of random variables; Random vectors and estimation; Basic concepts of random processes; Random processes in linear systems, expansions of random processes; Wiener filtering; Spectral representation of random processes, and white-noise integrals. Cross-list: ELEC 533, STAT 583.

CAAM 585 - STOCHASTIC OPTIMIZATION
Short Title: STOCHASTIC OPTIMIZAITON
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Course Level: Graduate
Corequisite: CAAM 571
Description: Stochastic optimization models arise in many contexts. This course focuses on stochastic programs, including stochastic integer programs and multi-stage stochastic programs. It will emphasize the interplay between theory and computational approaches.

CAAM 590 - INDEPENDENT STUDY
Short Title: GRADUATE RESEARCH PROJECTS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Semester-long graduate-level research on a topic in Computational and Applied Mathematics. Instructor Permission Required. Repeatable for Credit.

CAAM 591 - GRADUATE RESEARCH PROJECTS
Short Title: GRADUATE RESEARCH PROJECTS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Semester-long graduate-level research on a topic in Computational and Applied Mathematics. Instructor Permission Required. Repeatable for Credit.
CAAM 600 - THESIS WRITING
Short Title: THESIS WRITING
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Assists the student in preparation of the CAAM MA/PhD thesis and in other writing projects. Structure of a scientific paper, effective approaches to technical writing, building literature review, results, and discussion sections, how to write a good abstract, oral presentation skills. Prerequisite: Advisor approval of topic and consent of the instructor(s). Instructor Permission Required. Repeatable for Credit.

CAAM 615 - THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS
Short Title: THEORETICAL NEUROSCIENCE
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We present the theoretical foundations of cellular and systems neuroscience from distinctly quantitative point of view. We develop the mathematical and computational tools as they are needed to model, analyze, visualize and interpret a broad range of experimental data. Additional course work required beyond the undergraduate course requirements. Cross-list: ELEC 588, NEUR 615. Graduate/Undergraduate Equivalency: CAAM 415. Mutually Exclusive: Credit cannot be earned for CAAM 615 and CAAM 415.

CAAM 620 - TOPICS IN COMPUTATIONAL SCIENCE
Short Title: TOPICS IN COMPUTATIONAL SCIENCE
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies from year to year. Instructor Permission Required. Repeatable for Credit.

CAAM 640 - OPTIMIZATION WITH SIMULATION CONSTRAINTS
Short Title: OPTIMIZATION W/SIM CONSTRAINTS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies from year to year. Recommended Prerequisite(s): CAAM 564. Repeatable for Credit.

CAAM 641 - TOPICS IN INVERSE PROBLEMS
Short Title: TOPICS IN INVERSE PROBLEMS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Theoretical, computational and practical issues for inverse problems in science and engineering. Selected topics will vary depending on instructor and student interests. Instructor Permission Required. Repeatable for Credit.

CAAM 642 - TOPICS IN SEISMIC IMAGING
Short Title: TOPICS IN SEISMIC IMAGING
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies from year to year. Instructor Permission Required. Repeatable for Credit.

CAAM 643 - TOPICS IN GEOMATHEMATICS
Short Title: TOPICS IN GEOMATHEMATICS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies from year to year. Instructor Permission Required. Cross-list: ESCI 643. Recommended Prerequisite(s): CAAM 335 and CAAM 336 Repeatable for Credit.

CAAM 651 - TOPICS IN NUMERICAL LINEAR ALGEBRA
Short Title: TOPICS IN NUM LINEAR ALGEBRA
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Selected topics will vary depending on instructor and student interests. Derivation and analysis of Krylov and subspace iteration methods for large eigenvalue problems (Lanczos, Arnoldi, Jacobi-Davidson algorithms); preconditioning for linear systems and eigenvalue problems (incomplete LU, domain decomposition, multigrid); convergence analysis including potential theory and pseudospectra. Applications: regularization of discrete inverse problems; dimension reduction for large dynamical control systems; effects on non-normality on behavior of dynamical systems and iterative processes. Recommended Prerequisite(s): CAAM 551. Repeatable for Credit.
CAAM 652 - TOPICS IN NUMERICAL DIFFERENTIAL EQUATIONS
Short Title: TOPICS IN NUM DIFF EQNS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies from year to year. Instructor Permission Required. Repeatable for Credit.

CAAM 654 - TOPICS IN OPTIMIZATION
Short Title: TOPICS IN OPTIMIZATION
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies from year to year. Instructor Permission Required. Repeatable for Credit.

CAAM 664 - TOPICS IN NONLINEAR PROGRAMMING
Short Title: TOPICS NONLINEAR PROGRAMMING
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies from year to year.

CAAM 698 - RESEARCH THEMES IN THE MATHEMATICAL SCIENCES
Short Title: RESEARCH THEMES IN MATH. SCI.
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A seminar course that will cover a selected theme of general research in the mathematical sciences from the perspectives of mathematics, computational and applied mathematics and statistics. The course may be repeated multiple times for credit. Cross-list: MATH 698, STAT 698. Graduate/Undergraduate Equivalency: CAAM 498. Mutually Exclusive: Credit cannot be earned for CAAM 698 and CAAM 498. Repeatable for Credit.

CAAM 699 - COMPUTATIONAL AND APPLIED MATHEMATICS SEMINAR
Short Title: COMP & APPLIED MATH SEMINAR
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course prepares a student for research in the mathematical sciences on a specific topic. Each section is dedicated to a different topic. Current topics include bioinformatics, biomathematics, computational finance, simulation driven optimization, data simulation, and spectral optimization in rational mechanics. The topics may vary each semester. Instructor Permission Required. Graduate/Undergraduate Equivalency: CAAM 499. Mutually Exclusive: Credit cannot be earned for CAAM 699 and CAAM 499. Repeatable for Credit.

CAAM 800 - RESEARCH AND THESIS
Short Title: RESEARCH AND THESIS
Department: Computational & Applied Math
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is for CAAM MA or PhD students working on their thesis research. Repeatable for Credit.

Computer Science (COMP)

COMP 100 - INTRODUCTION TO COMPUTING AND INFORMATION SYSTEMS
Short Title: INTRO COMPUTING & INFO SYS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to organizing, analyzing, and presenting information using databases and spreadsheets. No programming involved, and no computing background expected.
Course URL: www.clear.rice.edu/comp100/

COMP 110 - COMPUTATION IN SCIENCE AND ENGINEERING
Short Title: COMPUTATION IN SCI & ENGI
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The course introduces basic techniques for problem solving and visualization using computational environments such as Mathematica and MATLAB. Class will consist of a mixture of traditional lectures held in classrooms and self-paced modules covering topics in science and engineering that will be completed in Symonds II. No previous experience is required or expected. Cross-list: NSCI 230. Repeatable for Credit.
Course URL: www.owlnet.rice.edu/~comp110

COMP 130 - ELEMENTS OF ALGORITHMS AND COMPUTATION
Short Title: ELEMENTS OF ALGORITHMS & COMP
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to computation taught by solving real-world problems in architecture, statistics, linguistics, social networks, visual pattern recognition, and the simulation of complex systems in ecology. Technical topics include how to model computational artifacts operating in the world, how to design and implement algorithmic solutions in Python, and how to experimentally test and evaluate computational systems.
COMP 140 - COMPUTATIONAL THINKING
Short Title: COMPUTATIONAL THINKING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An integrated introduction to computation taught by solving real-world problems in audio, video and text processing, physical robotics, control and simulation of complex systems in nature, and swarm intelligence. Technical topics include how to model computational artifacts operating in the world; how to design and implement algorithmic solutions in Python; and how to experimentally test and evaluate performance of computational systems. Open to Fall 2017 and Fall 2016 matrics.
Course URL: www.clear.rice.edu/comp140

COMP 160 - INTRODUCTION TO GAME PROGRAMMING IN PYTHON
Short Title: INTRO TO GAME PROG IN PYTHON
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Students with a class of Junior or Senior may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class covers the basics of Python Programming with a focus on building simple games in a web-based environment. The class includes an introduction to event-driven programming and trains the students in the specifics of a Python GUI system designed to support creating to support creating applications that run in a web browser. This course is limited to first-year students only. Continuing Students may register with an approved Special Registration Form. Recommended Prerequisite(s): Java Experience.
Course URL: www.clear.rice.edu/comp160/

COMP 162 - INTRODUCTION TO GAME CONTENT CREATION
Short Title: INTRO TO GAME CONTENT CREATION
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Explore how modern game content is created, and how it interacts with the underlying technology. Beginning with an explanation of how games are developed and what role content plays in the process, the class will learn to use 3D Studio Max, Photoshop, and game-native scripting as they create working content for an established game project.
Course URL: www.owlnet.rice.edu/~comp162

COMP 180 - PRINCIPLES OF COMPUTING
Short Title: PRINCIPLES OF COMPUTING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): COMP 130 or COMP 140 or COMP 160
Description: This class is designed for non-majors interested in a broader understanding of Computer Science and focuses on intermediate-level programming in Python as well as the basics of discrete math. The class concludes with an introduction to the process of Algorithmic Thinking. Note that COMP 180 cannot be substituted for COMP 182 as a prerequisite for upper level CS classes. Instructor Permission Required.

COMP 182 - ALGORITHMIC THINKING
Short Title: ALGORITHMIC THINKING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): COMP 130 or COMP 140 or COMP 160
Description: Algorithms are the engines of a great majority of systems, natural and artificial alike. This course introduces algorithmic thinking as a discipline for reasoning about systems, taming their complexities, and elucidating their properties. Algorithmic techniques, along with their correctness and efficiency, will be taught through reasoning about systems of interactions, such as markets, that are ubiquitous in our highly connected world.

COMP 200 - ELEMENTS OF COMPUTER SCIENCE
Short Title: ELEMENTS OF COMPUTER SCIENCE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Broad introduction to major topics in computer science. Includes algorithms, mathematical models of computation, machine organization and design, programming languages, communication, and artificial intelligence. This course is intended for majors outside of Science and Engineering.
Course URL: www.clear.rice.edu/comp200/
COMP 215 - INTRODUCTION TO PROGRAM DESIGN
Short Title: INTRODUCTION TO PROGRAM DESIGN
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): COMP 182
Description: This course covers the principles of programming and program design. The course is organized around a number of individual programming assignments that fit together to complete a significant, real-world application. Each assignment emphasizes one or more of the basic principles of software design, including: encapsulation, abstraction, test-driven development, and functional and object-oriented programming. The Java programming language will be used. An introduction to the basics of the Java language itself (including Java syntax and semantics) will be provided.

COMP 281 - HISTORY OF NUMBERS AND GAMES OF CHANCE
Short Title: NUMBER HISTORY/GAMES OF CHANCE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Starting with the colorful history of numbers, we discover their use to characterize chance or luck through probability; students will participate in one major project and submit a report-application areas include physics, computer science, sports, finance, etc. The course is accessible to sophomores and juniors in science, engineering or business. Cross-list: ELEC 281, STAT 281.

COMP 290 - COMPUTER SCIENCE PROJECTS
Short Title: COMPUTER SCIENCE PROJECTS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Theoretical and experimental investigations under staff direction. Credit cannot be received for both COMP 290 and COMP 390. Instructor Permission Required. Equivalency: COMP 390. Mutually Exclusive: Credit cannot be earned for COMP 290 and COMP 390. Repeatable for Credit.

COMP 300 - SOCIETY IN THE INFORMATION AGE
Short Title: SOCIETY IN THE INFORMATION AGE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: We will review the remarkable technology of the Information Age and examine its effects on the ways in which we live, work and think about the world around us. We will consider, for example, how the pervasive use of computers and networks is changing our ideas about property, privacy, authority, social relations, knowledge and identity. And we will discuss what further changes we might see as technology continues to advance.

COMP 310 - ADVANCED OBJECT-ORIENTED PROGRAMMING AND DESIGN
Short Title: ADV OBJECT-ORIENTED PROG
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 211 or COMP 215
Description: Discover how state-of-the-art object-orient programming and design techniques can create globe-spanning software systems that are both flexible and scalable. Learn how software design patterns are used in multiple programming paradigms. Explore highly decoupled systems with dynamically configurable behaviors. Highly recommended for anyone interested in building large systems and software engineering. Mutually Exclusive: Credit cannot be earned for COMP 310 and COMP 504.
Course URL: www.clear.rice.edu/comp310

COMP 311 - FUNCTIONAL PROGRAMMING
Short Title: FUNCTIONAL PROGRAMMING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 211 or COMP 215
Description: An introduction to concepts, principles, and approaches of functional programming. Functional programming is a style of programming where the key means of computation is the application of functions to arguments (which themselves might be functions). This style of programming has become increasingly popular in recent years because it offers important advantages in designing, maintaining, and reasoning about programs in many modern contexts such as web services, multicore programming, and cluster computing. Course work consists of a series of programming assignments in the Scala programming language and various library extensions such as Apache Spark.
Course URL: wiki.rice.edu/confluence/display/PARPROG/COMP311
COMP 314 - APPLIED ALGORITHMS AND DATA STRUCTURES  
Short Title: APPL ALGORITHMS & DATA STRUCTURE  
Department: Computer Science  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 4  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): COMP 211 and COMP 280 (may be taken concurrently)  
Description: Design analysis of computer algorithms and data structures useful for applied problems. Laboratory assignments will use these techniques in conjunction with advanced programming methods. COMP 280 may be taken concurrently with COMP 314. Cross-list: ELEC 322.

COMP 316 - VIRTUAL RECONSTRUCTION OF HISTORICAL CITIES  
Short Title: VIRTL RECONSTR HISTORCL CITIES  
Department: Computer Science  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course, part of the HRC’s Digital Humanities Initiative, is devoted to the virtual reconstruction of ancient urban landscapes with focus on individual buildings in their urban settings. All course activities will be based around interdisciplinary student teams who will work together through the semesters to complete a virtual reconstruction project. Instructor Permission Required. Cross-list: ANTH 346, ARCH 310, HART 316.

COMP 321 - INTRODUCTION TO COMPUTER SYSTEMS  
Short Title: INTRO TO COMPUTER SYSTEMS  
Department: Computer Science  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 4  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ELEC 220 and (COMP 211 or COMP 215)  
Description: This course introduces computer systems from the programmer’s perspective. Topics include data representation, the compilation process, and system-level programming concepts such as interrupts and concurrency. Formerly COMP 221. Mutually Exclusive: Credit cannot be earned for COMP 321 and COMP 221.

COMP 326 - DIGITAL LOGIC DESIGN  
Short Title: DIGITAL LOGIC DESIGN  
Department: Computer Science  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ELEC 220  
Description: Study of gates, flip-flops, combinational and sequential switching circuits, registers, logical and arithmetic operations, introduction to the Verilog hardware description language. Cross-list: ELEC 326.

COMP 327 - INTRODUCTION TO COMPUTER SECURITY  
Short Title: INTRO TO COMPUTER SECURITY  
Department: Computer Science  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): COMP 310 or COMP 314 or ELEC 322  
Description: This elective course covers a wide variety of topics in computer security, including hands-on experience with breaking software and engineering software to be harder to break. For example, students will perform buffer overflow attacks and exploit web application vulnerabilities, while also learning how to defend against them. Grades will be based on a series of in-class projects. Graduate/Undergraduate Equivalency: COMP 427, COMP 541. Mutually Exclusive: Credit cannot be earned for COMP 327 and COMP 427/COMP 541.

COMP 330 - TOOLS AND MODELS FOR DATA SCIENCE  
Short Title: TOOLS & MODELS - DATA SCIENCE  
Department: Computer Science  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): (MATH 211 or MATH 221) and COMP 215  
Description: This course is an introduction to modern data science. Data science is the study of how to extract actionable, non-trivial knowledge from data. The proposed course will focus both on the software tools used by practitioners of modern data science, as well as the mathematical and statistical models that are employed in conjunction with such software tools. On the tools side, we will cover the basics of relational database systems, as well as modern systems for distributed computing based on MapReduce. On the models side, the course will cover standard supervised and unsupervised models for data analysis and pattern discovery. Mutually Exclusive: Credit cannot be earned for COMP 330 and COMP 543.
COMP 360 - COMPUTER GRAPHICS
Short Title: COMPUTER GRAPHICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (COMP 221 or COMP 321) and (COMP 182 or COMP 280) and (MATH 211 or MATH 212 or MATH 221 or MATH 222) and (MATH 354 or MATH 355)
Description: 2D graphics techniques including fast line and curve drawing and polygon filling. 3D graphics problems including representation of solids, shading, and hidden surface elimination. Fractals, graphics standards. Graduate/Undergraduate Equivalency: COMP 560. Mutually Exclusive: Credit cannot be earned for COMP 360 and COMP 560.
Course URL: www.owlnet.rice.edu/~comp360/

COMP 361 - GEOMETRIC MODELING
Short Title: GEOMETRIC MODELING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 101 and MATH 102 and COMP 182 and COMP 215
Description: Exploration of curves and surfaces (e.g. parametric form, implicit form, and conversion between forms), the representation of solid (e.g., wireframes, octrees, boundary representations, and constructive solid geometry), and applications (e.g., graphics, motion planning, simulation, and finite element mesh generation. Graduate/Undergraduate Equivalency: COMP 561. Repeatable for Credit.

COMP 370 - EVOLUTIONARY BIOINFORMATICS
Short Title: EVOLUTIONARY BIOINFORMATICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Large accessible data sets have opened new frontiers in evolutionary biology, and many fields. Learn to write computer programs to test hypotheses and discover patterns in diverse data. Understand the most common strategies in evolutionary bioinformatics, including dynamic programming, hidden Markov models, and graphical algorithms. No previous programming experience required. Cross-list: EBIO 333. Recommended Prerequisite(s): MATH 101 and MATH 102.

COMP 382 - REASONING ABOUT ALGORITHMS
Short Title: REASONING ABOUT ALGORITHMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 182
Description: Writing algorithms is fun, but how are you sure that the algorithm you wrote is flawless? Are there computing tasks for which it is impossible to produce an efficient algorithm, or, for that matter, any algorithm? To answer these questions, you have to learn to perform mathematical reasoning about algorithmic problems and solutions. COMP 382 is an introduction to such reasoning techniques. Topics covered would include elementary logic, analysis of the correctness and efficiency of algorithms, and formal computational models like finite automata and Turning machines. On the way, you are also going to learn some new algorithm design techniques.

COMP 390 - COMPUTER SCIENCE PROJECTS
Short Title: COMPUTER SCIENCE PROJECTS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Theoretical and experimental investigations under staff direction. Credit cannot be received for both COMP 290 and COMP 390. Instructor Permission Required. Equivalency: COMP 290. Mutually Exclusive: Credit cannot be earned for COMP 390 and COMP 290. Repeatable for Credit.

COMP 402 - PRODUCTION PROGRAMMING
Short Title: PRODUCTION PROGRAMMING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 310 or COMP 411 or COMP 510 or COMP 511
Description: This course focuses on the principles and practices of test-driven software development, which have been popularized under the banner of “Extreme Programming.” To provide students with practical experience, the course engages students in the development of open source production programs written in JAVA or C#. The DRJAVA programming courses was developed by students in this course. Some of the major topics covered in course lectures include design patterns for controlling concurrency and refactoring transformations to improve legacy code. Graduate/Undergraduate Equivalency: COMP 501. Mutually Exclusive: Credit cannot be earned for COMP 402 and COMP 501.
COMP 403 - REASONING AND SOFTWARE
Short Title: REASONING ABOUT SOFTWARE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (COMP 382 and COMP 215) or COMP 482 or COMP 409 or COMP 509
Description: Our reliance on software of all forms is increasing by the day. As a result, it is more important than ever to ensure that programs function correctly and cannot be exploited by hostile adversaries. The field of formal methods takes on this challenge, developing algorithms and programming methodologies that can be used to formally reason about what happens when software executes on arbitrary inputs, often without actually executing the program. Such reasoning can be used, for example, to identify subtle bugs and vulnerabilities in programs, or to give mathematical proofs of program correctness. This is a hands-on introduction to the field of formal methods. In this class, you will learn the theoretical foundations of these systems; you will also implement a series of systems that can be used to reason about the correctness of C programs. Mutually Exclusive: Credit cannot be earned for COMP 403 and COMP 503.

COMP 405 - ADVANCED TOPICS IN OBJECT-ORIENTED DESIGN
Short Title: ADV. LOGIC IN COMPUTER SCIENCE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 310
Description: A topics-driven exploration of cutting-edge object oriented design issues and concepts including mutable recursive data frameworks, design patterns for sorting, parsing and games, service-oriented architectures and cloud computing. Detailed knowledge and practice in abstract structure and behavioral representations, delegation model programming, design patterns and Java are required. Graduate/Undergraduate Equivalency: COMP 505. Mutually Exclusive: Credit cannot be earned for COMP 405 and COMP 505.

COMP 409 - ADVANCED LOGIC IN COMPUTER SCIENCE
Short Title: ADV. LOGIC IN COMPUTER SCIENCE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (COMP 211 or COMP 215) and (COMP 182 or COMP 280)
Description: Set theoretical concepts. Propositional and first-order logic. Soundness and completeness, incompleteness, undecidability. Logical issues in computer science. Graduate/Undergraduate Equivalency: COMP 509. Mutually Exclusive: Credit cannot be earned for COMP 409 and COMP 509.
Course URL: www.cs.rice.edu/~vardi/comp409/

COMP 410 - SOFTWARE ENGINEERING METHODOLOGY
Short Title: SOFTWARE ENGINEER METHODOLOGY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 310 or COMP 314
Description: COMP 410 is a pure discovery-based learning course designed to give students real-life, hands-on training in a wide variety of software engineering issues that arise in creating large-scale, state-of-the-art software systems. The class forms a small software development "company" that works to deliver a product to a customer. The topics encountered include and are not limited to, dealing with new technologies (e.g. C#, .NET, distributed computing), advanced object-oriented programming and design, interacting with customers, problem specification and tasking, individual and group communications, human resource management, group leadership, testing, integration and documentation. Traditional development cycle methodologies will be compared to recent, "agile" techniques. Graduate/Undergraduate Equivalency: COMP 539. Mutually Exclusive: Credit cannot be earned for COMP 410 and COMP 539.
Course URL: www.bandgap.cs.rice.edu/classes/comp410

COMP 411 - PRINCIPLES OF PROGRAMMING LANGUAGES
Short Title: PRINCIPLES OF PROG LANGUAGES
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 211 or COMP 310
Description: The design, definition and abstract implementation of programming languages including methods for precisely specifying syntax and semantics. Graduate/Undergraduate Equivalency: COMP 511. Mutually Exclusive: Credit cannot be earned for COMP 411 and COMP 511.

COMP 412 - COMPILER CONSTRUCTION FOR UNDERGRADUATE STUDENTS
Short Title: COMPILER CONSTRUCTION - UG
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (COMP 314 or ELEC 322 or COMP 310 or COMP 215) and (COMP 221 or COMP 321)
Description: Topics in the design of programming language translators, including parsing, run-time storage management, error recovery, code generation and optimization. Graduate/Undergraduate Equivalency: COMP 506. Recommended Prerequisite(s): COMP 412 or COMP 506. Mutually Exclusive: Credit cannot be earned for COMP 412 and COMP 506.
Course URL: www.clear.rice.edu/comp412
COMP 413 - DISTRIBUTED PROGRAM CONSTRUCTION
Short Title: DISTRIB PROGRAM CONSTRUCTION
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 310
Description: This course focuses on modern principles for the construction of distributed programs, with an emphasis on design patterns, modern programming tools, and distributed object systems. The material will be applied in a substantial software design/construction project.

COMP 415 - REAL-WORLD SOFTWARE DEVELOPMENT
Short Title: REAL-WORLD SOFTWARE DEVELOPMENT
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 410
Description: Experience real customers, software, and situations. The class will be contracted by an industrial customer to design build, and deliver a product. Negotiate to finalize specifications, updates, and delivery schedules. Encounter real-life issues such as team management, intellectual property, and vagueness and specification changes while developing a state-of-the-art software application.

COMP 420 - INTRODUCTION TO DISTRIBUTED COMPUTER SYSTEMS
Short Title: INTRO TO DISTRIBUTED COMP SYS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 421
Description: Introduction to distributed computer systems. The course covers concepts, architecture, algorithms, protocols, and implementation, focusing on distribution, scale, robustness in the face of failure, and security. Graduate/Undergraduate Equivalency: COMP 532. Mutually Exclusive: Credit cannot be earned for COMP 420 and COMP 532.

COMP 421 - OPERATING SYSTEMS AND CONCURRENT PROGRAMMING
Short Title: OP SYS/CONCURRENT PROGRAMMING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 215 and (COMP 221 or COMP 321)
Description: Introduction to the design, construction, and analysis of concurrent programs with an emphasis on operating systems, including filing systems, schedulers, and memory allocators. Specific attention is devoted to process synchronization and communication within concurrent programs. Cross-list: ELEC 421. Graduate/Undergraduate Equivalency: COMP 521. Mutually Exclusive: Credit cannot be earned for COMP 421 and COMP 521.

COMP 422 - PARALLEL COMPUTING
Short Title: PARALLEL COMPUTING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 211 and (COMP 221 or COMP 321)
Description: COMP 422 is an undergraduate version of this course. COMP 422 students will have four programming assignments. COMP 534 students will have five. As part of their assignments, both COMP 422 and COMP 534 students will analyze the scalability and parallel efficiency of parallel programs they write. COMP 534 students will additionally use tools to qualify the root causes of scaling losses in their programs and document their findings. Mutually Exclusive: Credit cannot be earned for COMP 422 and COMP 534.

COMP 424 - MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION
Short Title: MOBILE & EMBEDDED SYSTEM
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 220
Description: ELEC 424 introduces mobile and embedded system design and applications to undergraduate students and provides them hands-on design experience. It consists of three interleaving parts: lectures, student project, and student presentations. Cross-list: ELEC 424.

Course URL: www.owlnet.rice.edu/~comp422/

2017-2018 General Announcements
**COMP 425 - COMPUTER SYSTEMS ARCHITECTURE**

**Short Title:** COMPUTER SYSTEMS ARCHITECTURE

**Department:** Computer Science

**Grade Mode:** Standard Letter

**Course Type:** Lecture/Laboratory

**Credit Hours:** 4

**Restrictions:** Graduate level students may not enroll.

**Course Level:** Undergraduate Upper-Level

**Prerequisite(s):** COMP 310 and COMP 321

**Description:** Evolution of key architecture concepts found in advanced uniprocessor systems. Fundamental and advanced pipelining techniques and associated issues for improving processor performance. Illustrated with RISC processors such as the ARM processor. Examine several metrics for processor performance, such as Amdahl's law. Key concepts of data and program memory systems found in modern systems with memory hierarchies and cashes. Perform experiments in cache performance analysis. Influence of technology trends, such as Moore's law, on processor implementation Approaches for exploiting instruction level parallelism, such as VLW. Introduction to parallel and multicore architectures. Introduction to processor architectures targeted for embedded applications. Cross-list: ELEC 425. Graduate/Undergraduate Equivalency: COMP 554. Mutually Exclusive: Credit cannot be earned for COMP 425 and COMP 554.

**COMP 427 - INTRODUCTION TO COMPUTER SECURITY**

**Short Title:** INTRO TO COMPUTER SECURITY

**Department:** Computer Science

**Grade Mode:** Standard Letter

**Course Type:** Seminar

**Credit Hours:** 3

**Restrictions:** Graduate level students may not enroll.

**Course Level:** Undergraduate Upper-Level

**Prerequisite(s):** COMP 310 and COMP 321

**Description:** This elective course covers a wide variety of topics in computer security, including hands-on experience w/breaking software & engineering software to be harder to break. For example, students will perform buffer overflow attacks & exploit web application vulnerabilities, while also learning how to defend against them. Graduate/Undergraduate Equivalency: COMP 327, COMP 541. Mutually Exclusive: Credit cannot be earned for COMP 427 and COMP 327/COMP 541.

**COMP 429 - INTRODUCTION TO COMPUTER NETWORKS**

**Short Title:** INTRO TO COMPUTER NETWORKS

**Department:** Computer Science

**Grade Mode:** Standard Letter

**Course Type:** Lecture

**Credit Hours:** 4

**Restrictions:** Graduate level students may not enroll.

**Course Level:** Undergraduate Upper-Level

**Prerequisite(s):** COMP 211 or COMP 215 and (COMP 182 or COMP 280)


**Course URL:** www.clear.rice.edu/comp429/

**COMP 430 - INTRODUCTION TO DATABASE SYSTEMS**

**Short Title:** INTRO TO DATABASE SYSTEMS

**Department:** Computer Science

**Grade Mode:** Standard Letter

**Course Type:** Lecture/Laboratory

**Credit Hours:** 4

**Restrictions:** Graduate level students may not enroll.

**Course Level:** Undergraduate Upper-Level

**Prerequisite(s):** (COMP 211 or COMP 215) and (COMP 182 or COMP 280)

**Description:** Introduction to relational and other database systems, SQL programming, Database application programming, and Database design. Graduate/Undergraduate Equivalency: COMP 533. Mutually Exclusive: Credit cannot be earned for COMP 430 and COMP 533.

**COMP 431 - WEB DEVELOPMENT**

**Short Title:** WEB DEVELOPMENT

**Department:** Computer Science

**Grade Mode:** Standard Letter

**Course Type:** Lecture/Laboratory

**Credit Hours:** 3

**Restrictions:** Graduate level students may not enroll.

**Course Level:** Undergraduate Upper-Level

**Course Type:** Lecture

**Distribution Group:** Distribution Group III

**Credit Hours:** 3

**Restrictions:** Graduate level students may not enroll.

**Course Level:** Undergraduate Upper-Level

**Description:** In this project-based course, students create multi-user Web applications involving all aspects of application development from front-end and back-end programming to interfacing client-server communications technologies. Class time includes discussions of topics in Web development, structural frameworks, test driven development, and time for students to develop their Web applications. Graduate/Undergraduate Equivalency: COMP 531. Recommended Prerequisite(s): COMP 310 or COMP 321 Mutually Exclusive: Credit cannot be earned for COMP 431 and COMP 531.

**COMP 435 - ELECTION SYSTEMS, TECHNOLOGIES, AND ADMINISTRATION**

**Short Title:** ELECTION SYSTEMS

**Department:** Computer Science

**Grade Mode:** Standard Letter

**Course Type:** Lecture

**Distribution Group:** Distribution Group III

**Credit Hours:** 3

**Restrictions:** Graduate level students may not enroll.

**Course Level:** Undergraduate Upper-Level

**Description:** This multidisciplinary course will consider how elections are conducted to enhance participation, to accurately measure the will of the electorate, and to be sufficiently rigorous to convince all parties that the results are legitimate. This course will consider the design and evaluation of election technologies, ranging from voter registration through the polling booth and vote tabulation. This course will consider three questions: how do individual voters interact with the voting technology, how are voting technologies engineered to be accurate and secure, and how do the social aspects of voting fulfill democratic goals for elections? A central requirement for this course will be group research projects, many operating in our community, built around the November election. Cross-list: POLI 420, PSYC 420.
COMP 440 - ARTIFICIAL INTELLIGENCE
Short Title: ARTIFICIAL INTELLIGENCE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 310 and (STAT 310 or ECON 307 or ECON 382 or STAT 312 or STAT 331 or ELEC 331 or ELEC 303) and (MATH 354 or MATH 355 or CAAM 335)
Description: This is a foundational course in artificial intelligence, the discipline of designing intelligent agents. The course will cover the design and analysis of agents that do the right thing in the face of limited information and computational resources. The course revolves around two main questions: how agents decide what to do, and how they learn from experience. Tools from computer science, probability theory, and game theory will be used. Interesting examples of intelligent agents will be covered, including poker playing programs, bots for various games (e.g., WoW), DS1 -- the spacecraft that performed an autonomous flyby of Comet Borrely in 2001, Stanley -- the Stanford robot car that won the Darpa Grand Challenge, Google Maps and how it calculates driving directions, face and handwriting recognizers, FedEx package delivery planners, airline fare prediction sites, and fraud detectors in financial transactions. Cross-list: ELEC 440. Graduate/Undergraduate Equivalency: COMP 557. Mutually Exclusive: Credit cannot be earned for COMP 440 and COMP 557.
Course URL: www.owlnet.rice.edu/~comp440

COMP 441 - LARGE-SCALE MACHINE LEARNING
Short Title: LARGE-SCALE MACHINE LEARNING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 440 or ELEC 440
Description: Learning from large dataset is becoming a ubiquitous phenomena in all applications spanning robotics, medical decisions, internet, communication, biology, etc. Designed to give senior UG students a thorough grounding in the theory and algorithms needed for research and practical applications in machine learning for modern massive datasets. Topics draw from machine learning, classical statistics, algorithms and information theory. Graduate/Undergraduate Equivalency: COMP 542. Mutually Exclusive: Credit cannot be earned for COMP 441 and COMP 542.

COMP 446 - MOBILE DEVICE APPLICATIONS
Short Title: MOBILE DEVICE APPLICATIONS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Connected mobile devices require updated programming models and design concepts to take advantage of their capabilities. We will explore applications primarily on the Apple iPhone and iPad but will also cover smart watches, Google Android and intelligent voice assistants like Amazon Echo and Google Home. We will briefly touch on the development of web services to support mobile applications. The course culminates with a large project taking up most of the second half of the semester. Although the curriculum centers around and teaches iOS and Xcode, final projects may be completed in any major mobile system including Android and Alexa, etc. Cross-list: ELEC 446. Recommended Prerequisite(s): COMP 310 or prior Object Oriented Programming experience highly recommended.

COMP 447 - INTRODUCTION TO COMPUTER VISION
Short Title: INTRO TO COMPUTER VISION
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 301 or ELEC 475 or COMP 314 or ELEC 322 or COMP 330
Description: An introduction to the basic concepts, algorithms and applications in computer vision. Topics include: cameras, camera models and imaging pipeline, low-level vision/image processing methods such as filtering and edge detection; mid-level vision topics such as segmentation and clustering; shape reconstruction from stereo, introduction to high-level vision tasks such as object recognition and face recognition. The course will involve programming and implementing basic computer vision algorithms in Matlab. Cross-list: ELEC 447. Graduate/Undergraduate Equivalency: COMP 546. Mutually Exclusive: Credit cannot be earned for COMP 447 and COMP 345/COMP 546.
COMP 450 - ALGORITHMIC ROBOTICS
Short Title: ALGORITHMIC ROBOTICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (COMP 221 or COMP 321) and COMP 215
Description: Robots have fascinated people for generations. Today, robots are built for applications as diverse as exploring remote planets, de-mining war zones, cleaning toxic waste, assembling cars, inspecting pipes in industrial plants and mowing lawns. Robots are also interacting with humans in a variety of ways: robots are museum guides, robots assist surgeon in life threatening operations, and robotic cars can drive us around. The field of robotics studies not only the design of new mechanisms but also the development of artificial intelligence frameworks to make these mechanisms useful in the physical world, integrating computer science, engineering, mathematics and more recently biology and sociology, in a unique way. This class will present fundamental algorithmic advances that enable today's robots to move in real environments and plan their actions. It will also explore fundamentals of the field of Artificial Intelligence through the prism of robotics. The class involves a significant programming project. Cross-list: ELEC 450, MECH 450. Graduate/Undergraduate Equivalency: COMP 550. Mutually Exclusive: Credit cannot be earned for COMP 450 and COMP 550.

COMP 451 - DESIGN AND ANALYSIS OF CYBER-PHYSICAL SYSTEMS
Short Title: DESIGN&ANALYSIS CYBER/PHYSICAL
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is an introduction to cyber-physical systems, engineering artifacts in which computational components interact with and typically control physical components. Some common examples of cyber-physical systems include robots, Segways and lane-departure warning, LDW, systems in automobiles. Graduate/Undergraduate Equivalency: COMP 555. Mutually Exclusive: Credit cannot be earned for COMP 451 and COMP 555.

COMP 460 - ADVANCED COMPUTER GAME CREATION
Short Title: ADV COMPUTER GRAPHICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This project-based class involves teams of 2-4 CS and Visual Arts students designing and building computer games suitable for Xbox Live Arcade using C# and XNA. For CS students, Comp 160 or Comp 360 is recommended as a prerequisite. For Visual Arts students, previous experience in drawing using Photoshop is suggested. Instructor Permission Required. Cross-list: ARTS 460. Repeatable for Credit.
Course URL: www.owlnet.rice.edu/~comp460

COMP 470 - FROM SEQUENCE TO STRUCTURE: AN INTRODUCTION TO COMPUTATIONAL BIOLOGY
Short Title: FROM SEQUENCE TO STRUCTURE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Contemporary introduction to problems in computational biology spanning sequence to structure. The course has three modules: the first introduces students to the design and statistical analysis of gene expression studies; the second covers statistical machine learning techniques for understanding experimental data generated in computational biology; and the third introduces problems in the modeling of protein structure using computational methods from robotics. The course is project oriented with an emphasis on computation and problem-solving. Cross-list: BIOE 470, STAT 470. Recommended Prerequisite(s): COMP 280 and (STAT 310 or STAT 331).

COMP 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics/requirements/credit hours may vary each semester. Contact Department for current semester's topic(s). Repeatable for Credit.

COMP 481 - AUTOMATA, FORMAL LANGUAGES, AND COMPUTABILITY
Short Title: AUTOMATA/FORMAL LANG/COMPUTING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Finite automata, regular expressions, regular languages, pushdown automata, context-free languages, Turing machines, recursive languages, computability, and solvability. It is strongly recommended that students complete three semesters of Mathematics before enrolling in this course. Graduate/Undergraduate Equivalency: COMP 581. Mutually Exclusive: Credit cannot be earned for COMP 481 and COMP 581.

COMP 485 - FUNDAMENTALS OF MEDICAL IMAGING I
Short Title: FUND MEDICAL IMAGING I
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will introduce basic principles of image acquisition, formation and processing of several medical imaging modalities such as X-Ray, CT, MRI, and US that are used to evaluate the human anatomy. The course also includes visits to a clinical site to gain experience with the various imaging modalities covered in class. Cross-list: BIOE 485, ELEC 485. Recommended Prerequisite(s): MATH 211 and MATH 212.
COMP 486 - FUNDAMENTALS OF MEDICAL IMAGING II
Short Title: FUND MEDICAL IMAGING II
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 382 or COMP 409 or COMP 509 or COMP 481 or COMP 581
Description: This course focuses on functional imaging modalities used specifically in nuclear medicine such as Gamma cameras, SPECT, and PET imaging. The course will introduce the basic principles of image acquisition, formation, processing, and the clinical applications of these imaging modalities and lays the foundations for understanding the principles of radiotracer kinetic modeling. A trip to a clinical site in also planned to gain experience with nuclear medicine imaging. Cross-list: BIOE 486, ELEC 486.

COMP 487 - COMPUTATIONAL COMPLEXITY
Short Title: COMPUTATIONAL COMPLEXITY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 382 or COMP 409 or COMP 509 or COMP 481 or COMP 581
Description: In Computational Complexity we study the computational resources (time, space, communication, etc.) that are required to solve computational problems via various computational needs. Specifically, we are interested in classifying computational problems with classes of other problems that require similar amount of resources to solve. Graduate/Undergraduate Equivalency: COMP 587. Mutually Exclusive: Credit cannot be earned for COMP 487 and COMP 587.

COMP 490 - COMPUTER SCIENCE PROJECTS
Short Title: COMPUTER SCIENCE PROJECTS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Theoretical and experimental investigation under staff direction. Instructor Permission Required. Repeatable for Credit.

COMP 491 - COMPUTER SCIENCE TEACHING
Short Title: COMPUTER SCIENCE TEACHING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A combination of in-service teaching and a seminar. Department Permission Required. Repeatable for Credit.

COMP 496 - RTG CROSS-TRAINING IN DATA SCIENCE
Short Title: RTG CROSS-TRAINING IN DATA SCI
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Computer Science or Statistics. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A seminar course to introduce students to topics in Data Science at the interface between Statistics and Computer Science. Students participate in the process of preparing, delivering and critiquing talks. Topics change each semester. Instructor Permission Required. Cross-list: STAT 496. Graduate/Undergraduate Equivalency: COMP 696. Mutually Exclusive: Credit cannot be earned for COMP 496 and COMP 696. Repeatable for Credit.

COMP 498 - INTRODUCTION TO ROBOTICS
Short Title: INTRODUCTION TO ROBOTICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 354 or MATH 355 or CAAM 335
Description: Introduction to the kinematics, dynamics, and control of robot manipulators and to applications of artificial intelligence and computer vision in robotics. Cross-list: ELEC 498, MECH 498. Graduate/Undergraduate Equivalency: COMP 598. Mutually Exclusive: Credit cannot be earned for COMP 498 and COMP 598.

COMP 501 - PRODUCTION PROGRAMMING
Short Title: PRODUCTION PROGRAMMING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 310 or COMP 411 or COMP 510 or COMP 511
Description: This course focuses on the principles and practices of test-driven software development, which have been popularized under the banner of "Extreme Programming." To provide students with practical experience, the course engages students in the development of open source production programs written in JAVA or C#. The DRJAVA programming courses was developed by students in this course. Some of the major topics covered in course lectures include design patterns for controlling concurrency and refactoring transformations to improve legacy code. Graduate/Undergraduate Equivalency: COMP 402. Mutually Exclusive: Credit cannot be earned for COMP 501 and COMP 402.
COMP 502 - NEURAL MACHINE LEARNING I
Short Title: NEURAL MACHINE LEARNING I
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of major neural machine learning (Artificial Neural Network) paradigms. Analytical discussion of supervised and unsupervised neural learning algorithms and their relation to information theoretical methods. Practical applications to data analysis such as pattern recognition, clustering, classification, function approximation/regression, non-linear PCA, projection pursuit, independent component analysis, with lots of examples from image and digital processing. Details are posted at www.ece.rice.edu/~erzsebet/ANNcourse.html. Cross-list: ELEC 502, STAT 502. Recommended Prerequisite(s): ELEC 430 and ELEC 431 or equivalent or permission of instructor.
Course URL: www.ece.rice.edu/~erzsebet/ANNcourse.html

COMP 503 - REASONING AND SOFTWARE
Short Title: REASONING ABOUT SOFTWARE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (COMP 382 and COMP 215) or COMP 482 or COMP 409 or COMP 509
Description: Our reliance on software of all forms is increasing by the day. As a result, it is more important than ever to ensure that programs function correctly and cannot be exploited by hostile adversaries. The field of formal methods takes on this challenge, developing algorithms and programming methodologies that can be used to formally reason about what happens when software executes on arbitrary inputs, often without actually executing the program. Such reasoning can be used, for example, to identify subtle bugs and vulnerabilities in programs, or to give mathematical proofs of program correctness. This is a hands-on introduction to the field of formal methods. In this class, you will learn the theoretical foundations of these systems; you will also implement a series of systems that can be used to reason about the correctness of C programs. Mutually Exclusive: Credit cannot be earned for COMP 503 and COMP 403.

COMP 504 - GRADUATE OBJECT-ORIENTED PROGRAMMING AND DESIGN
Short Title: GR OBJ-ORIENTED PROG & DESIGN
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discover how stat-of-the-art object-orient programming and design techniques can create globe-spanning software systems that are both flexible and scalable. Learn how software design patterns are used in multiple programming paradigms. Explore highly decoupled systems with dynamically configurable behaviors. Highly recommended for anyone interested in building large systems and software engineering. Basic proficiency in Java is required. Students may not receive credit for both COMP 310/510 and COMP 404/504. Mutually Exclusive: Credit cannot be earned for COMP 504 and COMP 310/COMP 404/COMP 510.

COMP 505 - ADVANCED TOPICS IN OBJECT-ORIENTED DESIGN
Short Title: ADV TOP OBJECT/ORIENTED DESIGN
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 404 or COMP 504 or COMP 310
Description: A topics-driven exploration of cutting-edge object oriented design issues and concepts including mutable recursive data frameworks, design patterns for sorting, parsing and games, service-oriented architectures and cloud computing. Detailed knowledge and practice in abstract structure and behavioral representations, delegation model programming, design patterns and Java are required. Graduate/Undergraduate Equivalency: COMP 405. Mutually Exclusive: Credit cannot be earned for COMP 505 and COMP 405.

COMP 506 - COMPILER CONSTRUCTION FOR GRADUATE STUDENTS
Short Title: COMPILER CONSTRUCTION - GR
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics in the design of programming language translators, including parsing, run-time storage management, error recovery, code generation and optimization. Graduate/Undergraduate Equivalency: COMP 412. Mutually Exclusive: Credit cannot be earned for COMP 506 and COMP 412.

COMP 507 - COMPUTER-AIDED PROGRAM DESIGN
Short Title: COMPUTER-AIDED PROGRAM DESIGN
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (COMP 482 or ELEC 420) or COMP 481
Description: This course is a graduate-level introduction to computer-aided program design, a field that studies logical and algorithmic techniques for formally verifying programs, and mechanized derivation of programs that are correct by construction. Topics covered will include classical automated program verification in particular abstract interpretation and model checking - as well as recent developments in algorithmic program synthesis.
COMP 508 - DESIGN AND ANALYSIS OF SECURE EMBEDDED SYSTEMS FOR IoT ERA
Short Title: SECURE EMBEDDED SYS FOR IoT
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course emphasizes the security of small embedded devices that are central to the Internet of Things (IoT) Era. We discuss the practical security attacks, challenges, constraints, and opportunities that arise in the IoT domain. Covered topics include security engineering, real world attacks, practical and side channel attacks, and hands-on lab/projects. Cross-list: ELEC 511. Repeatable for Credit.

COMP 509 - ADVANCED LOGIC IN COMPUTER SCIENCE
Short Title: ADV LOGIC IN COMPUTER SCIENCE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Set theoretical concepts. Propositional and first-order logic. Soundness and completeness, incompleteness, undecidability. Logical issues in computer science. A final project is required. Graduate/Undergraduate Equivalency: COMP 409. Mutually Exclusive: Credit cannot be earned for COMP 509 and COMP 409.

COMP 511 - PRINCIPLES OF PROGRAMMING LANGUAGES
Short Title: PRINCIPLES OF PROG LANGUAGES
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 211 or COMP 310
Description: The design, definition and abstract implementation of programming languages including methods for precisely specifying syntax and semantics. Graduate/Undergraduate Equivalency: COMP 411. Mutually Exclusive: Credit cannot be earned for COMP 511 and COMP 411.

COMP 512 - ADVANCED COMPILER CONSTRUCTION
Short Title: ADVANCED COMPILER CONSTRUCTION
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced topics in the design of an optimizing compiler. This course will focus on analysis and optimization of programs for uniprocessor machines, including program analysis (data-flow analysis, construction of static single-assignment form) and program transformation (redundancies, constant values, strength reduction, etc.). The course uses a variety of readings from the literature and includes an implementation project. Recommended Prerequisite(s): COMP 412 or COMP 506.
Course URL: www.cs.rice.edu/~keith/512

COMP 513 - COMPLEXITY IN MODERN SYSTEMS
Short Title: COMPLEXITY IN MODERN SYSTEMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced compilation techniques for vector and parallel computer systems, including the analysis of program dependence, program transformations to enhance parallelism, compiler management of the memory hierarchy, interprocedural data flow analysis, and parallel debugging. Recommended Prerequisite(s): COMP 412.
COMP 516 - CLOUD COMPUTING PRACTICUM
Short Title: CLOUD COMPUTING PRACTICUM
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 413 or COMP 420 or (COMP 520 or ELEC 520)
Description: This is a project-based class that provides students with the opportunity to apply their knowledge of distributed computing principles to designed and develop a single, large distributed application that utilizes the public cloud. Students will learn about the basic services for computing, storage, and commination that are supported by the new generation of "public utilities" that provide the infrastructure for the public cloud, and how to utilize these services to engineer a robust, scalable application.

COMP 518 - ENERGY EFFICIENCY IN MODERN SYSTEMS
Short Title: ENERGY EFFICIENCY MODERN SYS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Energy efficiency has become critically important for modern computing systems, from battery-powered mobile devices to wall-powered high-performance servers. The course presents the fundamentals of energy characteristics of modern systems, and introduces basic energy-saving mechanisms and methodologies for system energy characterization. It also covers emerging technologies in energy-efficient design. Instructor Permission Required. Cross-list: ELEC 518.
Course URL: www.ruf.rice.edu/~mobile/elec518/

COMP 519 - NETWORK SYSTEMS ARCHITECTURE
Short Title: NETWORK SYSTEMS ARCHITECTURE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Design and implementation of network systems, including hardware and software architectures of network routers and servers. Students will design and implement wither the hardware or software components of a network system, depending on their experience and preferences. This course is suitable for students with expertise in either software or hardware. Cross-list: ELEC 519. Recommended Prerequisite(s): COMP 221

COMP 520 - DISTRIBUTED SYSTEMS
Short Title: DISTRIBUTED SYSTEMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Course URL: www.cs.rice.edu/~alc/comp520/

COMP 521 - OPERATING SYSTEMS AND CONCURRENT PROGRAMMING
Short Title: OP SYS/CONCURRENT PROGRAMMING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 215 and (COMP 221 or COMP 321)
Description: Introduction to the design, construction, and analysis of concurrent programs with an emphasis on operating systems, including filing systems, schedulers, and memory allocators. Specific attention is devoted to process synchronization and communication within concurrent programs. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 552. Graduate/Undergraduate Equivalency: COMP 421. Mutually Exclusive: Credit cannot be earned for COMP 521 and COMP 421.

COMP 522 - MULTI-CORE COMPUTING
Short Title: MULTI-CORE COMPUTING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (COMP 221 or COMP 321) and COMP 425
Description: Multi-core microprocessors are becoming the norm. The course will focus on emerging multi-core processor architectures and challenges to using them effectively. Topics include multi-core microprocessors, memory hierarchy, synchronization, programming systems, scheduling, and transactional memory.
Course URL: www.cs.rice.edu/~johnmc/comp522/
COMP 523 - COMPUTER-AIDED DESIGN FOR VLSI
Short Title: COMPUTER-AIDED DESIGN FOR VLSI
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Fundamental topics in computer-aided design for VLSI: logic synthesis and formal verification, timing analysis and optimization, technology mapping, logic and fault simulation, testing, and physical design will be covered. Relevant topics in algorithms and data structures, generic programming, and the C++ standard template library will also be covered. Cross-list: ELEC 523.

COMP 524 - MOBILE AND WIRELESS NETWORKING
Short Title: MOBILE AND WIRELESS NETWORKING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 425 or ELEC 425
Description: Study of network protocols for mobile and wireless networking, particularly at the media access control, network, and transport protocol layers. Focus is on the unique problems and challenges presented by the properties of wireless transmission and host or router mobility. Cross-list: ELEC 524. Recommended Prerequisite(s): COMP 421 OR ELEC 421.

COMP 525 - VIRTUALIZATION AND CLOUD RESOURCE MANAGEMENT
Short Title: VIRTUAL & CLOUD RESOURCE MGMT
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (ELEC 425 or COMP 425)

COMP 526 - HIGH PERFORMANCE COMPUTER ARCHITECTURE
Short Title: HIGH PERFORM COMPUTER ARCH
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 425 or ELEC 425
Description: Design of high performance computer systems, including shared-memory and message-passing multiprocessors and vector systems. Hardware and software techniques to tolerate and reduce memory and communication latency. Case studies and performance simulation of high-performance systems. Cross-list: ELEC 526.

COMP 527 - COMPUTER SYSTEMS SECURITY
Short Title: COMPUTER SYSTEMS SECURITY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This class will focus on computer security in real systems. We will cover theory and practice for the design of secure systems (formal modeling, hardware and compiler-enforced safety, software engineering processes, tamper-resistant and tamper-reactive hardware, firewalls, cryptography, and more). Recommended Prerequisite(s): (COMP 311 or COMP 412) and (COMP 421 or COMP 429).
Course URL: seclab.cs.rice.edu/comp527/

COMP 528 - INTRODUCTION TO VIRTUALIZATION
Short Title: INTRODUCTION TO VIRTUALIZATION
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 421 or COMP 521
Description: System-level virtualization is an integral part of modern computer systems, spanning both hardware and software. This course will explore the various types of system-level virtualization and the hardware and software mechanisms that support them. The course will explore the interplay among hypervisors, operating systems, processors, memory, and I/O devices in modern virtualized systems.

COMP 529 - ADVANCED COMPUTER NETWORKS
Short Title: ADVANCED COMPUTER NETWORKS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 429 or ELEC 429
Description: This course explores advanced solutions in computer networks that are driven by the need to go beyond the best-effort capabilities of the Internet. Topics include network fault tolerance, traffic engineering, scalable data center network architectures, network support for big data processing, network support for cloud computing, extensible network control via software defined networking, denial-of-service-attack defense mechanisms. Readings from original research papers. Also include design project and oral presentation components. This course assumes students already have a good understanding of the best-effort Internet. Cross-list: ELEC 529.
Course URL: www.clear.rice.edu/comp529/
COMP 530 - DATABASE SYSTEM IMPLEMENTATION
Short Title: DATABASE SYSTEM IMPLEMENTATION
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 321 and COMP 430
Description: This course covers database management system architecture, query processing and optimization, transaction processing, concurrent control and recover, storage, indexing structures and related topics. Students will build a database system from the ground up. Graduate students who have not had an introductory database course should enroll for 4 credits: all others should enroll for 3 credits.

COMP 531 - WEB DEVELOPMENT AND DESIGN
Short Title: WEB DEVELOPMENT AND DESIGN
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This project-based course explores Web application creation and design. Students are involved in the development of front-end and back-end systems while interfacing client-server communications technologies. Students will evaluate Web structural frameworks, Web development technologies, apply test driven development, and create multi-user Web applications. Graduate/Undergraduate Equivalency: COMP 431. Recommended Prerequisite(s): COMP 310 or COMP 321
Mutually Exclusive: Credit cannot be earned for COMP 531 and COMP 431.

COMP 532 - INTRODUCTION TO DISTRIBUTED COMPUTER SYSTEMS
Short Title: INTRO TO DISTRIBUTED COMP SYS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 421 or COMP 521
Description: Introduction to distributed computer systems. The course covers concepts, architecture, algorithms, protocols, and implementation, focusing on distribution, scale, robustness in the face of failure, and security. Additional coursework required beyond the UG course requirements. Graduate/Undergraduate Equivalency: COMP 420. Mutually Exclusive: Credit cannot be earned for COMP 532 and COMP 420.
Course URL: www.clear.rice.edu/comp420

COMP 533 - INTRODUCTION TO DATABASE SYSTEMS
Short Title: INTRO TO DATABASE SYSTEMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to relational and other database systems, SQL programming, Database application programming, and Database design. Graduate/Undergraduate Equivalency: COMP 430. Mutually Exclusive: Credit cannot be earned for COMP 533 and COMP 430.

COMP 534 - PARALLEL COMPUTING
Short Title: PARALLEL COMPUTING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 211 and (COMP 221 or COMP 321)
Description: COMP 422 is an undergraduate version of this course. COMP 422 students will have four programming assignments. COMP 534 students will have five. As part of their assignments, both COMP 422 and COMP 534 students will analyze the scalability and parallel efficiency of parallel programs they write. COMP 534 students will additionally use tools to qualify the root causes of scaling losses in their programs and document their findings. Mutually Exclusive: Credit cannot be earned for COMP 534 and COMP 422.

COMP 535 - APPROXIMATE COMPUTING SYSTEM FOR BIG DATA, SUPERCOMPUTING AND EMBEDDED SYSTEMS
Short Title: APPROX COMP SYS FOR BIG DATA
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey this radical concept of approximate (or inexact) computing with the goal of understanding both of the challenges and opportunities at all layers of the computing system ranging over programming languages, compilers and run-time, and architecture.

COMP 538 - SECURITY OF HW EMBEDDED SYSTEMS
Short Title: EMBEDDED HW SYSTEMS SECURITY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course covers wide range of topics pertaining to security of Hardware Embedded system, including cryptographic processors, secure memory access, hardware IT protection by monitoring and watermarking FPGA security, physical and side-charmed attacks, Trojan horses. Cross-list: ELEC 528. Repeatable for Credit.
COMP 539 - SOFTWARE ENGINEERING METHODOLOGY
Short Title: SOFTWARE ENGINEER METHODOLOGY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 404 or COMP 504
Description: COMP 539 is a pure discovery-based learning course designed to give students real-life, hands-on training in a wide variety of software engineering issues that arise in creating large-scale, state-of-the-art software systems. The course forms a small software development “company” that works to deliver a product to a customer. The topics encountered include and are not limited to, dealing with new technologies (e.g. C#, .NET, distributed computing), advanced object-oriented programming and design, interacting with customers, problem specification and tasking, individual and group communications, human resource management, group leadership, testing, integration and documentation. Traditional development cycle methodologies will be compared to recent, “agile” techniques. Graduate/Undergraduate Equivalency: COMP 410. Recommended Prerequisite(s): COMP 505
Mutually Exclusive: Credit cannot be earned for COMP 539 and COMP 410.
Course URL: www.bandgap.cs.rice.edu/classes/comp410

COMP 540 - STATISTICAL MACHINE LEARNING
Short Title: STATISTICAL MACHINE LEARNING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (STAT 331 or STAT 310) and (MATH 355 or CAAM 335)
Description: COMP 540 is about learning models from data. The course is designed to give students a foundational understanding of modern algorithms in learning and data mining, as well as hands-on experience with its applications in science and engineering.

COMP 541 - INTRODUCTION TO COMPUTER SECURITY
Short Title: INTRO TO COMPUTER SECURITY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 310
Description: This elective course covers a wide variety of topics in computer security, including hands-on experience w/breaking software & engineering software to be harder to break. For example, students will perform buffer overflow attacks & exploit web application vulnerabilities, while also learning how to defend against them. Graduate/Undergraduate Equivalency: COMP 327, COMP 427. Mutually Exclusive: Credit cannot be earned for COMP 541 and COMP 327/COMP 427.

COMP 542 - LARGE-SCALE MACHINE LEARNING
Short Title: LARGE-SCALE MACHINE LEARNING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Learning from large dataset is becoming a ubiquitous phenomenon in all applications spanning robotics, medical decisions, internet, communication, biology, etc. Designed to give senior UG students a thorough grounding in the theory and algorithms needed for research and practical applications in machine learning for modern massive datasets. Topics draw from machine learning, classical statistics, algorithms and information theory. Graduate/Undergraduate Equivalency: COMP 441. Mutually Exclusive: Credit cannot be earned for COMP 542 and COMP 441.

COMP 543 - GRADUATE TOOLS AND MODELS - DATA SCIENCE
Short Title: GR TOOLS & MODELS - DATA SCI
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is an introduction to modern data science. Data science is the study of how to extract actionable, non-trivial knowledge from data. The course will focus on the software tools used by practitioners of modern data science, the mathematical and statistical models that are employed in conjunction with such software tools and the applications of these tools and systems to different problems and domains. On the tools side, we will cover the basics of relational database systems, as well as modern systems for manipulating large data sets such as Hadoop MapReduce, Apache Spark, and Google's TensorFlow. On the model side, the course will cover standard supervised and unsupervised models for data analysis and pattern discovery. Mathematical sophistication (calculus, statistics) and programming skills that would be acquired in an undergraduate computer science program are expected. Most programming will be in Python and SQL (SQL is covered in the course) with some Java. Instructor Permission Required. Mutually Exclusive: Credit cannot be earned for COMP 543 and COMP 330.

COMP 546 - INTRODUCTION TO COMPUTER VISION
Short Title: INTRO TO COMPUTER VISION
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to the basic concepts, algorithms and applications in computer vision. Topics include: cameras, camera models and imaging pipeline, low-level vision/image processing methods such as filtering and edge detection; mid-level vision topics such as segmentation and clustering; shape reconstruction from stereo, introduction to high-level vision tasks such as object recognition and face recognition. The course will involve programming and implementing basic computer vision algorithms in Matlab. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 546. Graduate/Undergraduate Equivalency: COMP 447. Mutually Exclusive: Credit cannot be earned for COMP 546 and COMP 345/COMP 447.
COMP 550 - ALGORITHMIC ROBOTICS
Short Title: ALGORITHMIC ROBOTICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (COMP 221 or COMP 321) and COMP 215
Description: Robots have fascinated people for generations. Today, robots are built for applications as diverse as exploring remote planets, de-mining war zones, cleaning toxic waste, assembling cars, inspecting pipes in industrial plants and mowing lawns. Robots are also interacting with humans in a variety of ways: robots are museum guides, robots assist surgeons in life threatening operations, and robotic cars can drive us around. The field of robotics studies not only the design of new mechanisms but also the development of artificial intelligence frameworks to make these mechanisms useful in the physical world, integrating computer science, engineering, mathematics and more recently biology and sociology, in a unique way. This class will present fundamental algorithmic advances that enable today's robots to move in real environments and plan their actions. It will also explore fundamentals of the field of Artificial Intelligence through the prism of robotics. The class involves a significant programming project. Graduate/Undergraduate Equivalency: COMP 450. Mutually Exclusive: Credit cannot be earned for COMP 550 and COMP 450.

COMP 552 - DESIGN AND ANALYSIS OF CYBER-PHYSICAL SYSTEMS
Short Title: DESIGN&ANALYSIS CYBER-PHYS SYS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is an introduction to cyber-physical systems, engineering artifacts in which computational components interact with and typically control physical components. Some common examples of cyber-physical systems include robots, Segways and lane-departure warning, LDW, systems in automobiles.

COMP 554 - COMPUTER SYSTEMS ARCHITECTURE
Short Title: COMPUTER SYSTEMS ARCHITECTURE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Evolution of key architecture concepts found in advanced uniprocessor systems. Fundamental and advanced pipelining techniques and associated issues for improving processor performance. Illustrated with RISC processors such as the ARM processor. Examine several metrics for processor performance, such as Amdahl's law. Key concepts of data and program memory systems found in modern systems with memory hierarchies and caches. Perform experiments in cache performance analysis. Influence of technology trends, such as Moore's law, on processor implementation Approaches for exploiting instruction level parallelism, such as VLIW. Introduction to parallel and multicore architectures. Introduction to processor architectures targeted for imbedded applications. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 554. Graduate/Undergraduate Equivalency: COMP 425. Mutually Exclusive: Credit cannot be earned for COMP 554 and COMP 425.

COMP 555 - DESIGN AND ANALYSIS OF CYBER-PHYSICAL SYSTEMS
Short Title: DESIGN&ANALYSIS CYBER-PHYSICAL
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is an introduction to cyber-physical systems, engineering artifacts in which computational components interact with and typically control physical components. Some common examples of cyber-physical systems include robots, Segways and lane-departure warning, LDW, systems in automobiles. Graduate/Undergraduate Equivalency: COMP 451. Mutually Exclusive: Credit cannot be earned for COMP 555 and COMP 451.

COMP 556 - INTRODUCTION TO COMPUTER NETWORKS
Short Title: INTRO TO COMPUTER NETWORKS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 221 or COMP 321
COMP 557 - ARTIFICIAL INTELLIGENCE
Short Title: ARTIFICIAL INTELLIGENCE
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 310 and (STAT 310 or ECON 307 or ECON 382 or STAT 312 or STAT 331 or ELEC 331 or ELEC 303) and (MATH 354 or MATH 355 or CAAM 335)
Description: This is a foundational course in artificial intelligence, the discipline of designing intelligent agents. The course will cover the design and analysis of agents that do the right thing in the face of limited information and computational resources. The course revolves around two main questions: how agents decide what to do, and how they learn from experience. Tools from computer science, probability theory, and game theory will be used. Interesting examples of intelligent agents will be covered, including poker playing programs, bots for various games (e.g. WoW), DS1 – the spacecraft that performed an autonomous flyby of Comet Borrely in 2001, Stanley – the Stanford robot car that won the Darpa Grand Challenge, Google Maps and how it calculates driving directions, face and handwriting recognizers, Fedex package delivery planners, airline fare prediction sites, and fraud detectors in financial transactions. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 557. Graduate/Undergraduate Equivalency: COMP 440. Mutually Exclusive: Credit cannot be earned for COMP 557 and COMP 440.
Course URL: www.owlnet.rice.edu/~comp440

COMP 560 - COMPUTER GRAPHICS AND GEOMETRIC MODELING
Short Title: COMPUTER GRAPHICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A survey of core topics in Computer Graphics and Geometric Modeling, including fractals, ray tracing, hidden surface Algorithmic, Bezier, B-spline, blossoming techniques and subdivision procedures. Graduate/Undergraduate Equivalency: COMP 360. Mutually Exclusive: Credit cannot be earned for COMP 560 and COMP 360.

COMP 561 - GEOMETRIC MODELING
Short Title: GEOMETRIC MODELING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Exploration of curves and surfaces (e.g. parametric form, implicit form, and conversion between forms), the representation of solid (e.g., wireframes, octrees, boundary representations, and constructive solid geometry), and applications (e.g., graphics, motion planning, simulation, and finite element mesh generation. Graduate/Undergraduate Equivalency: COMP 361. Repeatable for Credit.

COMP 560 - COMPUTER GRAPHICS AND GEOMETRIC MODELING
Short Title: COMPUTER GRAPHICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A survey of core topics in Computer Graphics and Geometric Modeling, including fractals, ray tracing, hidden surface Algorithmic, Bezier, B-spline, blossoming techniques and subdivision procedures. Graduate/Undergraduate Equivalency: COMP 360. Mutually Exclusive: Credit cannot be earned for COMP 560 and COMP 360.

COMP 561 - GEOMETRIC MODELING
Short Title: GEOMETRIC MODELING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Exploration of curves and surfaces (e.g. parametric form, implicit form, and conversion between forms), the representation of solid (e.g., wireframes, octrees, boundary representations, and constructive solid geometry), and applications (e.g., graphics, motion planning, simulation, and finite element mesh generation. Graduate/Undergraduate Equivalency: COMP 361. Repeatable for Credit.
COMP 576 - A PRACTICAL INTRODUCTION TO DEEP MACHINE LEARNING
Short Title: INTRODUCTION TO DEEP LEARNING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Deep Machine Learning has recently made many advances in difficult perceptual tasks, including object and phoneme recognition, and natural language processing. However, the field has a steep learning curve, both conceptually and practically. The point of this course is to engage students by jumping into the deep end, and building their own architectures and algorithms. Cross-list: ELEC 576.

COMP 581 - AUTOMATA, FORMAL LANGUAGES, AND COMPUTABILITY
Short Title: AUTOMATA/FORMAL LANG/COMPUTING
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Finite automata, regular expressions, regular languages, pushdown automata, context-free languages, Turing machines, recursive languages, computability, and solvability. It is strongly recommended that students complete three semesters of Mathematics before enrolling in this course. Graduate/Undergraduate Equivalency: COMP 481. Mutually Exclusive: Credit cannot be earned for COMP 581 and COMP 481.

COMP 582 - GRADUATE DESIGN AND ANALYSIS OF ALGORITHMS
Short Title: GR DESGN ANALY OF ALGORITHMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 310 or ECON 307 or STAT 331 or ELEC 331 or ELEC 303 or STAT 312
Description: Methods for designing and analyzing computer algorithms and data structures. The focus of this course will be on the theoretical and mathematical aspects of algorithms and data structures. Cross-list: ELEC 512.

COMP 587 - COMPUTATIONAL COMPLEXITY
Short Title: COMPUTATIONAL COMPLEXITY
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 382 or COMP 409 or COMP 509 or COMP 481 or COMP 581
Description: In Computational Complexity we study the computational resources (time, space, communication, etc.) that are required to solve computational problems via various computational needs. Specifically, we are interested in classifying computational problems with classes of other problems that require similar amount of resources to solve. Graduate/Undergraduate Equivalency: COMP 487. Mutually Exclusive: Credit cannot be earned for COMP 587 and COMP 487.

COMP 590 - COMPUTER SCIENCE PROJECTS
Short Title: COMPUTER SCIENCE PROJECTS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced theoretical and experimental investigations under staff direction. Instructor Permission Required. Repeatable for Credit.

COMP 591 - GRADUATE COMPUTER SCIENCE TEACHING
Short Title: GRAD COMPUTER SCIENCE TEACHING
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A combination of in-service teaching and a seminar. Instructor Permission Required. Repeatable for Credit.

COMP 598 - INTRODUCTION TO ROBOTICS
Short Title: INTRODUCTION TO ROBOTICS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the kinematics, dynamics, and control of robot manipulators and to applications of artificial intelligence and computer vision in robotics. Additional work required for Graduate course. Cross-list: ELEC 598, MECH 598. Graduate/Undergraduate Equivalency: COMP 498. Mutually Exclusive: Credit cannot be earned for COMP 598 and COMP 498.

COMP 600 - GRADUATE SEMINAR IN COMPUTER SCIENCE
Short Title: GRADUATE SEMINAR
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Doctor of Philosophy or Master of Science degrees.
Course Level: Graduate
Description: The seminar course meets weekly to discuss current research results by graduate students in the Computer Science Department. Senior Ph.D. Students are expected to present their research results. This course is open ONLY to MS and Ph.D. Students. MCS students may NOT take this course for credit without the consent of the instructor. Repeatable for Credit.
Course URL: www.clear.rice.edu/comp600/
COMP 601 - WRITING AND EDITING CONFERENCE PAPERS
Short Title: WRITING & EDITING CONF PAPERS
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a seminar on technical writing and preparing publications for peer review. The focus is on conference papers, around 6-10 pages in length. The main topics are: 1) The structure of a conference publication, with guest lectures from the faculty. 2) Good daily writing habits with a group accountability system. 3) Editing techniques and the development of a departmental "writing community" with interactive editing sessions. This course will cover a few topics from ENGI 600, but the main focus will be on short computer science conference documents and interactive peer editing. ENGI 600 is still the correct course to take for writing in general, thesis preparation, or journal publications. This course will complement COMP 600, and to develop the same community for writing as this class does for presentations. Repeatable for Credit.

COMP 602 - NEURAL MACHINE LEARNING AND DATA MINING II
Short Title: NEURAL MACHINE LEARNING II
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ELEC 502 or COMP 502 or STAT 502
Description: Advanced topics in ANN theories, with a focus on learning high-dimensional complex manifolds with neural maps (Self-Organizing Maps, Learning Vector Quantizers and variants). Application to data mining, clustering, classification, dimension reduction, sparse representation. The course will be a mix of lectures and seminar discussions with active student participation, based on most recent research publications. Students will have access to professional software environment to implement theories. Cross-list: ELEC 602, STAT 602. Repeatable for Credit.
Course URL: www.ece.rice.edu/~erzsebet/NMLcourseII.html

COMP 607 - AUTOMATED PROGRAM VERIFICATION
Short Title: AUTOMATED PROGRAM VERIFICATION
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Methods, tools and theories for the computer-aided verification of concurrent systems. Repeatable for Credit.
Course URL: www.cs.rice.edu/~vardi/comp607/

COMP 620 - GRADUATE SEMINAR IN DISTRIBUTED COMPUTING
Short Title: GRAD SEMINAR DIST COMPUTING
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies at discretion of instructor. Repeatable for Credit.

COMP 640 - GRADUATE SEMINAR IN MACHINE LEARNING
Short Title: GR SEM IN MACHINE LEARNING
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A reading course covering the latest developments in statistical machine learning and pattern recognition. Recommended Prerequisite(s): COMP 440. Repeatable for Credit.

COMP 645 - ADVANCED TOPICS IN DISTRIBUTED SYSTEMS
Short Title: ADV TOPICS IN DISTRIBUTED SYST
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We will learn about and discuss recent advances in various areas in computer systems, including topics on security, distributed systems, networking, operating systems, and databases. The seminar will be divided into several sections, with each section focusing on one research trend. In each class, students will read one classic paper on the topic, and present two recent papers that describe the state of the art. Students can also team up and do a semester-long research project on any relevant topics. All students will need to make a final presentation at the end of the class on a potential project idea; for students that choose to do a semester-long project, they will also submit a six-page report on their project, in addition to giving a final presentation. Instructor Permission Required. Repeatable for Credit.

COMP 650 - PHYSICAL COMPUTING
Short Title: PHYSICAL COMPUTING
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Methods, tools and theories for reasoning about problems with physical constraints. The student may elect to perform a project to receive more than 1 credit hour. Instructor Permission Required. Repeatable for Credit.

COMP 690 - RESEARCH AND THESIS
Short Title: RESEARCH AND THESIS
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
COMP 693 - ADVANCED TOPICS-COMPUTER SYSTEMS
Short Title: ADV TOPICS - COMPUTER SYSTEMS
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is a discussion based seminar about state of the art embedded and digital signal processing systems, with emphasis on both hardware architectures as well as software tools, programming models, and compilers. The seminar focuses on state of the art academic and commercial offerings in these areas. Cross-list: ELEC 693. Repeatable for Credit.

COMP 694 - HOW TO BE A CHIEF TECHNOLOGY OFFICER
Short Title: HOW TO BE A CTO
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of the component and standards trends that are the basis of personal computers and digital appliances with the aim of predicting technologies, solutions, and new products five years into the future. Examples of these technologies are dual Core processors, iPods and their evolution, mobile wireless data devices, and even Google vs. Microsoft. Students will each pick a topic important to the digital lifestyle and through a series of one-on-one sessions develop a depth of understanding that is presented to the class. Formerly "Future Personal Computing Technologies." Cross-list: ELEC 694.
Course URL: www.ece.rice.edu/Courses/694.html/

COMP 696 - RTG CROSS-TRAINING IN DATA SCIENCE
Short Title: RTG CROSS-TRAINING IN DATA SCI
Department: Computer Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Computer Science or Statistics. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A seminar course to introduce students to topics in Data Science at the interface between Statistics and Computer Science. Students participate in the process of preparing, delivering and critiquing talks. Topics change each semester. Instructor Permission Required. Cross-list: STAT 696. Graduate/Undergraduate Equivalency: COMP 496. Mutually Exclusive: Credit cannot be earned for COMP 696 and COMP 496. Repeatable for Credit.

COMP 800 - GRADUATE RESEARCH
Short Title: GRADUATE RESEARCH
Department: Computer Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

Dissertation/Thesis Submission (DSRT)

DSRT 100 - FINDING YOUR WAY OUT
Short Title: FINDING YOUR WAY OUT
Department: Dean of Undergraduates
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Course Level: Undergraduate Lower-Level

DSRT 999 - DISSERTATION/THESIS SUBMISSION
Short Title: DISSERTATION/THESIS SUBMISSION
Department: Dean Graduate/Postdoc Studies
Grade Mode: Study Away
Course Type: Independent Study
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Description: Repeatable for Credit.

Earth Science (ESCI)

ESCI 101 - THE EARTH
Short Title: THE EARTH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Study of the nature of the Earth and its processes. Cross-list: ENST 101. Mutually Exclusive: Credit cannot be earned for ESCI 101 and ESCI 115/ESCI 301.

ESCI 102 - HISTORY OF THE EARTH AND LIFE
Short Title: HISTORY OF THE EARTH & LIFE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Study of Earth's systems over the past 4.6 billion years. Topics include evolution of life, continents, ocean basins and climate. Cross-list: ENST 102.

ESCI 103 - FIELD TRIPS FOR THE EARTH
Short Title: FIELD TRIPS FOR THE EARTH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Three evening lectures of two hours each; one weekend long field trip.
ESCI 106 - INVESTIGATING EARTH'S SURFACE
Short Title: INVESTIGATING EARTH'S SURFACE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will be investigation-based course covering processes on Earth's surface, such as carbon cycling, ocean and atmospheric circulation, and climate change. Lectures will be minimal. Most work will be in-class assignments.

ESCI 107 - OCEANS AND GLOBAL CHANGE
Short Title: OCEANS AND GLOBAL CHANGE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Overview of the impact of the ocean and ocean evolution on the Earth's climate. Includes geological, physical, chemical, and biological aspects of change.

ESCI 108 - CRISES OF THE EARTH
Short Title: CRISES OF THE EARTH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Geological and environmental crises have affected Earth throughout history. Included are meteorite impacts, global extinctions, volcanic eruptions, earthquakes, tsunamis, effect of humans on environment, as well as an overview of historical perspectives, scientific background, and development of these processes, the development of predictive scenarios, and society's adaptations to such hazards.

ESCI 109 - OCEANOGRAPHY
Short Title: OCEANOGRAPHY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the oceans, with an emphasis on how the physics, chemistry, geology, and biology of the oceans are linked.

ESCI 110 - ENERGY, THE ENVIRONMENT, AND SOCIETY
Short Title: ENERGY, ENVIRONMENT, & SOCIETY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Undergraduate seminar on current issues in energy used by industrial society, energy resources and their impact on the environment. Offered on demand.

ESCI 113 - ENVIRONMENTAL CRISIS SEMINAR
Short Title: ENVIRONMENTAL CRISIS SEMINAR
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group III
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Discussion of environmental crises. Topics vary annually. Cross-list: EBIO 113, ENST 113. Repeatable for Credit.

ESCI 114 - NATURAL DISASTER SEMINAR
Short Title: NATURAL DISASTER SEMINAR
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group III
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Discussion of natural disasters. Topics vary annually. Cross-list: ENST 114. Repeatable for Credit.

ESCI 115 - INTRODUCTION TO THE EARTH
Short Title: INTRODUCTION TO THE EARTH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course provides a comprehensive introduction to the Earth, its origins and composition, and the processes that change it, covering rock and mineral identification, geologic maps, plate tectonics and its causes, Earth structure and geophysics, sedimentology and stratigraphy, and surface processes. Mutually Exclusive: Credit cannot be earned for ESCI 115 and ESCI 101/ESCI 301.
ESCI 201 - THE SCIENCE BEHIND EARTH GLOBAL WARMING AND CLIMATE CHANGE  
**Short Title:** SCIENCE BEHIND GLOBAL WARMING  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** The course will introduce the students to the science behind last century Earth global warming in the context of the past records of global Earth climate variability and forecast of Earth climate in the next century. Cross-list: ENST 201.  

ESCI 214 - THE PLANETS  
**Short Title:** THE PLANETS  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** The physical, chemical, and geological development of the solar system from 4.6 billion years ago until today. All planets, their major satellites, comets, and asteroids will be discussed.  

ESCI 307 - ENERGY AND THE ENVIRONMENT  
**Short Title:** ENERGY AND THE ENVIRONMENT  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course explores the physical principles of energy use and its impact on Earth's environment and climate. Topics will include energy mechanics, climate change, and the environmental impacts and future prospects of various fossil fuel and alternative energy sources. Cross-list: CEVE 307, ENST 307.  

ESCI 321 - EARTH SYSTEM EVOLUTION AND CYCLES  
**Short Title:** EARTH SYSTEM EVOLUTION/CYCLES  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 4  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ESCI 101 (may be taken concurrently) or ESCI 115 (may be taken concurrently) or ESCI 301 (may be taken concurrently)  
**Description:** This course explores the systems and processes that shape Earth's surface including weathering, sediment transport, ocean and atmosphere circulation, accumulation of sedimentary material and organisms, including man. This course requires a once-a-week 3-hour lab. Prerequisites ESCI 101 or ESCI 115 or ESCI 301 can be taken concurrently or with permission of instructor. Recommended Prerequisite(s): MATH 101, 102, PHYS 101 or 111, CHEM 121 or 151.  

ESCI 322 - EARTH CHEMISTRY AND MATERIALS  
**Short Title:** EARTH CHEMISTRY & MATERIALS  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 4  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ESCI 101 (may be taken concurrently) or ESCI 115 (may be taken concurrently) or ESCI 301 (may be taken concurrently)  
**Description:** This course introduces rock-forming processes related to the chemical and physical differentiation of the solid Earth into its main reservoirs: continental crust, oceanic crust, mantle, and core. Beginning with the bulk Earth and an overview of the chemical and petrologic properties of the rocks that make up each of these reservoirs. The basic principles of igneous, metamorphic and sedimentary petrology will be presented in the context of the rock cycle, plate tectonics, as well as the origin of economically and societally important ore deposits. A laboratory and field trip, where students will see petrologic principles applied, will be required. Prerequisites ESCI 101, ESCI 115 or ESCI 301 can be taken concurrently or with permission of instructor. Recommended prerequisite(s): MATH 101 and MATH 102, CHEM 121 or CHEM 151.  

ESCI 323 - EARTH STRUCTURE AND DEFORMATION  
**Short Title:** EARTH STRUCTURE & DEFORMATION  
**Department:** Earth/Environmnt/Planetary Sci  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 4  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ESCI 101 (may be taken concurrently) or ESCI 115 (may be taken concurrently) or ESCI 301 (may be taken concurrently)  
**Description:** Introduction to the mechanics and deformation of the Earth's crust and lithosphere, emphasizing rock strength and rheology, earthquakes and faulting, brittle and ductile deformation mechanisms and processes, and an introduction to tectonic systems. Lab will develop skills for recognition, interpretation, and analysis of deformation structures and processes on maps, cross-sections and seismograms. Prerequisites ESCI 101 or ESCI 115 or ESCI 301 can be taken concurrently or with permission of instructor. Recommended Prerequisite(s): MATH 101 and (PHYS 101 or PHYS 111). These may be taken concurrently. Mutually Exclusive: Credit cannot be earned for ESCI 323 and ESCI 333.
ESCI 324 - EARTH'S INTERIOR
Short Title: EARTH'S INTERIOR
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 101 (may be taken concurrently) or ESCI 115 (may be taken concurrently) or ESCI 301 (may be taken concurrently)
Description: Introduction to the mechanics and deformation of Earth's crust and lithosphere, emphasizing rock strength and rheology, earthquakes and faulting, brittle and ductile deformation mechanism and processes, and an introduction to tectonic systems. Lab will develop skills for recognition, interpretation, and analysis of deformation structures and processes on maps, cross-sections and seismograms. Prerequisites ESCI 101 or ESCI 115 or ESCI 301 may be taken concurrently or with permission of instructor. Recommended Prerequisite(s): MATH 211 and (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and (PHYS 102 or PHYS 112 or PHYS 126 or PHYS 142) and MATH 212 - may be taken concurrently.

ESCI 330 - GEOARCHAEOLOGY
Short Title: GEOARCHAEOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Anthropology or Earth Science. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Overview of the basics of the analysis of soils and sediments as related to archaeological deposits, and introducing the key concepts of surficial geology, site formation, landscape evolution, and the scope of depositional environments. Includes practical methods for describing stratigraphy, sediments and soil profiles in the field. Cross-list: ANTH 330.

ESCI 334 - GEOLOGICAL TECHNIQUES
Short Title: GEOLOGICAL TECHNIQUES
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Earth Science. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 322 and ESCI 323 (may be taken concurrently) and (ESCI 101 or ESCI 115 or ESCI 301)
Description: An introduction to the basic methods of description, recording, and interpretation of geologic features in the field, including rock and outcrop description, geologic mapping and cross-section construction. The course includes one or two required field trips during Saturdays, as well as a required seven day excursion either during Spring Break or during the semester. Taught every Spring. ESCI 323 may be taken concurrently with ESCI 334.

ESCI 340 - GLOBAL BIOGEOCHEMICAL CYCLES
Short Title: GLOBAL BIOGEOCHEMICAL CYCLES
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to the coupled nature of the biosphere, atmosphere and hydrosphere using as focal points elemental cycles such as those of carbon and nitrogen. This is a writing-intensive class, and will include 3 required Saturday field trips. Cross-list: EBIOS 340, ENST 340.

ESCI 380 - VISUALIZING NATURE
Short Title: VISUALIZING NATURE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An experimental course combining the scientific disciplines of the earth sciences with the artistic disciplines of creative photography to study the natural landscape and related ecosystems. The course will combine classroom lectures and laboratory demonstrations in geoscience with classes in the use of digital and film-based cameras and illustrated lectures on recognized achievements in landscape photography. Extensive field trips will be scheduled. Students will travel frequently, at times in pairs, other times in larger groups and as a full class, accompanied by one or both professors. The budget for the course includes funding both for travel and for photography expenses. Instructor Permission Required. Cross-list: FOTO 390.

ESCI 390 - GEOLOGY FIELD CAMP
Short Title: GEOLOGY FIELD CAMP
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Field course typically involving geologic mapping in one or more of sedimentary, metamorphic, igneous rocks and structures. Not offered by Rice University. Students must take an approved field camp from another university and transfer credit to Rice University. Recommended Prerequisite(s): ESCI 334.

ESCI 391 - EARTH SCIENCE FIELD EXPERIENCE
Short Title: EARTH SCIENCE FIELD EXPERIENCE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Comprises participating in an earth science expedition or research experience, follow-up analysis of some aspect of the data acquired, and a written report. Must be approved in advance by one of the department undergraduate advisors. Instructor Permission Required.
ESCI 401 - SEMINAR: UNDERGRADUATE HONORS THESIS
Short Title: SEM: UG HONORS THESIS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to and presentation of original undergraduate research for Earth Science Undergraduate Honors Thesis candidates. Students will be introduced to basic research protocols and approaches, and will learn how to give presentations on their research, and gain experience presenting their research. Repeatable for Credit.

ESCI 403 - SEMINAR: DEPARTMENT RESEARCH
Short Title: SEM: DEPARTMENT RESEARCH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to current research in the Earth Science department. Students will learn how to give a presentation and will get experience presenting their research. Graduate/Undergraduate Equivalency: ESCI 603. Repeatable for Credit.

ESCI 404 - SEMINAR: DEPARTMENT RESEARCH
Short Title: SEM: DEPARTMENT RESEARCH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to current research in the Earth Science department. Students will learn how to give a presentation and will get experience presenting their research. Graduate/Undergraduate Equivalency: ESCI 604. Repeatable for Credit.

ESCI 405 - SEMINAR: CURRENT RESEARCH IN EARTH SCIENCE
Short Title: SEM:CURR RESRCH EARTH SCIENCE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A series of lectures and paper discussions in various areas of Earth science. Graduate/Undergraduate Equivalency. ESCI 605. Repeatable for Credit.

ESCI 406 - SEMINAR: CURRENT RESEARCH IN EARTH SCIENCE
Short Title: SEM:CURR RESRCH EARTH SCIENCE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A series of lectures and paper discussions in various areas of Earth science. Graduate/Undergraduate Equivalency. ESCI 606. Repeatable for Credit.

ESCI 407 - INTRODUCTION TO BIOGEOCHEMISTRY II
Short Title: INTRO TO BIOCHEM II
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Description: The course introduces students to the Matlab programming language and topics may include: importing and exporting data; working with vectors and matrices; curve fitting; data smoothing and filtering; data regression; data visualization; optimization; solving differential equations. The course is built around progressive programming assignments. Graduate/Undergraduate Equivalency: ESCI 609. Recommended Prerequisite(s): Undergrad math through calculus. Mutually Exclusive: Credit cannot be earned for ESCI 409 and ESCI 609.

ESCI 409 - INTRODUCTION TO PROGRAMMING IN MATLAB AND NUMERICAL METHODS FOR EARTH SCIENCE
Short Title: INTRO TO PROGRAMMAT AND NUMERICAL METHODS FOR EARTH SCIENCE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 102
Description: Description: The course introduces students to the Matlab programming language and topics may include: importing and exporting data; working with vectors and matrices; curve fitting; data smoothing and filtering; data regression; data visualization; optimization; solving differential equations. The course is built around progressive programming assignments. Graduate/Undergraduate Equivalency: ESCI 609. Recommended Prerequisite(s): Undergrad math through calculus. Mutually Exclusive: Credit cannot be earned for ESCI 409 and ESCI 609.

ESCI 410 - OPTICAL MINERALOGY AND PETROGRAPHY
Short Title: OPTICAL MINERALOGY & PETROGRPH
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 322
Description: This is a lab course focused on the identification of minerals with petrographic microscopy. Principles of crystallography, mineral optics, and mineral chemistry will be covered in the first third of the course. The second third of the course will focus on the identification of minerals in igneous, metamorphic, and sedimentary rocks with emphasis on petrographic interpretation. The last third of the course will involve each student working on specific petrologic themes in the context of regional tectonics or magmatic processes. Taught every other Fall. Graduate/Undergraduate Equivalency: ESCI 610. Mutually Exclusive: Credit cannot be earned for ESCI 410 and ESCI 610.
ESCI 411 - ADVANCED PETROLOGY II  
Short Title: ADVANCED PETROLOGY II  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course will bring together constraints from field geology, petrography, petrology, geochemistry, and geodynamics to tackle advanced A87 research questions of whole Earth processes that are relevant in the 21st century. The topics that may be covered include, but are not limited to, interplay between magmatic and tectonic processes, magma generation, migration, extraction, and dynamic stability in various settings, magmatic differentiation, volatiles and fluids exchange between various reservoirs and effects on long-term climate, ore genesis, and formation and modification of continents. Graduate/Undergraduate Equivalency: ESCI 611. Mutually Exclusive: Credit cannot be earned for ESCI 411 and ESCI 611.

ESCI 412 - ADVANCED PETROLOGY  
Short Title: ADVANCED PETROLOGY  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ESCI 322  
Description: Evaluation of the evolution of igneous rocks in the Earth's crust and mantle. Topics will include phase equilibria, experimental studies, and geochemistry. Labs will stress thin section petrography. Graduate/Undergraduate Equivalency: ESCI 612. Mutually Exclusive: Credit cannot be earned for ESCI 412 and ESCI 612. Repeatable for Credit.

ESCI 415 - DECISION MAKING AND ECONOMICS IN THE ENERGY INDUSTRY  
Short Title: DECISION MAKING AND ECONOMICS  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course will provide students with an understanding of how energy projects are evaluated. Topics include resource-size determination, geologic and economic risk, discounted cash-flow economics, and other common methods used in decision making. Emphasis will be placed on working in teams to understand basic concepts and sensitivities. Graduate/Undergraduate Equivalency: ESCI 615. Recommended Prerequisite(s): ESCI 321 and ESCI 323. Mutually Exclusive: Credit cannot be earned for ESCI 415 and ESCI 615.

ESCI 416 - ECONOMIC GEOLOGY MINERAL DEPOSITS  
Short Title: ECON GEOL MINERAL DEPOSITS  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: An overview of metallic and nonmetallic mineral deposits, theories of their origin, and classification. The impact of government regulation, economics, production practices, and exploration will be considered. Graduate/Undergraduate Equivalency: ESCI 616. Mutually Exclusive: Credit cannot be earned for ESCI 416 and ESCI 616.

ESCI 417 - PETROLEUM INDUSTRY ECONOMICS AND MANAGEMENT  
Short Title: PETROLEUM IND ECONOMICS MGMT  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Topics covered include resource size determination; geologic risk analysis; establishing minimum economic thresholds; economic chance factors; the concepts of present worth, investment efficiency, rates of return. Price forecasting, cost inflation are discussed. Graduate/Undergraduate Equivalency: ESCI 617. Recommended Prerequisite(s): ESCI 415. Mutually Exclusive: Credit cannot be earned for ESCI 417 and ESCI 617.

ESCI 418 - QUANTITATIVE HYDROGEOLOGY  
Short Title: QUANTITATIVE HYDROGEOLOGY  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Advanced course that will provide a quantitative overview of groundwater hydrology. Emphasis will be placed on mastering concepts in fluid mechanics and applying these concepts to water supply, environmental, and geological problems. Cross-list: CEVE 418. Graduate/Undergraduate Equivalency: ESCI 618. Mutually Exclusive: Credit cannot be earned for ESCI 418 and ESCI 618.

ESCI 419 - MATERIALS CHARACTERIZATION  
Short Title: MATERIALS CHARACTERIZATION  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): CHEM 121 or CHEM 151  
Description: This course will provide an overview of various characterization methods used in geological, chemical, material science and other natural science and engineering research. The techniques that will be discussed include but not limited to electron beam methods (imaging and spectroscopy), X-ray methods, ion-beam analysis, vibrational spectroscopies, and Synchrotron-based techniques. Graduate/Undergraduate Equivalency: ESCI 619. Mutually Exclusive: Credit cannot be earned for ESCI 419 and ESCI 619.
ESCI 421 - PALEOCEANOGRAPHY
Short Title: PALEOCEANOGRAPHY
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 321
Description: The evolution of the ocean, climate, and the global carbon cycle over the last 100 million years as recorded by the biology, chemistry and composition of deep-sea sediment. Graduate/Undergraduate Equivalency: ESCI 621. Recommended Prerequisite(s): ESCI 109. Mutually Exclusive: Credit cannot be earned for ESCI 421 and ESCI 621.

ESCI 422 - PALEOClimate and Modern Climate Change
Short Title: PALEOClimate
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 101 or ESCI 115 or ESCI 301 or ESCI 321
Description: Climate change is a widely discussed and, often, debated topic in society today. This course will focus on scientific observations of Earth’s climate in the past, records of modern climate variability, and projections of future climate change as well as geologic and instrumental records of climate change and science communication. Graduate/Undergraduate Equivalency: ESCI 622. Mutually Exclusive: Credit cannot be earned for ESCI 422 and ESCI 622.

ESCI 423 - ANTARCTIC MARINE GEOLOGY
Short Title: ANTARCTIC MARINE GEOLOGY
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 423. Recommended prerequisite(s): ESCI 321. Mutually Exclusive: Credit cannot be earned for ESCI 423 and ESCI 623.

ESCI 424 - ORGANIC GEOCHEMISTRY
Short Title: ORGANIC GEOCHEMISTRY
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course covers the organic geochemistry of the natural environment. Topics include: production, transport, decomposition, and storage of organic matter in the marine and terrestrial environments, use of isotopes to track biogeochemical processes and natural and perturbed carbon cycle issues, including past and recent climate shifts. Cross-list: CHEM 425, ENST 425. Graduate/Undergraduate Equivalency: ESCI 625. Mutually Exclusive: Credit cannot be earned for ESCI 425 and ESCI 625.

ESCI 425 - INTERPRETATION OF REGIONAL 2-D SEISMIC DATA
Short Title: INTER REGIONAL 2D SEISMIC DATA
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will introduce students to analysis of sub-regional structural and stratigraphic frameworks. We will utilize the interpretation of 2D seismic profiles to reconstruct basin history and discuss implications for petroleum systems. Students will gain an understanding of a variety of structural and stratigraphic styles, as expressed on seismic data. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 626. Mutually Exclusive: Credit cannot be earned for ESCI 426 and ESCI 626.

ESCI 427 - SEQUENcE STRATIGRAPHY
Short Title: SEQUENcE STRATIGRAPHY
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 321
Description: This course will introduce students to the concepts of sequence stratigraphy and the power behind this correlation technique. The course is divided between classic sequence stratigraphy using cores, well-logs, and outcrop examples and seismic sequence stratigraphy. Graduate/Undergraduate Equivalency: ESCI 627. Mutually Exclusive: Credit cannot be earned for ESCI 427 and ESCI 627.

ESCI 429 - MAGMATIC, VOLCANIC AND HYDROTHERMAL PROCESSES
Short Title: VOLCANIC PROCESSES
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to the physical processes governing magmatic hydrothermal and volcanic systems. Conceptual and quantitative discussion of topics such as magma generation, accumulation, dike propagation, magma chambers, volcano deformation, volcanic eruptions, magmatic gases, magma rheology and fragmentation, hydrothermal systems. A 3-6 day field trip may be required. Graduate/Undergraduate Equivalency: ESCI 629. Mutually Exclusive: Credit cannot be earned for ESCI 429 and ESCI 629.
ESCI 430 - TRACE-ELEMENT AND ISOTOPE GEOCHEMISTRY FOR EARTH AND ENVIRONMENTAL SCIENCE
Short Title: TRACE-ELEMENT& ISOTOPE GEOCHEM
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to the principles of trace-element and isotope geochemistry and their applications to high and low temperature processes in the Earth. Topics to be covered are trace-element partitioning, basic quantum physics, radiogenic isotopic systems and stable isotope fractionation. Graduate/Undergraduate Equivalency: ESCI 630. Recommended Prerequisite(s): ESCI 321. Mutually Exclusive: Credit cannot be earned for ESCI 430 and ESCI 630.

ESCI 431 - GEOMORPHOLOGY
Short Title: GEOMORPHOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 321
Description: This course will investigate physical, chemical, and biological processes that contribute to the development and shaping of Earth's surface across a continuum of subaerial and subaqueous environments. Mandatory 4-day field trip is associated with this class. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 631. Repeatable for Credit.

ESCI 435 - MECHANICS OF SEDIMENT TRANSPORT
Short Title: MECHANICS-SEDIMENT TRANSPORT
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Evaluation of sedimentary transport dynamics: physical interaction between fluid flow and sediment mobility, from grain to bedform scale; exploration of environments including rivers, estuaries, deltas, coastlines, and deserts. Examination of sediment transport for geology, environmental, and engineering applications; formation of diagnostic sedimentary features recognized in the stratigraphic record. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 635. Mutually Exclusive: Credit cannot be earned for ESCI 435 and ESCI 635.

ESCI 436 - WELL LOGGING AND PETROPHYSICS
Short Title: WELL LOGGING AND PETROPHYSICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the principles and procedures involved in geophysical exploration. Includes acquisition, processing, and interpretation of seismic, ground-penetrating radar, gravity, magnetic, and electrical data. Graduate/Undergraduate Equivalency: ESCI 641. Mutually Exclusive: Credit cannot be earned for ESCI 442 and ESCI 642.
ESCI 444 - REFLECTION SEISMIC DATA PROCESSING
Short Title: REFLEC SEISMIC DATA PROCESSING
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 442
Description: Experience with processing reflection seismic data. Includes seismic data organization, velocity analysis, stacking, filtering, deconvolution, migration, and display, using the Center for Computational Geophysics facility's seismic processing system(s). Recommended Prerequisite(s): ESCI 442. Mutually Exclusive: Credit cannot be earned for ESCI 444 and ESCI 564.

ESCI 450 - REMOTE SENSING
Short Title: REMOTE SENSING
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to electromagnetic remote sensing of the earth and other planets using passive and active methods. The course includes a computer lab component involving processing and interpretation of remote sensing imagery, and an individual project. Cross-list: CEVE 450. Graduate/Undergraduate Equivalency: ESCI 650. Mutually Exclusive: Credit cannot be earned for ESCI 450 and ESCI 650.

ESCI 452 - GIS FOR SCIENTISTS AND ENGINEERS
Short Title: GIS FOR SCIENTISTS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ESCI 321 or ESCI 322 or ESCI 323 or ESCI 324) and ESCI 442
Description: Basic principles of Geographic Information Systems, with a focus on effectively applying the technology to the geosciences. Main platform of the class will be ESRI's ArcGIS, but a wide array of other tools will also be introduced. Material will be delivered via a blend of lecture and hands-on exercises. Graduate/Undergraduate Equivalency: ESCI 652. Mutually Exclusive: Credit cannot be earned for ESCI 452 and ESCI 652.

ESCI 454 - GEOGRAPHIC INFORMATION SCIENCE
Short Title: GEOGRAPHIC INFORMATION SCIENCE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ESCI 321 or ESCI 322 or ESCI 323 or ESCI 324) and (ESCI 321 or ESCI 322 or ESCI 323 or ESCI 324)
Description: Introduction to Geographic Information Systems (GIS) technology, mapping sciences, and spatial analysis. The course will include extensive computer use and the completion of a major individual project on a topic selected by the student. Cross-list: CEVE 453. Graduate/Undergraduate Equivalency: ESCI 654. Mutually Exclusive: Credit cannot be earned for ESCI 454 and ESCI 654.

ESCI 456 - PLANETARY VOLCANISM
Short Title: PLANETARY VOLCANISM
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar will cover the broad range of volcanic phenomena in the solar system, via weekly readings of, and student presentations on, classic and recent papers. Topics include: Composition (basaltic, silicic, unusual, carbonatite), cryovolcanism, structure (caldera, rift zones, volcanic spreading radiating dike systems, magma chambers, and sills complexes), and dynamics (eruption mechanism, effusive vs. explosive, volatiles and atmospheres/oceans). The planetary settings to be considered include Earth, Venu, Mars, Mercury, Moon, large asteroids and outer planet satellites. Graduate/Undergraduate Equivalency: ESCI 656. Mutually Exclusive: Credit cannot be earned for ESCI 456 and ESCI 656.

ESCI 460 - GEOLOGICAL AND GEOPHYSICAL FLUID DYNAMICS
Short Title: GEOL & GEOPHYS FLUID DYNAMICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and MATH 212
Description: Advanced course in the foundations of fluid mechanics and its application to Earth science. Aspects of continuum mechanics, heat and mass transfer, and the rheologic behavior of materials will be covered in developing the fundamental laws that describe fluid motion. Applications include atmospheric dynamics, mantle and lithospheric dynamics, and hydrogeology. Graduate/Undergraduate Equivalency: ESCI 660. Mutually Exclusive: Credit cannot be earned for ESCI 460 and ESCI 660.

ESCI 461 - SEISMOLOGY I
Short Title: SEISMOLOGY I
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Principles of elastic wave propagation, the determination of Earth structure, and the understanding of earthquake physics. Graduate/Undergraduate Equivalency: ESCI 661. Mutually Exclusive: Credit cannot be earned for ESCI 461 and ESCI 661.
ESCI 462 - TECTONOPHYSICS
Short Title: TECTONOPHYSICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 102 or PHYS 102 or PHYS 112
Description: Applications of continuum physics to the deformation, flexure, heat transfer, and gravity field of the lithosphere. Graduate/Undergraduate Equivalency: ESCI 662. Recommended Prerequisite(s): MATH 212. Mutually Exclusive: Credit cannot be earned for ESCI 462 and ESCI 662.

ESCI 463 - STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS
Short Title: TECTONIC SYSTEMS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ESCI 323
Description: The distribution, origin, and evolution of various tectonic systems, and characterization of their structural and geophysical signatures, emphasizing crustal and lithospheric processes associated with tectonic deformation. Review of representative global examples of convergent and collisional margins, divergent and passive margins, and transform margins. Graduate/Undergraduate Equivalency: ESCI 663. Mutually Exclusive: Credit cannot be earned for ESCI 463 and ESCI 663.

ESCI 464 - GLOBAL TECTONICS
Short Title: GLOBAL TECTONICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Geometrical aspects of plate tectonics, the 3 traditional types of plate boundaries, instantaneous plate motions, earthquakes and faulting, space geodesy, geomagnetic reversals, paleomagnetic poles, hotspots, "absolute" plate motion, true polar wander, driving forces, diffuse plate boundaries, plate nonrigidity, and rheology of the lithosphere. Graduate/Undergraduate Equivalency: ESCI 664. Mutually Exclusive: Credit cannot be earned for ESCI 464 and ESCI 664.

ESCI 467 - GEOMECHANICS
Short Title: GEOMECHANICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of deformation and failure processes within the Earth's shallow crust, with a focus on rock and sediment mechanics, and associated fluid processes. Emphasis will be on geologic applications, including sediment consolidation, slope stability, fault mechanics, and earthquake nucleation and rupture. Graduate/Undergraduate Equivalency: ESCI 667. Mutually Exclusive: Credit cannot be earned for ESCI 467 and ESCI 667.

ESCI 471 - EARTH SYSTEMS MODELING I: PHILOSOPHY AND FUNDAMENTALS
Short Title: EARTH SYSTEMS MODELING I
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 121 or PHYS 101 or PHYS 102
Description: A model is a simplified representation of something. Scientific models range from conceptual to physical to mathematical. In Earth and planetary science, one is often concerned with modeling interactions between physical, chemical, and biological components, i.e., with modeling systems. This class will cover the fundamentals of scientific modeling with a focus on Earth systems. Graduate/Undergraduate Equivalency: ESCI 671. Recommended Prerequisite(s): MATH 211. Mutually Exclusive: Credit cannot be earned for ESCI 471 and ESCI 671. Repeatable for Credit.

ESCI 472 - EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS
Short Title: NUMERICAL METHODS EARTH SYSTEM
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 121 or PHYS 101 or PHYS 102
Description: Introduction to numerical methods with applications in Earth Science using Matlab and COMSOL. Much of the class is spent in the computer lab learning Matlab and COMSOL, followed by hands-on exercises. Graduate/Undergraduate Equivalency: ESCI 672. Recommended Prerequisite(s): MATH 211.

ESCI 481 - UNDERGRADUATE RESEARCH IN EARTH SCIENCE
Short Title: UNDERGR RESEARCH EARTH SCIENCE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced work adapted to the needs of the individual undergraduate student reading. Instructor Permission Required. Repeatable for Credit.

ESCI 491 - SPECIAL STUDIES FOR UNDERGRADUATES
Short Title: SPECIAL STUDY FOR UNDERGRADS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Work in Earth Science adapted to the needs of individual undergraduate research. Instructor Permission Required. Repeatable for Credit.
ESCI 499 - GRAPHIC AND VISUAL DESIGN FOR SCIENTISTS
Short Title: VISUAL DESIGN FOR SCIENTISTS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A significant portion of a scientist's time is spent solving visual design problems (graphics for papers, visual layouts for seminars, posters, teaching). Effective communication of scientific information is part of a scientist's skill set. This class is designed to enhance that skill set in terms of presenting visual information clearly, simply, and effectively. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 699. Mutually Exclusive: Credit cannot be earned for ESCI 499 and ESCI 699. Repeatable for Credit.

ESCI 501 - SPECIAL STUDIES FOR GRADUATE STUDENTS
Short Title: SPECIAL STUDIES GRAD STUDENTS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced work in Earth science adapted to the needs of individual graduate students. Instructor Permission Required. Repeatable for Credit.

ESCI 502 - FIELD TRIP FOR ADVANCED GEOLOGY AND PETROLOGY
Short Title: FIELD TRIP-ADV GEOL & PETROL
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ESCI 322 and ESCI 334
Description: A field trip course centered on weekly readings and several mapping projects carried out over the course of 1 week. The course will focus on western North American geology with emphasis on igneous and metamorphic petrology and structural geology in the context of regional tectonics. Field studies will be accompanied by quantitative data collection and analysis. Each student will be responsible for a small field-based project. Instructor Permission Required. Repeatable for Credit.

ESCI 503 - CRYOSPHERE
Short Title: CRYOSPHERE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ESCI 321
Description: The growth and decay of glaciers play a large role in modulating Earth's climate system. This course focuses on physical glaciology, glacial geomorphology, the geologic record of glaciation, and glacier-climate interactions in the past, present, and future.

ESCI 504 - SILICICLASTIC DEPOSITIONAL SYSTEMS
Short Title: SILICICLASTIC DEPOSITION SYST
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced field studies in sedimentary geology. This course is intended to provide graduate students with experience working in sedimentary rocks by working on projects of their own design.

ESCI 505 - APPLIED SEDIMENTOLOGY II
Short Title: APPLIED SEDIMENTOLOGY II
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ESCI 504
Description: Characterization of modern and ancient, shallow and deep sedimentary environments and facies. Includes examination of different depositional models in relation both to climate and to hydrographic and geographic settings, as well as three field trips. Meeting times will be determined after registration.

ESCI 506 - CARBONATE DEPOSITIONAL SYSTEMS
Short Title: CARBONATE DEPOSITIONAL SYSTEMS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ESCI 321
Description: Advanced work in Earth science adapted to the needs of individual graduate students. Instructor Permission Required. Repeatable for Credit.

ESCI 507 - SEMINAR: GLOBAL SEISMOLOGY
Short Title: SEM:GLOBAL SEISMOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 508 - SEMINAR: DEPARTMENT TYPE-LOCAL FIELD TRIPS
Short Title: SEM::DEPT-LOCAL FIELD TRIPS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.
ESCI 511 - PUTTING EARTH SCIENCE INTO ACTION
Short Title: SEM: EARTH SCIENCE INTO ACTION
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 512 - SEMINAR: CARIBBEAN
Short Title: SEM: CARIBBEAN
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 514 - ADVANCED BIOGEOCHEMISTRY
Short Title: ADVANCED BIOGEOCHEMISTRY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore carbon, nitrogen, and water cycling at the advanced level. Instructor Permission Required. Repeatable for Credit.

ESCI 515 - GEOPHYSICAL FIELD WORK FOR EDUCATORS
Short Title: GEOPHY FLWK FOR EDUCATORS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course consists of 2 weeks of geophysical field work and is designated for in-service K-12 teachers. Instructor Permission Required. Repeatable for Credit.

ESCI 516 - TOPICS ON CARBONATES
Short Title: TOPICS ON CARBONATES
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics may vary. 7-day field trip to Belize is required. Recommended Prerequisite(s): MATH 211. Repeatable for Credit.

ESCI 519 - SEMINAR: SEISMOLOGY
Short Title: SEM: SEISMOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 520 - SEMINAR: SEISMOLOGY
Short Title: SEM: SEISMOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 521 - SEMINAR: TECTONICS OF CONTINENTAL MARGINS
Short Title: SEM: TECTONICS-CONTINEN-MARGINS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 522 - SEMINAR: ADVANCED TOPICS IN GEOPROCESSES
Short Title: SEM: GEOPROCSSES
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 523 - SEMINAR: SEISMIC MODELING AND INVERSE METHODS
Short Title: SEM: SEISMICMODEL&INVERSEMETHOD
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 524 - SEMINAR: ADVANCED TOPICS IN EARTH STRUCTURE AND DEFORMATION
Short Title: SEM: ADV TOPICS EARTH STRUCTURE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2,3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit. Please note there are two sections: Section 1 is a seminar with discussion for 2 credits. Section 2 is the seminar with discussion and a mandatory 1-week field trip for 3 credits. Instructor permission is required for Section 2. Repeatable for Credit.

ESCI 526 - SEMINAR: DEVELOPMENTS IN STRUCTURAL GEOLOGY
Short Title: SEM: DEVELOPSTRUCTURALGEOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.
ESCI 527 - SEMINAR: QUANTITATIVE PETROLEUM SYSTEMS ANALYSIS
Short Title: QUANT PETROLEUM SYS ANALYSIS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Course taught at the University of Houston. Repeatable for Credit.

ESCI 528 - SEMINAR: ADVANCED TOPICS IN HYDROGEOLOGY
Short Title: SEM:ADV TOPICS HYDROGEOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 529 - THE MOON: ORIGIN AND EVOLUTION OF EARTH'S COMPANION
Short Title: THE MOON: ORIGIN & EVOLUTION
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar course addresses fundamental issues in the origin and evolution of the Moon, spanning the disciplines of geology, geophysics, geochemistry and petrology. Sources range from classic studies to recent results from orbiting spacecraft and laboratory analysis. Readings will be supplemented by guest presentations from active researchers in the field. Repeatable for Credit.

ESCI 531 - ADVANCED TECTONOPHYSICS/GLOBAL TECTONICS
Short Title: ADV TECTONOPHY/GLOBL TECTONICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar course addresses fundamental issues in the origin and evolution of the Moon, spanning the disciplines of geology, geophysics, geochemistry and petrology. Sources range from classic studies to recent results from orbiting spacecraft and laboratory analysis. Readings will be supplemented by guest presentations from active researchers in the field. Repeatable for Credit.

ESCI 533 - SEMINAR: TOPICS IN SEDIMENTOLOGY
Short Title: SEM:TOPICS-SEDIMENTOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 534 - CLASTIC DEPOSITIONAL SYSTEMS FIELD TRIP
Short Title: FIELD TRIP CLASTIC DEP SYSTEMS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ESCI 504
Description: This is a five day trip that takes place in northwestern New Mexico. The trip is intended for students with strong interests in sedimentology and stratigraphy and focuses on field methods in interpretation of clastic sedimentary deposits in terms of their depositional environment, sequence stratigraphic occurrence and reservoir and source rock potential. The field area includes four different basins, which provides further opportunity for discussion of sedimentary basin evolution. The course also includes reading assignments and class presentations on topics related to the trip. Repeatable for Credit.

ESCI 536 - SEMINAR: DEPARTMENT TYPE - LOCALE FIELD TRIP
Short Title: SEM: LOCALE FIELD TRIP
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (ESCI 321 (may be taken concurrently) and ESCI 322 (may be taken concurrently) and ESCI 323 (may be taken concurrently) and ESCI 324 (may be taken concurrently))
Description: Seminar topics vary depending on location of field trip. This is a Seminar/Trip type course combination. Undergraduates are required to take prerequisites to register for this course. Prerequisites do not apply for graduate students. Prerequisites may be taken concurrently. Additional fee may be required for this course. Instructor Permission Required. Repeatable for Credit.

ESCI 537 - ADVANCED TOPICS IN THE SOLID EARTH I
Short Title: ADV TOPICS - SOLID EARTH I
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary.

ESCI 538 - ADVANCED TOPICS IN THE SOLID EARTH II
Short Title: ADV TOPICS - SOLID EARTH II
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.
ESCI 539 - SEMINAR: TOPICS IN VOLCANOLOGY, MAGMATIC, AND HYDROTHERMAL PROCESSES
Short Title: SEM: PHYSICAL VOLCANOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Reading and discussions about current topics related to magma generation, migration, accumulation and eruption, as well as hydrothermal systems. Repeatable for Credit.

ESCI 540 - EARTH'S ATMOSPHERE
Short Title: EARTH'S ATMOSPHERE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHEM 121 or PHYS 101 or PHYS 111
Description: How and why has Earth's atmosphere evolved over time? We will begin with an understanding of the atmosphere today - its physics, chemistry, and dynamics - work backwards in time to frontiers that are comparatively data-poor. We focus on empirical/observational constraints that drive theories of atmospheric evolution on Earth and other planets. Recommended Prerequisite(s): MATH 211. Mutually Exclusive: Credit cannot be earned for ESCI 540 and ESCI 414. Repeatable for Credit.

ESCI 541 - THE PLANET MARS: FORMATION, DIFFERENTIATION, STRUCTURE AND EVOLUTION
Short Title: PLANET MARS: FORM, STRUCT, EVO
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar addresses fundamental issues in Mars science, spanning the disciplines of geology, geophysics, geochemistry and petrology. Sources range over six decades of data from flybys and orbiting spacecraft, landed stations and rovers, and laboratory analysis of meteorites and experiments. Readings will be supplemented by presentations from active Mars researchers. Instructor Permission Required.

ESCI 542 - SEISMOLOGY II
Short Title: SEISMOLOGY II
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of elastodynamics. Calculation of synthetic seismograms using asymptotic and finite-difference methods, wave propagation in layered and random media. Seismic migration and inversion using finite-difference. Kirchoff, and frequency-wave number methods.

ESCI 543 - INTRODUCTION TO THE DYNAMICS AND PHYSICAL PROPERTIES OF THE EARTH'S INTERIOR
Short Title: DYNAMICS OF EARTH'S INTERIOR
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of the Earth's deep interior with an emphasis on dynamical processes and physical properties of the Earth's mantle. Topics include: global energy budget; convective heat transfer; thermal evolution of the Earth; constitutive laws; rheology; seismic velocities; composition, density structure; thermal expansion; thermal conductivity. Taught every other Fall. Mutually Exclusive: Credit cannot be earned for ESCI 543 and ESCI 413.

ESCI 544 - HYDROCARBON EXPLORATION
Short Title: HYDROCARBON EXPLORATION
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A student team will analyze and assess petroleum prospects in a sedimentary basin. Using a dataset of industry well/seismic data, the team will analyze data, identify/prioritize exploration targets, and prepare a formal presentation. Team will review their findings to industry judges for AAPG Imperial Barrel Award competition. Instructor Permission Required.

ESCI 545 - HYDROCARBON SYSTEMS ANALYSIS
Short Title: HYDROCARBON SYSTEMS ANALYSIS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course has lecture, lab, and field components. Students will learn about the components of the hydrocarbon system and how to rank areas of a basin for prospectively. Activities will be organized on a class and small group basis. Recommended Prerequisite(s): ESCI 323 or ESCI 427/627.

ESCI 546 - ADVANCED TOPICS IN BASIN SEDIMENTOLOGY AND STRATIGRAPHY
Short Title: ADV TOPICS: BASIN SEDIM & STRAT
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will investigate the processes that lead to the development of sedimentary stratigraphy across a continuum of depositional environments, including: fluvial, deltaic, coastal near-shore, continental shelf and slope and abyssal settings. Material will include transport linkages based on studies from modern settings, and will also cover the unique stratigraphic signatures preserved in ancient depositional systems. Instructor Permission Required.
ESCI 548 - ADVANCED TOPICS IN FLUVIAL-DELTAIC SEDIMENTOLOGY AND STRATIGRAPHY  
Short Title: ADV TOPICS FLUVIAL-DELTAIC  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will investigate physical and biological processes that contribute to the development of fluvial-deltaic environments. Materials will include deriving physical erosion, transport, and deposition laws, in order to evaluate modern processes that shape deltas and coastlines. The course will also focus on sedimentary deposits of fluvial-deltaic systems and preservation potential of the stratigraphy, by examining ancient depositional systems that are preserved in the rock record. The course will explore these topics by reviewing science literature that utilizes numerical, experimental, and field studies, to further theory on the development of fluvial-deltaic systems. Instructor Permission Required. Repeatable for Credit.  

ESCI 550 - MODERN EXPLORATION TECHNOLOGY  
Short Title: MODERN EXPLORATION TECHNOLOGY  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): ESCI 442 or ESCI 642  
Corequisite: ESCI 564  
Description: Modern petroleum exploration techniques using geology, geophysics, and information technology methods. As new techniques emerge, the course will change to ensure that the course material mirrors the exploration industry. Mutually Exclusive: Credit cannot be earned for ESCI 550 and ESCI 420.  

ESCI 552 - MARINE GEOLOGY SYSTEMS  
Short Title: MARINE GEOLOGY SYSTEMS  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course examines areas of the seafloor recently targeted by large-scale science projects, such as the ocean drilling program. The purpose is to understand current ocean geoscience problems, the research being conducted to address these problems, and preliminary results. Mutually Exclusive: Credit cannot be earned for ESCI 552 and ESCI 432.  

ESCI 555 - MOUNTAINS, CLIMATE AND GLOBAL CARBON CYCLING  
Short Title: CARBON CYCLE  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hours: 2  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The purpose of this course is to discuss the origins of high elevations, such as mountains and epeirogenic uplifts, and their impacts of climate, global carbon cycling, and sedimentary processes. We will discuss the physics and chemistry of building mountains by magmatism and tectonic thickening as well as destroying them by erosion, chemical weathering, and delamination. We will explore perspectives from the deep Earth to the atmosphere. The seminar will meet once a week for two hours with the first hour being a thematic overview given by faculty or students and the second hour devoted to discussion of assigned papers. Recommended Prerequisite(s): ESCI 321 and ESCI 322. Repeatable for Credit.  

ESCI 557 - SPECIAL TOPICS IN EARTH SCIENCE  
Short Title: SPECIAL TOPICS - EARTH SCIENCE  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This is an overview of Petroleum Geoscience, including standard industry datasets and their use, petroleum system elements, and the components of petroleum plays, prospects and fields. The course will be comprised of lectures, short exercises, and exercise discussions. Priority will be given to students enrolling in ESCI 544 Hydrocarbon Exploration Repeatable for Credit.  

ESCI 558 - 3D SEISMIC REFLECTION DATA INTERPRETATION  
Short Title: 3D SEISMIC REFLECTION DATA  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Workstation-based geologic interpretation of 3D seismic reflection data. The course will focus on interpreting horizons and faults tying interpretation to well data, analyzing seismic attributes, and other relevant topics. Emphasis will be placed on workflows utilized in hydrocarbon exploration. Mutually Exclusive: Credit cannot be earned for ESCI 558 and ESCI 428.  

ESCI 559 - SPECIAL TOPICS IN GEOCHEMISTRY  
Short Title: SPECIAL TOPICS IN GEOCHEMISTRY  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Lecture  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): CHEM 121 or CHEM 151  
Description: This course deals with miscellaneous special topics not covered in other courses. Please contact the Earth Science department for the specific topics. Topics change each semester. SPRING 2016 topic: X-Ray Based Characterization of Earth Materials. Repeatable for Credit.
ESCI 562 - ADVANCED TOPICS IN GEOPHYSICS
Short Title: ADV TOPICS IN GEOPHYSICS
Department: Earth/Environmt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Repeatable for Credit.

ESCI 564 - SEISMIC REFLECTION DATA PROCESS
Short Title: SEISMIC REFLECTN DATA PROCESS
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ESCI 442 or ESCI 642
Description: Mutually Exclusive: Credit cannot be earned for ESCI 564 and ESCI 444.

ESCI 565 - JOINT INVERSION OF EXPLORATION GEOPHYSICAL DATA
Short Title: JNT INVERSN OF EXPLOR GEO DATA
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: By jointly inverting several different kinds of exploration geophysical measurements at a site we avoid some of the ambiguity inherent in the individual methods. *Students review papers (one-half of course) Recommended Prerequisite(s): ESCI 442 and (ESCI 444 or 564) and ESCI 436. Mutually Exclusive: Credit cannot be earned for ESCI 565 and ESCI 445.

ESCI 566 - ROCK DEFORMATION AND RHEOLOGY
Short Title: ROCK DEFORMATION AND RHEOLOGY
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The mechanisms of deformation and rheology of Earth's crust and mantle. Mutually Exclusive: Credit cannot be earned for ESCI 566 and ESCI 466.

ESCI 567 - UNCONVENTIONAL ENERGY EXPLORATION
Short Title: UNCONV ENERGY EXPLORATION
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topical presentations on the exploration and production of unconventional energy resources, including sources, techniques, and prospects. Intent is to cover all non-traditional energy targets, including shale oil/gas, oil sands/heavy oil, geothermal, coalbed methane, methane clathrates (seafloor hydrates) and more. Instructor Permission Required. Mutually Exclusive: Credit cannot be earned for ESCI 567 and ESCI 447.

ESCI 568 - PITCHING YOUR SCIENCE
Short Title: PITCHING YOUR SCIENCE
Department: Earth/Environmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed for senior level graduate students who will be facing high-stakes professional speaking opportunities, such as impromptu job conversations, formal academic and professional presentations, conversations with journalists, and/or industrial job interviews. Students will construct and practice 90-second, 5-minute, and 15-minute presentations. Most assignments will take place in-class, with limited work occurring outside of the classroom. Requirement: Participation in the Rice University 90-second thesis competition. Instructor Permission Required.

ESCI 581 - TOPICS IN PLANETARY DYNAMICS AND MAGMATIC PROCESSES
Short Title: TOPICS IN PLANETARY DYNAMICS
Department: Earth/Environmt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Instructor Permission Required. Repeatable for Credit.

ESCI 603 - SEMINAR: DEPARTMENT RESEARCH
Short Title: SEMINAR: DEPARTMENT RESEARCH
Department: Earth/Environmt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to current research in the Earth Science department. Students will learn how to give a presentation and will get experience presenting their research. Graduate/Undergraduate Equivalency: ESCI 403. Repeatable for Credit.

ESCI 604 - SEMINAR: DEPARTMENT RESEARCH
Short Title: SEM: DEPARTMENT RESEARCH
Department: Earth/Environmt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to current research in the Earth Science department. Students will learn how to give a presentation and will get experience presenting their research. Graduate/Undergraduate Equivalency: ESCI 404. Repeatable for Credit.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCI 605</td>
<td>SEMINAR: CURRENT RESEARCH IN EARTH SCIENCE</td>
<td>SEM:CURR RESCHR EARTH SCIENCE</td>
<td>Earth/Environmnt/Planetary Sci</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Seminar</td>
<td>1</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>A series of lectures and paper discussions in various areas of Earth science. Graduate/Undergraduate Equivalency: ESCI 405. Repeatable for Credit.</td>
</tr>
<tr>
<td>ESCI 606</td>
<td>SEMINAR: CURRENT RESEARCH IN EARTH SCIENCE</td>
<td>SEM:CURR RESCHR EARTH SCIENCE</td>
<td>Earth/Environmnt/Planetary Sci</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Seminar</td>
<td>1</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>A series of lectures and paper discussions in various areas of Earth science. Graduate/Undergraduate Equivalency: ESCI 406. Repeatable for Credit.</td>
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<tr>
<td>ESCI 607</td>
<td>INTRODUCTION TO BIOGEOCHEMISTRY II</td>
<td>INTRO TO BIOCHEM II</td>
<td>Earth/Environmnt/Planetary Sci</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>The interaction between (micro) organisms, minerals, rocks, and aqueous solutions is an important new field of research that requires an interdisciplinary approach between (micro) biology, organic chemistry, and geochemistry. This course provides an introduction and insight into this exciting new field and puts an emphasis on quantitative strategies. Taught every other Fall. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 407. Mutually Exclusive: Credit cannot be earned for ESCI 607 and ESCI 407.</td>
</tr>
<tr>
<td>ESCI 609</td>
<td>INTRODUCTION TO MATLAB AND NUMERICAL METHODS FOR EARTH SCIENCE</td>
<td>INTRO TO PROGRAMMING IN MATLAB</td>
<td>Earth/Environmnt/Planetary Sci</td>
<td>Standard Letter</td>
<td>Lecture/Laboratory</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>The course introduces students to the Matlab programming language and topics may include: importing and exporting data; working with vectors and matrices; curve fitting; data smoothing and filtering; data regression; data visualization; optimization; solving differential equations. The course is built around progressive programming assignments. Graduate/Undergraduate Equivalency: ESCI 409. Mutually Exclusive: Credit cannot be earned for ESCI 609 and ESCI 409.</td>
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<tr>
<td>ESCI 610</td>
<td>OPTICAL MINERALOGY AND PETROGRAPHY</td>
<td>OPTICAL MINERALOGY &amp; PETROGRPH</td>
<td>Earth/Environmnt/Planetary Sci</td>
<td>Standard Letter</td>
<td>Laboratory</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>This is a lab course focused on the identification of minerals with petrographic microscopy. Principles of crystallography, mineral optics, and mineral chemistry will be covered in the first third of the course. The second third of the course will focus on the identification of minerals in igneous, metamorphic, and sedimentary rocks with emphasis on petrogenetic interpretation. The last third of the course will involve each student working on specific petrologic themes in the context of regional tectonics or magmatic processes. Taught every other Fall. Graduate/Undergraduate Equivalency: ESCI 410. Mutually Exclusive: Credit cannot be earned for ESCI 610 and ESCI 410.</td>
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<tr>
<td>ESCI 611</td>
<td>ADVANCED PETROLOGY II</td>
<td>ADVANCED PETROLOGY II</td>
<td>Earth/Environmnt/Planetary Sci</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>The advanced A87 research questions of whole Earth processes that are relevant in the 21st century. The topics that may be covered include, but are not limited to, interplay between magmatic and tectonic processes, magma generation, migration, extraction, and dynamic stability in various settings, magmatic differentiation, volatiles and fluids exchange between various reservoirs and effects on long-term climate, ore genesis, and formation and modification of continents. Graduate/Undergraduate Equivalency: ESCI 411. Mutually Exclusive: Credit cannot be earned for ESCI 611 and ESCI 411.</td>
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<tr>
<td>ESCI 612</td>
<td>ADVANCED PETROLOGY</td>
<td>ADVANCED PETROLOGY</td>
<td>Earth/Environmnt/Planetary Sci</td>
<td>Standard Letter</td>
<td>Lecture/Laboratory</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Evaluation of the evolution of igneous rocks in the Earth's crust and mantle. Topics will include phase equilibria, experimental studies, and geochemistry. Labs will stress thin section petrography. Graduate/Undergraduate Equivalency: ESCI 412. Mutually Exclusive: Credit cannot be earned for ESCI 612 and ESCI 412. Repeatable for Credit.</td>
</tr>
</tbody>
</table>
ESCI 615 - DECISION MAKING AND ECONOMICS IN THE ENERGY INDUSTRY
Short Title: DECISION MAKING AND ECONOMICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will provide students with an understanding of how energy projects are evaluated. Topics include resource-size determination, geologic and economic risk, discounted cash-flow economics, and other common methods used in decision making. Emphasis will be placed on working in teams to understand basic concepts and sensitivities. Graduate/Undergraduate Equivalency: ESCI 415. Recommended Prerequisite(s): ESCI 321 and ESCI 323. Mutually Exclusive: Credit cannot be earned for ESCI 615 and ESCI 415.

ESCI 616 - ECONOMIC GEOLOGY MINERAL DEPOSITS
Short Title: ECON GEOL MINERAL DEPOSITS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An overview of metallic and nonmetallic mineral deposits, theories of their origin, and classification. The impact of government regulation, economics, production practices, and exploration will be considered. Graduate/Undergraduate Equivalency: ESCI 416. Mutually Exclusive: Credit cannot be earned for ESCI 616 and ESCI 416.

ESCI 617 - PETROLEUM INDUSTRY ECONOMICS AND MANAGEMENT
Short Title: PETROLEUM IND ECONOMICS MGMT
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics covered include resource size determination; geologic risk analysis; establishing minimum economic thresholds; economic chance factors; the concepts of present worth, investment efficiency, rates of return. Price forecasting, cost inflation are discussed. Graduate/Undergraduate Equivalency: ESCI 417. Mutually Exclusive: Credit cannot be earned for ESCI 617 and ESCI 417.

ESCI 618 - QUANTITATIVE HYDROGEOLOGY
Short Title: QUANTITATIVE HYDROGEOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced course that will provide a quantitative overview of groundwater hydrology. Emphasis will be placed on mastering concepts in fluid mechanics and applying these concepts to water supply, environmental, and geological problems. Graduate/Undergraduate Equivalency: ESCI 418. Mutually Exclusive: Credit cannot be earned for ESCI 618 and ESCI 418.

ESCI 619 - MATERIALS CHARACTERIZATION
Short Title: MATERIALS CHARACTERIZATION
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will provide an overview of various characterization methods used in geological, chemical, material science and other natural science and engineering research. The techniques that will be discussed include but not limited to electron beam methods (imaging and spectroscopy), X-ray methods, ion-beam analysis, vibrational spectroscopies, and Synchrotron-based techniques. Graduate/Undergraduate Equivalency: ESCI 419. Mutually Exclusive: Credit cannot be earned for ESCI 619 and ESCI 419.

ESCI 621 - PALEOCEANOGRAPHY
Short Title: PALEOCEANOGRAPHY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The evolution of the ocean, climate and the global carbon cycle over the last 100 million years as recorded by the biology, chemistry, and composition of deep-sea sediment. Graduate/Undergraduate Equivalency: ESCI 421. Mutually Exclusive: Credit cannot be earned for ESCI 621 and ESCI 421.

ESCI 622 - PALEOCLIMATE AND MODERN CLIMATE CHANGE
Short Title: PALEOCLIMATE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Climate change is a widely discussed and, often, debated topic in society today. This course will focus on scientific observations of Earth's climate in the past, records of modern climate variability, and projections of future climate change as well as geologic and instrumental records of climate change and science communication. Graduate/Undergraduate Equivalency: ESCI 422. Mutually Exclusive: Credit cannot be earned for ESCI 622 and ESCI 422.

ESCI 623 - ANTARCTIC MARINE GEOLOGY
Short Title: ANTARCTIC MARINE GEOLOGY
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The study of marine geologic principles and processes using examples from the Southern Oceans. Graduate/Undergraduate Equivalency: ESCI 423. Mutually Exclusive: Credit cannot be earned for ESCI 623 and ESCI 423.
ESCI 625 - ORGANIC GEOCHEMISTRY  
Short Title: ORGANIC GEOCHEMISTRY  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course covers the organic geochemistry of the natural environment. Topics include: production, transport, decomposition, and storage of organic matter in the marine and terrestrial environments, use of isotopes to track biogeochemical processes and natural and perturbed carbon cycle issues, including past and recent climate shifts. Graduate/Undergraduate Equivalency: ESCI 425. Mutually Exclusive: Credit cannot be earned for ESCI 625 and ESCI 425.

ESCI 626 - INTERPRETATION OF REGIONAL 2-D SEISMIC DATA  
Short Title: INTER REGIONAL 2D SEISMIC DATA  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will introduce students to analysis of sub-regional structural and stratigraphic frameworks. We will utilize the interpretation of 2D seismic profiles to reconstruct basin history and discuss implications for petroleum systems. Students will gain an understanding of a variety of structural and stratigraphic styles, as expressed on seismic data. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 426. Mutually Exclusive: Credit cannot be earned for ESCI 626 and ESCI 426.

ESCI 627 - SEQUENCE STRATIGRAPHY  
Short Title: SEQUENCE STRATIGRAPHY  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will introduce students to the concepts of sequence stratigraphy and the power behind this correlation technique. The course is divided between classic sequence stratigraphy using cores, well-logs, and outcrop examples and seismic sequence stratigraphy. Graduate/Undergraduate Equivalency: ESCI 427. Mutually Exclusive: Credit cannot be earned for ESCI 627 and ESCI 427.

ESCI 629 - VOLCANIC PROCESSES  
Short Title: VOLCANIC PROCESSES  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Introduction to the physical processes governing magmatic hydrothermal and volcanic systems. Conceptual and quantitative discussion of topics such as magma generation, accumulation, dike propagation, magma chambers, volcano deformation, volcanic eruptions, magmatic gases, magma rheology and fragmentation, hydrothermal systems. A 3-6 day field trip may be required. Graduate/Undergraduate Equivalency: ESCI 429. Mutually Exclusive: Credit cannot be earned for ESCI 629 and ESCI 429.

ESCI 630 - TRACE-ELEMENT AND ISOTOPE GEOCHEMISTRY FOR EARTH AND ENVIRONMENTAL SCIENCE  
Short Title: TRACE-ELEMENT& ISOTOPE GEOCHEM  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: . Graduate/Undergraduate Equivalency: ESCI 430. Mutually Exclusive: Credit cannot be earned for ESCI 630 and ESCI 430.

ESCI 631 - GEOMORPHOLOGY  
Short Title: GEOMORPHOLOGY  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will investigate physical, chemical, and biological processes that contribute to the development and shaping of Earth's surface across a continuum of subaerial and subaqueous environments. Mandatory 4-day field trip is associated with this class. Graduate students will be assigned exercises more challenging than those assigned to undergraduate students. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 431. Repeatable for Credit.

ESCI 635 - MECHANICS OF SEDIMENT TRANSPORT  
Short Title: MECHANICS-SEDIMENT TRANSPORT  
Department: Earth/Environmnt/Planetary Sci  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Evaluation of sedimentary transport dynamics: physical interaction between fluid flow and sediment mobility, from grain to bedform scale; exploration of environments including rivers, estuaries, deltas, coastlines, and deserts. Examination of sediment transport for geology, environmental, and engineering applications; formation of diagnostic sedimentary features recognized in the stratigraphic record. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 435. Mutually Exclusive: Credit cannot be earned for ESCI 635 and ESCI 435.
ESCI 636 - WELL LOGGING AND PETROPHYSICS
Short Title: WELL LOGGING AND PETROPHYSICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Basics of wireline logging and logging while drilling including borehole environment, resistivity, radiation, thermal, and elastic wave measurements and measuring tools. Building from this introduction, basic interpretation of logging data and formation evaluation will be studied. Graduate/Undergraduate Equivalency: ESCI 436. Mutually Exclusive: Credit cannot be earned for ESCI 636 and ESCI 436.

ESCI 640 - GEOPHYSICAL DATA ANALYSIS: DIGITAL SIGNAL PROCESSING
Short Title: GEOPHYSICAL DATA ANALYSIS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Data sampling, aliasing, discrete Fourier transform, digital filter design techniques, z-transform, and discrete Hilbert transform are introduced. Deconvolution, velocity filters, polarization filter, stacking, beam forming and migration techniques will be taught together with their application in geophysical studies. Graduate/Undergraduate Equivalency: ESCI 440. Mutually Exclusive: Credit cannot be earned for ESCI 640 and ESCI 440.

ESCI 641 - GEOPHYSICAL DATA ANALYSIS: INVERSE METHODS
Short Title: GEOPHYSICAL DATA ANALYSIS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of linear algebra and probability. Data fitting, model parameter estimation, inverse theory, linear and nonlinear methods, and global optimization. Graduate/Undergraduate Equivalency: ESCI 441. Mutually Exclusive: Credit cannot be earned for ESCI 641 and ESCI 441.

ESCI 642 - EXPLORATION GEOPHYSICS
Short Title: EXPLORATION GEOPHYSICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the principles and procedures involved in geophysical exploration. Includes acquisition, processing, and interpretation of seismic, ground-penetrating radar, gravity, magnetic, and electrical data. Graduate/Undergraduate Equivalency: ESCI 442. Mutually Exclusive: Credit cannot be earned for ESCI 642 and ESCI 442.

ESCI 643 - TOPICS IN GEOMATHEMATICS
Short Title: TOPICS IN GEOMATHEMATICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Content varies from year to year. Instructor Permission Required. Cross-list: CAAM 643. Recommended Prerequisite(s): CAAM 335 and CAAM 336 Repeatable for Credit.

ESCI 650 - REMOTE SENSING
Short Title: REMOTE SENSING
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to electromagnetic remote sensing of the Earth and other planets using passive and active methods. The course includes a computer lab component involving processing and interpretation of remote sensing imagery, and an individual project. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 450. Mutually Exclusive: Credit cannot be earned for ESCI 650 and ESCI 450.

ESCI 652 - GIS FOR SCIENTISTS AND ENGINEERS
Short Title: GIS FOR SCIENTISTS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Basic principles of Geographic Information Systems, with a focus on effectively applying the technology to the geosciences. Main platform of the class will be Esri's ArcGIS, but a wide array of other tools will also be introduced. Material will be delivered via a blend of lecture and hands-on exercises. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 452. Mutually Exclusive: Credit cannot be earned for ESCI 652 and ESCI 452.

ESCI 654 - GEOGRAPHIC INFORMATION SCIENCE
Short Title: GEOGRAPHIC INFORMATION SCIENCE
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Basic principles of Geographic Information Systems, with a focus on effectively applying the technology to the geosciences. Main platform of the class will be Esri's ArcGIS, but a wide array of other tools will also be introduced. Material will be delivered via a blend of lecture and hands-on exercises. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 454. Mutually Exclusive: Credit cannot be earned for ESCI 654 and ESCI 454.
ESCI 656 - PLANETARY VOLCANISM
Short Title: PLANETARY VOLCANISM
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will cover the broad range of volcanic phenomena in the solar system, via weekly readings of, and student presentations on, classic and recent papers. Topics include: Composition (basaltic, silicic, unusual, carbonatite), cryovolcanism, structure (caldera, rift zones, volcanic spreading radiating dike systems, magma chambers, and sill complexes), and dynamics (eruption mechanism, effusive vs. explosive, volatiles and atmospheres/oceans). The planetary settings to be considered include Earth, Venu, Mars, Mercury, Moon, large asteroids and outer planet satellites. Graduate/Undergraduate Equivalency: ESCI 456. Mutually Exclusive: Credit cannot be earned for ESCI 656 and ESCI 456.

ESCI 660 - GEOLOGICAL AND GEOPHYSICAL FLUID DYNAMICS
Short Title: GEOL & GEOPHYS FLUID DYNAMICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced course in the foundations of fluid mechanics and its application to Earth science. Aspects of continuum mechanics, heat and mass transfer, and the rheologic behavior of materials will be covered in developing the fundamental laws that describe fluid motion. Applications include atmospheric dynamics, mantle and lithospheric dynamics, and geohydrology. Graduate/Undergraduate Equivalency: ESCI 460. Mutually Exclusive: Credit cannot be earned for ESCI 660 and ESCI 460.

ESCI 661 - SEISMOLOGY I
Short Title: SEISMOLOGY I
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Principles of elastic wave propagation, the determination of Earth structure, and the understanding of earthquake physics. Graduate/Undergraduate Equivalency: ESCI 461. Mutually Exclusive: Credit cannot be earned for ESCI 661 and ESCI 461.

ESCI 662 - TECTONOPHYSICS
Short Title: TECTONOPHYSICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Applications of continuum physics to the deformation, flexure, heat transfer, and gravity field of the lithosphere. Graduate/Undergraduate Equivalency: ESCI 462. Mutually Exclusive: Credit cannot be earned for ESCI 662 and ESCI 462.

ESCI 663 - STRUCTURE AND EVOLUTION OF TECTONIC SYSTEMS
Short Title: TECTONIC SYSTEMS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The distribution, origin, and evolution of various tectonic systems, and characterization of their structural and geophysical signatures, emphasizing crustal and lithospheric processes associated with tectonic deformation. Review of representative global examples of convergent and collisional margins, divergent and passive margins, and transform margins. Graduate/Undergraduate Equivalency: ESCI 463. Mutually Exclusive: Credit cannot be earned for ESCI 663 and ESCI 463.

ESCI 664 - GLOBAL TECTONICS
Short Title: GLOBAL TECTONICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Geometrical aspects of plate tectonics, the 3 traditional types of plate boundaries, instantaneous plate motions, earthquakes and faulting, space geodesy, geomagnetic reversals, paleomagnetic poles, hotspots, "absolute" plate motion, true polar wander, driving forces, diffuse plate boundaries, plate nonrigidity, and rheology of the lithosphere. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 464. Mutually Exclusive: Credit cannot be earned for ESCI 664 and ESCI 464.

ESCI 667 - GEOMECHANICS
Short Title: GEOMECHANICS
Department: Earth/Environmnt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An examination of deformation and failure processes within the Earth’s shallow crust, with a focus on rock and sediment mechanics, and associated fluid processes. Emphasis will be on geologic applications, including sediment consolidation, slope stability, fault mechanics, and earthquake nucleation and rupture. Graduate/Undergraduate Equivalency: ESCI 467. Mutually Exclusive: Credit cannot be earned for ESCI 667 and ESCI 467.
ESCI 671 - EARTH SYSTEMS MODELING I: PHILOSOPHY AND FUNDAMENTALS
Short Title: EARTH SYSTEMS MODELING I
Department: Earth/Environmmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A model is a simplified representation of something. Scientific models range from conceptual to physical to mathematical. In Earth and planetary science, one is often concerned with modeling interactions between physical, chemical, and biological components, i.e., with modeling systems. This class will cover the fundamentals of scientific modeling with a focus on Earth systems. Graduate/Undergraduate Equivalency: ESCI 471. Mutually Exclusive: Credit cannot be earned for ESCI 671 and ESCI 471. Repeatable for Credit.

ESCI 672 - EARTH SYSTEMS MODELING: NUMERICAL TECHNIQUES AND APPLICATIONS
Short Title: NUMERICAL METHODS EARTH SYSTEM
Department: Earth/Environmmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to numerical methods with applications in Earth Science using Matlab and COMSOL. Much of the class is spent in the computer lab learning Matlab and COMSOL, followed by hands-on exercises. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 472. Repeatable for Credit.

ESCI 699 - GRAPHIC AND VISUAL DESIGN FOR SCIENTISTS
Short Title: VISUAL DESIGN FOR SCIENTISTS
Department: Earth/Environmmt/Planetary Sci
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A significant portion of a scientists time is spent solving visual design problems (graphics for papers, visual layouts for seminars, posters, teaching). Effective communication of scientific information is part of a scientist's skill set. This class is designed to enhance that skill set in terms of presenting visual information clearly, simply, and effectively. Instructor Permission Required. Graduate/Undergraduate Equivalency: ESCI 499. Mutually Exclusive: Credit cannot be earned for ESCI 699 and ESCI 499. Repeatable for Credit.

ESCI 800 - THESIS RESEARCH
Short Title: THESIS RESEARCH
Department: Earth/Environmmt/Planetary Sci
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Recommended Prerequisite(s): Students must pass the preliminary exam before taking this course. Repeatable for Credit.

Ecology & Evolutionary Biology (EBIO)

EBIO 113 - ENVIRONMENTAL CRISIS SEMINAR
Short Title: ENVIRONMENTAL CRISIS SEMINAR
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group III
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Discussion of environmental crises. Topics vary annually. Cross-list: ENST 113, ESCI 113. Repeatable for Credit.

EBIO 116 - FRESHMAN SEMINAR ON LOCAL BIOLOGY RESEARCH (EEB)
Short Title: FRESHMAN BIOLOGY SEMINAR (EEB)
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group III
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A 7-week seminar course to introduce freshmen prospective biologists to the excitement of research at Rice and the Medical Center and to provide context with which to think about facts presented in biosciences textbooks. Small groups will meet weekly with a graduate student or postdoctoral researcher to explore a published research article by a local lab, gaining background information about the subject and exposure to the research techniques. In the final session, the group will tour the lab that produced the featured article. Additional tours and activities TBA. All first-year, non-transfer students are eligible to enroll in EBIO 116/FSEM 116 regardless of AP credit. This course meets in the first half of the semester and features research in the Program of Ecology and Environmental Biology. Cross-list: FSEM 116.

EBIO 124 - INTRODUCTION TO ECOLOGY AND EVOLUTIONARY BIOLOGY
Short Title: INTRO TO EEB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course provides a short introduction to the science of ecology and evolutionary biology. The topics covered include the mechanisms of evolution, the origin of species, the history of life on earth, biodiversity, animal behavior, population and community ecology, ecosystems, and conservation biology.
EBIO 202 - INTRODUCTORY BIOLOGY II
Short Title: INTRODUCTORY BIOLOGY II
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): BIOL 201
Description: The second in a series of two introductory biology courses (BIOL 201, EBIO 202). This course examines the diversity of life, comparative animal physiology, evolution, ecology, and conservation. An emphasis is placed on evolution as a central framework necessary for a complete understanding of modern biology. Group discussions allow students to explore topics in more detail and discover how they are relevant to our everyday lives.

EBIO 204 - ENVIRONMENTAL SUSTAINABILITY: THE DESIGN & PRACTICE OF COMMUNITY AGRICULTURE
Short Title: COMMUNITY GARDEN
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The course introduces the fundamentals of community garden design and practice. Responsibilities will center on developing and improving the Rice Community Garden. A strong emphasis will be on learning and applying ecological principles to the practice of community agriculture. Class has required meetings outside of regular class time. Cross-list: ENST 204. Repeatable for Credit.

EBIO 213 - INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY
Short Title: INTRO EXP ECOL & EVOL BIOL
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Experimental, laboratory, and field studies of natural history, ecology, evolution, and animal behavior. Class has required meetings outside of regular class time.

EBIO 215 - BIOS LAB TEACHING
Short Title: BIOS LAB TEACHING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Undergraduate teaching in a biosciences laboratory. Participate in meetings and selected seminars; supervise students in one or more laboratory sections. Provide group and individual instruction to undergraduates during and outside of laboratory classes. Instructor Permission Required. Repeatable for Credit.

EBIO 216 - DISCUSSION SECTION TEACHING
Short Title: DISCUSSION SECTION TEACHING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, undergraduates who have previously excelled in EBIO courses will develop teaching skills by leading discussion sections for the benefit of students presently taking EBIO courses under the guidance of the professor teaching the course. Instructor Permission Required.

EBIO 270 - ECOSYSTEM MANAGEMENT
Short Title: ECOSYSTEM MANAGEMENT
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will focus on applied ecosystem topics including relations with state and federal agencies, filed studies, wetland delineations, permitting compliance, and environmental regulations. Graduate/Undergraduate Equivalency: EBIO 570. Mutually Exclusive: Credit cannot be earned for EBIO 270 and EBIO 570.

EBIO 280 - SUSTAINABILITY DEVELOPMENT AND REPORTING
Short Title: SUSTAINABILITY DEVELOPMENT
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Sustainable development is an approach to development based on interacting social, economic, and environmental forces. It is intended as methodology for planning, and a guiding principle for Environmental Health and safety compliance (EHSs) and Corporate Sustainability (CSRs). Students will learn compliance guidelines, risk management, and assessment considerations. Graduate/Undergraduate Equivalency: EBIO 580. Mutually Exclusive: Credit cannot be earned for EBIO 280 and EBIO 580.

EBIO 306 - INDEPENDENT RESEARCH FOR ECOLOGY & EVOLUTIONARY BIOLOGY UNDERGRADUATES
Short Title: EEB UNDERGRADUATES IND RES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOL 213
Description: Program of independent research for students with previous training in the biosciences. Includes a research paper. Students are expected to spend at least three hours per week in the laboratory for each semester hour of credit. If receiving two or more credits, students will be required to participate in the university annual undergraduate symposium in the spring semesters. Instructor Permission Required. Repeatable for Credit.
EBIO 316 - LAB MODULE IN ECOLOGY
Short Title: LAB MODULE IN ECOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 323 or EBIO 325
Description: Field and lab experiments in ecology. Class has required meetings outside of regular class time.

EBIO 317 - LAB MODULE IN BEHAVIOR
Short Title: LAB MODULE IN BEHAVIOR
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 321 and EBIO 213
Description: Field experiments in behavior. Learn to formulate and test hypotheses on bird behavior using mockingbirds, grackles, and herons nesting on campus. Class has required meetings outside of regular class time.

EBIO 319 - TROPICAL FIELD BIOLOGY
Short Title: TROPICAL FIELD BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Distribution Group: Distribution Group III
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examine first-hand the two most diverse ecosystems on earth - the coral reef and the tropical rainforest in this 2-week summer course in the Central American country of Belize. Topics will include the diversity of tropical organisms and habitats, the formation of coral reefs, rainforest ecology, historical biogeography, symbiosis, and conservation of tropical biodiversity. While a background in biology is desirable, individuals lacking this background but having a special interest in the tropics are encouraged to enroll. Students will be responsible for their own transportation and accommodation cost (exact price TBD). Instructor Permission Required.

EBIO 320 - ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY
Short Title: BRAZILIAN WETLANDS LAB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course consists of a 2-week trip to Brazil to examine first-hand the ecology of the largest wetland ecosystem on earth - the Pantanal. Days will be spent in the field making observations and collecting data; lectures in the evenings will cover topics including freshwater ecology, seasonal flooding dynamics, community ecology of wetland species, symbiosis, geology, environmental management, ecotourism, and conservation biology. Recommended Prerequisite(s): EBIO 213

EBIO 321 - ANIMAL BEHAVIOR
Short Title: ANIMAL BEHAVIOR
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202
Description: Evolutionary theory is used to evaluate behavioral adaptations of organisms to their environment.

EBIO 323 - CONSERVATION BIOLOGY
Short Title: CONSERVATION BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202
Description: The course is designed to give students a broad overview of conservation biology. Lecture and discussions will focus on conservation issues such as biodiversity, extinction, management, sustained yield, invasive species and preserve design. Cross-list: ENST 323. Graduate/Undergraduate Equivalency: EBIO 523. Mutually Exclusive: Credit cannot be earned for EBIO 323 and EBIO 523.
EBIO 324 - CONSERVATION BIOLOGY LAB  
**Short Title:** CONSERVATION BIOLOGY LAB  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Laboratory  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** EBIO 213 and EBIO 323 (may be taken concurrently)  
**Description:** This course will give students hands-on experiences in the practice of conservation biology through authentic projects related to prioritization and design of nature preserves, restoration of natural environments, and for monitoring threatened and endangered species in the Houston area. EBIO 323 may be taken concurrently with EBIO 324. Graduate/Undergraduate Equivalency: EBIO 524. Mutually Exclusive: Credit cannot be earned for EBIO 324 and EBIO 524.

EBIO 325 - ECOLOGY  
**Short Title:** ECOLOGY  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** BIOC 201 and EBIO 202  
**Description:** Study of population dynamics, species interactions, plant and animal community organization, and ecosystem function. Graduate/Undergraduate Equivalency: EBIO 525. Mutually Exclusive: Credit cannot be earned for EBIO 325 and EBIO 525.

EBIO 326 - INSECT BIOLOGY  
**Short Title:** INSECT BIOLOGY  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** BIOC 201 and EBIO 202  
**Description:** This course addresses contemporary issues in ecology and evolution through the lens of insect diversity. Readings span a broad literature (popular to technical). Writing and oral reports develop proficiency in scientific communication.

EBIO 327 - BIOLOGICAL DIVERSITY  
**Short Title:** BIOLOGICAL DIVERSITY  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** BIOC 201 and EBIO 202 and EBIO 213  
**Description:** The lecture/laboratory course in field ecology focuses on the theory and practice of estimating biodiversity. The goals are to acquaint students with basic techniques for field sampling and quantifying biodiversity as well as some aspects of the natural history of south and east Texas. These will be accomplished through four field trips during the first half of the semester and an independent research project to be completed by the end of the semester. Class has required meetings outside of regular class time.

EBIO 328 - EVOLUTION OF GENES & GENOMES  
**Short Title:** EVOLUTION OF GENES & GENOMES  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** BIOC 201 and EBIO 202  
**Description:** The course provides an overview of the evolution of genes and genomes. Using many examples, the course introduces databases and the Worldwide Web, and molecular and statistical methods used to study the evolution of genes and genomes. Broad-scale evolutionary patterns and medical applications based on genome analyses are presented.

EBIO 329 - ANIMAL BIOLOGY AND PHYSIOLOGY  
**Short Title:** ANIMAL BIOLOGY AND PHYSIOLOGY  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** BIOC 201 or EBIO 202  
**Description:** The evolution and systematics of the animal kingdom with consideration of functional anatomy, comparative physiology, behavior, medical implications and resource management. Cross-list: BIOC 329. Graduate/Undergraduate Equivalency: EBIO 529. Mutually Exclusive: Credit cannot be earned for EBIO 329 and EBIO 529.

EBIO 330 - INSECT BIOLOGY LAB  
**Short Title:** INSECT BIOLOGY LAB  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** BIOC 201 and EBIO 202 and EBIO 213  
**Description:** Lectures will address contemporary issues in ecology and evolution through the lens of insect diversity. Labs will provide hands-on experiences with collection and curation of insects.

EBIO 331 - BIOLOGY OF INFECTIOUS DISEASES  
**Short Title:** BIOLOGY OF INFECTIOUS DISEASES  
**Department:** Biosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** EBIO 213  
**Description:** This course gives a broad overview of the biology of infectious diseases using examples from humans, plants, and animals. Topics include diversity of diseases, mechanisms of disease transmission, epidemiology, population regulation, evolution of virulence, disease dynamics in natural communities and disease invasion and conservation biology. Cross-list: BIOC 331.
EBIO 332 - EVOLUTION OF GENES & GENOMES LAB
Short Title: EVOLUTION GENES & GENOMES LAB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 328
Description: The laboratory course is designed to demonstrate concepts and approaches introduced in the lecture course EBIO 328. The text book remains the same, but the course will heavily rely on the computational exercises provided in the text (called Weblems). Students will be shown how to conduct analysis of sequence data, search databases, literature, and how to synthesize such data. Students will conduct their own projects, some suggested by the text, some by the instructor, some perhaps ideas of their own. Students present and defend their results in writing and in form of presentations and posters. The course would be useful for graduate student education, with added requirements for graduate students.

EBIO 333 - EVOLUTIONARY BIOINFORMATICS
Short Title: EVOLUTIONARY BIOINFORMATICS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 328
Description: The laboratory course is designed to demonstrate concepts and approaches introduced in the lecture course EBIO 328. The text book remains the same, but the course will heavily rely on the computational exercises provided in the text (called Weblems). Students will be shown how to conduct analysis of sequence data, search databases, literature, and how to synthesize such data. Students will conduct their own projects, some suggested by the text, some by the instructor, some perhaps ideas of their own. Students present and defend their results in writing and in form of presentations and posters. The course would be useful for graduate student education, with added requirements for graduate students.

EBIO 334 - EVOLUTION
Short Title: EVOLUTION
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 202
Description: Principles of biological evolution. Topics include natural selection, adaptation, molecular evolution, formation of new species, the fossil record, biogeography, and principles of classification. Cross-list: BIOC 334.

EBIO 335 - EVOLUTIONARY BIOINFORMATICS LAB
Short Title: EVOLUTION BIOINFORMATICS LAB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 333 (may be taken concurrently) or COMP 370 (may be taken concurrently)
Description: Computer lab section for Evolutionary Bioinformatics. Students must enroll in EBIO 333.

EBIO 336 - PLANT DIVERSITY
Short Title: PLANT DIVERSITY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 202
Description: The evolution, systematics, and ecology of plants, with emphasis on flowering plants and biodiversity.

EBIO 337 - FIELD BIRD BIOLOGY LAB
Short Title: FIELD BIRD BIOLOGY LAB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Distribution Group: Distribution Group III
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 213
Description: This course centers on a series of five field trips to diverse habitats for observing birds both immigrants and residents. Each will be preceded by a lecture and students will do two projects. Class has required meetings outside of regular class time.

EBIO 338 - DESIGN AND ANALYSIS OF BIOLOGICAL EXPERIMENTS
Short Title: DESIGN & ANALYSIS OF BIOL EXP
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 213
Description: This course addresses how to set up and how to draw conclusions from biological experiments. It introduces basic theories in statistics, interwoven with data analysis using software packages. Students will learn to design statistically sound data collection in observational or experimental studies. To answer given research questions, students will choose among modern statistical tools and analyze data using software. Students will also learn to effectively present results using statistical graphics. This class particularly focuses on ecological and environmental data.
EBIO 340 - GLOBAL BIOGEOCHEMICAL CYCLES
Short Title: GLOBAL BIOGEOCHEMICAL CYCLES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to the coupled nature of the biosphere, atmosphere and hydrosphere using as focal points elemental cycles such as those of carbon and nitrogen. This is a writing-intensive class, and will include 3 required Saturday field trips. Cross-list: ENST 340, ESCI 340. Graduate/Undergraduate Equivalency: EBIO 540. Mutually Exclusive: Credit cannot be earned for EBIO 340 and EBIO 540.

EBIO 365 - INTRODUCTORY PHYCOLOGY
Short Title: INTRODUCTORY PHYCOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202
Description: This course provides an overview of the biology of algae including their physiology, taxonomy, biochemistry, and ecology. Students will study the role of algae in different environments, their importance as primary producers, and their economic value.

EBIO 366 - APPLIED PHYCOLOGY
Short Title: APPLIED PHYCOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202
Description: This course provides an overview of methods of algal strain selection and cultivation for food, fodder, fertilizers, biofuels, pharmaceuticals, and cosmetics. Graduate/Undergraduate Equivalency: EBIO 566. Mutually Exclusive: Credit cannot be earned for EBIO 340 and EBIO 540.

EBIO 367 - INTRODUCTION PHYCOLOGY LAB
Short Title: INTRODUCTION PHYCOLOGY LAB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202
Corequisite: EBIO 365
Description: This lab course provides an introduction to techniques of isolation, culturing, measuring of growth and identification of algae.

EBIO 368 - APPLIED PHYCOLOGY LAB
Short Title: APPLIED PHYCOLOGY LAB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202
Corequisite: EBIO 366
Description: In this course students will learn methods of algal strain selection and mass cultivation together with analyses of algal characteristics including their lipid composition, enzymes and pigments.

EBIO 372 - CORAL REEF ECOSYSTEMS
Short Title: CORAL REEF ECOSYSTEMS
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): EBIO 213 and LPAP 194
Description: This three credit lecture course introduces students to a complex, dynamic and sensitive ecosystem: coral reefs. We will explore the biotic and abiotic components of coral reefs; how reef organisms interact with each other and the environment, and the factors that contribute to reef construction and decline over time and space. Graduate/Undergraduate Equivalency: EBIO 572. Mutually Exclusive: Credit cannot be earned for EBIO 372 and EBIO 572.

EBIO 379 - LAB MODULE IN AQUATIC ECOCOLOGY WITH SCUBA
Short Title: LAB MOD AQU ECOLOGY WITH SCUBA
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students will learn some fundamentals of aquatic ecosystems and conduct lab exercises that involve SCUB-based fieldwork in a nationally recognized freshwater dive site. Course has required meetings outside of regular class time. Prerequisites: LPAP 194 or proof of Open Water Scuba certification from a professional organization (e.g., PADI, NAUI). A course fee ranging from $300 to $535 is associated with the class. Please send all enrollment requests to Mariah McClarty, mam22@rice.edu and include the following information: major, year, scuba certification level and issuing professional organization, and a brief statement about why you want to take the course. You will be notified of enrollment decisions by December 5th. Department Permission Required. Cross-list: ENST 379. Graduate/Undergraduate Equivalency: EBIO 579. Recommended Prerequisite(s): EBIO 213 and LPAP 194. Mutually Exclusive: Credit cannot be earned for EBIO 379 and EBIO 579.
| Course Code | Course Title                                      | Short Title                     | Department         | Grade Mode     | Course Type   | Credit Hours | Restrictions                                      | Course Level                                      | Description                                                                 | Prerequisite(s)                | Grade Mode     | Course Type   |
|-------------|--------------------------------------------------|---------------------------------|--------------------|---------------|---------------|---------------|--------------|--------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------|-----------------------------|---------------|---------------|
| EBIO 391    | TRANSFER CREDIT IN ECOLOGY AND EVOLUTIONARY BIOLOGY | TRN CREDIT ECOL&EVOLUTION       | Biosciences        | Standard Letter| Transfer      | 3             | Graduate level students may not enroll.          | Undergraduate Upper-Level                    | For transfer of courses which have no current equivalent in the Rice curriculum, but which can be counted as Group B Biosciences courses in satisfying requirements for majors in the Biosciences. Repeatable for Credit. | (BIOC 201 and EBIO 202)        | Standard Letter| Transfer      |
| EBIO 393    | LABORATORY TRANSFER CREDIT IN BIOSCIENCES        | LAB TRANSFER CREDIT             | Biosciences        | Standard Letter| Transfer      | 1             | Graduate level students may not enroll.          | Undergraduate Upper-Level                    | For transfer of an advanced laboratory course in the biosciences that has no current equivalent in the Rice Biosciences curriculum. Any student may receive a maximum of one credit of EBIO 393. |                                                           | Standard Letter| Transfer      |
| EBIO 403    | UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY | UNDERGRADUATE HONORS RESEARCH | Biosciences        | Standard Letter| Research      | 5             | Graduate level students may not enroll.          | Undergraduate Upper-Level                    | Prerequisite(s): Graduate Status or current enrollment in EBIO 403/404 implies a commitment to participate in research for at least 2 semesters. Department Permission Required. | (BIOC 201 and EBIO 202)        | Standard Letter| Research      |
| EBIO 404    | UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY | UNDERGRADUATE HONORS RESEARCH | Biosciences        | Standard Letter| Research      | 5             | Graduate level students may not enroll.          | Undergraduate Upper-Level                    | Prerequisite(s): Graduate Status or current enrollment in EBIO 403/404 implies a commitment to participate in research for at least 2 semesters. Department Permission Required. | (BIOC 201 and EBIO 202)        | Standard Letter| Research      |
| EBIO 412    | ADVANCED COMMUNICATION IN THE BIOLOGICAL SCIENCES | ADV COMMUNICATION IN BIOL SCI   | Biosciences        | Standard Letter| Seminar       | 2             | Graduate level students may not enroll.          | Undergraduate Upper-Level                    | Intended primarily for seniors majoring in the biological sciences, this course will focus on improving students' written and oral communication skills. Emphasis will be placed on communication of scientific topics for audiences ranging from experts to the general public through weekly assignments. Instructor Permission Required. Repeatable for Credit. |                                                           | Graduate Status or current enrollment in EBIO 403/404 implies a commitment to participate in research for at least 2 semesters. Department Permission Required. | Standard Letter| Seminar       |
| EBIO 433    | ADVANCED ECOLOGY                                  | ADVANCED ECOLOGY                | Biosciences        | Standard Letter| Lecture       | 3             | Graduate level students may not enroll.          | Undergraduate Upper-Level                    | Students will develop a critical understanding of the discipline of ecology through a combination of lectures and discussion that span a range of topics. With the instructor's help, students will use current papers to stimulate debate on the theories, philosophies and methods of the study of populations, communities, and ecosystems. Instructor Permission Required. | (BIOC 201 and EBIO 202)        | Standard Letter| Lecture       |
| EBIO 520    | STUDENT SEMINAR IN ECOLOGY AND EVOLUTIONARY BIOLOGY | STUDENT SEMINAR IN EEB          | Biosciences        | Standard Letter| Seminar       | 1             | Enrollment is limited to Graduate level students. | Graduate                                      | Recommended Prerequisite(s): Graduate Status or current enrollment in EBIO 403/404 implies a commitment to participate in research for at least 2 semesters. Department Permission Required. |                                                           | Graduate Status or current enrollment in EBIO 403/404 implies a commitment to participate in research for at least 2 semesters. Department Permission Required. | Standard Letter| Seminar       |
| EBIO 523    | CONSERVATION BIOLOGY                             | CONSERVATION BIOLOGY            | Biosciences        | Standard Letter| Lecture       | 3             | Enrollment is limited to Graduate level students. | Graduate                                      | The course is designed to give students a broad overview of conservation biology. Lecture and discussions will focus on conservation issues such as biodiversity, extinction, management, sustained yield, invasive species and preserve design. Prerequisite(s): (BIOC 201 and EBIO 202) | (BIOC 201 and EBIO 202)        | Graduate Status or current enrollment in EBIO 523 implies a commitment to participate in research for at least 2 semesters. Department Permission Required. | Standard Letter| Lecture       |
EBIO 524 - CONSERVATION BIOLOGY LAB
Short Title: CONSERVATION BIOLOGY LAB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (EBIO 213 and EBIO 323 (may be taken concurrently))
Description: This course will give students hands-on experiences in the practice of conservation biology through authentic projects related to prioritization and design of nature preserves, restoration of natural environments, and for monitoring threatened and endangered species in the Houston area. Graduate/Undergraduate Equivalency: EBIO 324. Mutually Exclusive: Credit cannot be earned for EBIO 524 and EBIO 324.

EBIO 525 - ECOLOGY
Short Title: ECOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 201 and EBIO 202
Description: Study of population dynamics, species interactions, plant and animal community organization, and ecosystem function. Graduate/Undergraduate Equivalency: EBIO 325. Mutually Exclusive: Credit cannot be earned for EBIO 525 and EBIO 325.

EBIO 529 - ANIMAL BIOLOGY AND PHYSIOLOGY
Short Title: ANIMAL BIOLOGY AND PHYSIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): BIOC 201 or EBIO 202
Description: The evolution and systematics of the animal kingdom with consideration of functional anatomy, comparative physiology, behavior, medical implications and resource management. Graduate/Undergraduate Equivalency: EBIO 329. Mutually Exclusive: Credit cannot be earned for EBIO 529 and BIOC 329/EBIO 329.

EBIO 540 - GLOBAL BIOGEOCHEMICAL CYCLES
Short Title: GLOBAL BIOGEOCHEMICAL CYCLES
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces students to the coupled nature of the biosphere, atmosphere and hydrosphere using as focal points elemental cycles such as those of carbon and nitrogen. This is a writing-intensive class, and will include 3 required Saturday field trips. Graduate/Undergraduate Equivalency: EBIO 340. Mutually Exclusive: Credit cannot be earned for EBIO 540 and EBIO 340.

EBIO 541 - RESEARCH SEMINAR IN ECOLOGY AND EVOLUTIONARY BIOLOGY
Short Title: RESEARCH SEMINAR
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

EBIO 542 - RESEARCH SEMINAR IN ECOLOGY AND EVOLUTIONARY BIOLOGY
Short Title: RESEARCH SEMINAR
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

EBIO 545 - CURRENT TOPICS IN WOLF CONSERVATION
Short Title: WOLF CONSERVATION
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will provide an overview of the biology of wolves, their effects on ecosystems, the history of their management, and the current state of their conservation in the United States. Instructor Permission Required.

EBIO 550 - ENVIRONMENTAL IMPACT STATEMENTS AND PERMITTING
Short Title: EIS AND PERMITTING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is an exciting review of the methodologies involved in conduction Environmental Impact Statements for project Permitting under the National Environmental Policy Act (NEPA). EISs have to be conducted before permitting is secured for large infrastructure projects, such as power plants, highways, pipelines, dams, mines, airports, incinerators and landfills. Department Permission Required.

EBIO 560 - ENVIRONMENTAL IMPACT STATEMENTS AND PERMITTING
Short Title: EIS AND PERMITTING
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is an exciting review of the methodologies involved in conduction Environmental Impact Statements for project Permitting under the National Environmental Policy Act (NEPA). EISs have to be conducted before permitting is secured for large infrastructure projects, such as power plants, highways, pipelines, dams, mines, airports, incinerators and landfills. Department Permission Required.

EBIO 561 - TOPICS IN EVOLUTION
Short Title: TOPICS IN EVOLUTION
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review and discussion of the literature on current research in evolution. Repeatable for Credit.
EBIO 562 - TOPICS IN BEHAVIORAL BIOLOGY
Short Title: TOPICS IN BEHAVIORAL BIOLOGY  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Review and discussion of the literature on current research in animal behavior and evolution. Recommended prerequisite(s): Graduate standing or permission of chair or instructor. Repeatable for Credit.

EBIO 563 - TOPICS IN ECOLOGY  
Short Title: TOPICS IN ECOLOGY  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hour: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Review and discussion of the literature on current research in ecology. Repeatable for Credit.

EBIO 566 - APPLIED PHYCOLOGY  
Short Title: APPLIED PHYCOLOGY  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hour: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Review and discussion of the literature on current research in algal strain selection and cultivation for food, fodder, fertilizers, biofuels, pharmaceuticals, and cosmetics. Graduate/Undergraduate Equivalency: EEB 366. Mutually Exclusive: Credit cannot be earned for EBIO 566 and EBIO 366.

EBIO 567 - ECOSYSTEM MANAGEMENT  
Short Title: ECOSYSTEM MANAGEMENT  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will focus on applied ecosystem topics including relations with state and federal agencies, field studies, wetland delineations, permitting compliance, and environmental regulations. Graduate/Undergraduate Equivalency: EBIO 270. Mutually Exclusive: Credit cannot be earned for EBIO 570 and EBIO 270.

EBIO 569 - CORE COURSE IN ECOLOGY AND EVOLUTIONARY BIOLOGY  
Short Title: CORE COURSE IN ECOLOGY & EVOL  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Survey of topics in ecology and evolution taught by all EEB faculty.

EBIO 570 - ECOSYSTEM MANAGEMENT  
Short Title: ECOSYSTEM MANAGEMENT  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will focus on applied ecosystem topics including relations with state and federal agencies, field studies, wetland delineations, permitting compliance, and environmental regulations. Graduate/Undergraduate Equivalency: EBIO 270. Mutually Exclusive: Credit cannot be earned for EBIO 570 and EBIO 270.

EBIO 572 - CORAL REEF ECO SYSTEMS  
Short Title: CORAL REEF ECOSYSTEMS  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): EBIO 202  
Description: This three credit lecture course introduces students to a complex, dynamic and sensitive ecosystem: coral reefs. We will explore the biotic and abiotic components of coral reefs; how reef organisms interact with each other and the environment, and the factors that contribute to reef construction and decline over time and space. Graduate/Undergraduate Equivalency: EBIO 372. Mutually Exclusive: Credit cannot be earned for EBIO 572 and EBIO 372.

EBIO 579 - LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA  
Short Title: LAB MOD AQU ECOLOGY WITH SCUBA  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course provides an overview of methods of algal strain selection and cultivation for food, fodder, fertilizers, biofuels, pharmaceuticals, and cosmetics. Graduate/Undergraduate Equivalency: EEB 366. Mutually Exclusive: Credit cannot be earned for EBIO 566 and EBIO 366.

EBIO 580 - TOPICS IN BIOLOGICAL DIVERSITY  
Short Title: TOPICS IN BIOLOGICAL DIVERSITY  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Review and discussion of the literature on current research in biological diversity. Repeatable for Credit.

EBIO 581 - NEUROSCIENCE  
Short Title: NEUROSCIENCE  
Department: Biosciences  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This three credit lecture course introduces students to the fundamental principles of neuroscience, including structure and function of the nervous system, and the role of the nervous system in behavior and perception. Graduate/Undergraduate Equivalency: EEB 381. Mutually Exclusive: Credit cannot be earned for EBIO 581 and EEB 381.
EBIO 580 - SUSTAINABILITY DEVELOPMENT AND REPORTING
Short Title: SUSTAINABILITY DEVELOPMENT
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Sustainable development is an approach to development based on interacting social, economic, and environmental forces. It is intended as methodology for planning, and a guiding principle for Environmental Health and safety compliance (EHSs) and Corporate Sustainability (CSRs). Students will learn compliance guidelines, risk management, and assessment considerations. Graduate/Undergraduate Equivalency: EBIO 280. Mutually Exclusive: Credit cannot be earned for EBIO 580 and EBIO 280/EBIO 480.

EBIO 581 - EEB OUTREACH DEVELOPMENT
Short Title: EEB OUTREACH DEVELOPMENT
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is for Rice students interested in developing life science outreach initiatives that target underserved K-12 students in the Houston area. Goals of the course include developing hands-on teaching modules related to Texas science education standards and expanding graduate student teaching experiences beyond the University setting.

EBIO 585 - GRADUATE SEMINAR IN ECOLOGY AND EVOLUTIONARY BIOLOGY
Short Title: GRAD SEM IN ECOL & EVOL BIOL
Department: Biosciences
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Faculty and student presentations on current research. Required of all Ecology & Evolutionary Biology graduate students. Repeatable for Credit.

EBIO 586 - GRADUATE SEMINAR/ECOLOGY AND EVOLUTIONARY BIOLOGY
Short Title: GRAD SEM: ECOL & EVOL BIOLOGY
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of EBIO 585. Repeatable for Credit.

EBIO 591 - GRADUATE TEACHING IN ECOLOGY AND EVOLUTIONARY BIOLOGY
Short Title: GRADUATE TEACHING IN EEB
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

EBIO 801 - EEB GRADUATE RESEARCH
Short Title: EEB GRADUATE RESEARCH
Department: Biosciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

Economics (ECON)

ECON 100 - PRINCIPLES OF ECONOMICS
Short Title: PRINCIPLES OF ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the basic concepts of microeconomics and macroeconomics. Microeconomics component includes analysis of supply and demand, consumer and producer behavior, and competitive and noncompetitive market equilibria, with applications to current policy issues. Macroeconomics component provides an overview of the determination of national output, employment, interest rates, and inflation, and analyzes monetary fiscal policies and international trade. Designed for both non-majors and majors. Mutually Exclusive: Credit cannot be earned for ECON 100 and ECON 201/ECON 211.

ECON 101 - INTRODUCTION TO MICROECONOMICS
Short Title: INTRODUCTION TO MICROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to microeconomic analysis at a level suitable for non-majors. Applies only for transfer credit and requires departmental approval. Approved credit counts toward total credit hours required for graduation and for distribution, but does not count toward the ECON or MTEC majors. Students may not receive credit for ECON 101 if credit for ECON 201/211 has already been awarded. Mutually Exclusive: Credit cannot be earned for ECON 101 and ECON 201/ECON 211.
ECON 103 - INTRODUCTION TO MACROECONOMICS
Short Title: INTRODUCTION TO MACROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to macroeconomic analysis at a level suitable for non-majors. Applies only for transfer credit and requires departmental approval. Approved credit counts toward total credit hours required for graduation and for distribution, but does not count toward the ECON or MTEC majors. Students may not receive credit for ECON 103 if credit for ECON 212 has already been awarded. Mutually Exclusive: Credit cannot be earned for ECON 103 and ECON 112/ECON 113.

ECON 113 - AP/OTH CREDIT IN MACROECONOMICS
Short Title: AP/OTH CREDIT MACROECONOMICS
Department: Economics
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 1-6
Course Level: Undergraduate Lower-Level
Description: Provides transfer credit based on student performance on approved examinations in microeconomics, such as the Advanced Placement microeconomics exam or the International Baccalaureate higher-level economics exams, or for an approved introductory microeconomics course. Approved credit counts toward total credit hours required for graduation, but does not count for distribution or toward the ECON or MTEC majors. Students may not receive credit for ECON 113 if credit for ECON 201/211 has already been awarded. Mutually Exclusive: Credit cannot be earned for ECON 111 and ECON 201/ECON 211.

ECON 111 - AP/OTH CREDIT IN MICROECONOMICS
Short Title: AP/OTH CREDIT MICROECONOMICS
Department: Economics
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 1-6
Course Level: Undergraduate Lower-Level
Description: Provides transfer credit based on student performance on approved examinations in microeconomics, such as the Advanced Placement microeconomics exam or the International Baccalaureate higher-level economics exams, or for an approved introductory microeconomics course. Approved credit counts toward total credit hours required for graduation, but does not count for distribution or toward the ECON or MTEC majors. Students may not receive credit for ECON 111 if credit for ECON 200/211 has already been awarded. Mutually Exclusive: Credit cannot be earned for ECON 200 and ECON 301.

ECON 200 - MICROECONOMICS
Short Title: MICROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group II
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (ECON 100 or ECON 201 or ECON 211) and MATH 102 (may be taken concurrently)
Description: Intermediate level analysis of theories of household behavior, including demand for consumer goods, labor supply, and savings/investment decisions, and producer behavior including the supply of output and demands for labor, capital and other production inputs. Emphasizes individual and interactive decision making under resource constraints. Analyzes equilibria in competitive and noncompetitive markets, and discusses topics in welfare economics. MATH 102 may be taken concurrently with ECON 200. Mutually Exclusive: Credit cannot be earned for ECON 200 and ECON 301.

ECON 203 - MACROECONOMICS
Short Title: MACROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 200 or ECON 301 or ECON 370
Description: Analyzes aggregate performance of the national economy including output, inflation, interest rates, employment, the business cycle, monetary and fiscal policy, and more generally the appropriate role of government in influencing aggregate economic performance. Introduces both the traditional aggregative only approach to Macroeconomics and the more recent New Classical and New Keynesian micro-foundations approaches. Mutually Exclusive: Credit cannot be earned for ECON 203 and ECON 303.

ECON 209 - APPLIED ECONOMETRICS
Short Title: APPLIED ECONOMETRICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group II
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (ECON 200 or ECON 301 or ECON 370) and (ECON 307 or ECON 382 or STAT 310)
Description: Applied econometric methods: econometric theory with practical emphasis on modeling, estimation, and hypothesis testing. A computer lab one day a week focuses on empirical implementation of econometric methods using STATA software. Credit may be given for only one of ECON 309 or ECON 209. Mutually Exclusive: Credit cannot be earned for ECON 209 and ECON 309/ECON 446.
ECON 210 - BEHAVIORAL ECONOMICS
Short Title: BEHAVIORAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100 or ECON 201 or ECON 211
Description: Examines behavioral economics, which seeks to insert more behavioral realism into economic theory by incorporating into economic models insights based on empirical observations from psychology, sociology, and neuroscience. Emphasizes attempts by behavioral economists to explain anomalies that depart from the predcitions of standard economic theory. Topics include temptation and self-control, fairness and reciprocity, reference dependence, bounded rationality and choice under risk and uncertainty.

ECON 239 - LAW AND ECONOMICS
Short Title: LAW AND ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100 or ECON 201 or ECON 211
Description: Exploration of the law using economic tools based on microeconomic theory. Focuses on legal issues most applicable to business. Mutually Exclusive: Credit cannot be earned for ECON 239 and ECON 438.

ECON 260 - MICROECONOMICS AND PUBLIC POLICY
Short Title: MICROECONOMICS & PUBLIC POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100 or ECON 201
Description: Applies insights learned from the microeconomic component of ECON 100 to the analysis of public policy issues, stressing economic intuition rather than mathematical formulations. Designed for students who do not wish to major in ECON or MTEC, and does not apply toward ECON or MTEC major requirements.

ECON 265 - MICROECONOMICS AND PUBLIC POLICY TOWARDS BUSINESS
Short Title: MICRO & PUBLIC POLICY/BUSINESS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100 or ECON 201
Description: Applies insights learned from the microeconomic component of ECON 100 to the analysis of issues related to public policy toward business, stressing economic intuition rather than mathematical formulations. Designed for students who do not wish to major in ECON or MTEC, and does not apply toward ECON or MTEC major requirements.

ECON 270 - MACROECONOMICS AND PUBLIC POLICY
Short Title: MACROECONOMICS & PUBLIC POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100 or ECON 201
Description: Applies insights learned from the macroeconomic component of ECON 100 to the analysis of public policy issues, stressing economic intuition rather than mathematical formulations. Designed for students who do not wish to major in ECON or MTEC, and does not apply toward ECON or MTEC major requirements.

ECON 275 - INTERNATIONAL MACROECONOMICS AND PUBLIC POLICY
Short Title: INT MACRO & PUBLIC POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100 or ECON 201
Description: Applies insights learned from the macroeconomic component of ECON 100 to the analysis of issues related to international public policy, stressing economic intuition rather than mathematical formulations. Designed for students who do not wish to major in ECON or MTEC, and does not apply toward ECON or MTEC major requirements.
ECON 299 - EXPERIENTIAL EDUCATION IN ECONOMICS
Short Title: EXPERIENTIAL EDUC IN ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Economics or Mathematical Economic Analysis. Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 200
Description: This course provides one hour of university credit for faculty-directed and approved internship. Students must obtain approval from a member of the department's undergraduate committee and must submit a letter from the internship provider indicating completion and satisfactory performance. Department Permission Required. Repeatable for Credit.

ECON 300 - GAME THEORY AND OTHER MICRO TOPICS FOR ECON MAJORS
Short Title: GAME THEORY, MICRO TOPICS/ECON
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 200 or ECON 301 or ECON 370) and (ECON 307 or STAT 310)
Description: Advanced level analysis of topics in microeconomics designed for students in the ECON major. Topics include the foundations and applications of game theory, the economics of choice under uncertainty, and information economics including issues of asymmetric information. Additional topics may include auction theory, mechanism design and behavioral economics. Open to all majors other than MTEC. Mutually Exclusive: Credit cannot be earned for ECON 300 and ECON 205.

ECON 305 - GAME THEORY AND OTHER MICRO TOPICS FOR MTEC MAJORS
Short Title: GAME THEORY, MICRO TOPICS/MTEC
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 307 or STAT 310) and (ECON 308 or ECON 401 or ECON 477)
Description: Advanced level analysis of topics in microeconomics, focusing on mathematical modeling and designed for students in the MTEC major. Topics include the foundations and applications of game theory, general equilibrium theory and applications, the economics of choice under uncertainty, and information economics including issues of asymmetric information. Additional topics may include auction theory, mechanism design, and behavioral economics. Open to all majors. Mutually Exclusive: Credit cannot be earned for ECON 305 and ECON 405.

ECON 307 - PROBABILITY AND STATISTICS
Short Title: PROBABILITY & STATISTICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 102
Description: Probability and the central concepts and methods of statistics including probability, distributions of random variables, expectation, sampling distributions, estimation, confidence intervals, and hypothesis testing. Cross-list: STAT 310. Recommended Prerequisite(s): MATH 212.
Course URL: statistics.rice.edu/courses.cfm

ECON 308 - MATHEMATICAL ECONOMICS
Short Title: MATHEMATICAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 200 or ECON 301 or ECON 370) and (MATH 212 or MATH 221)
Description: Coverage of mathematical topics used in economics, such as linear algebra, optimization, and real analysis, with applications to fundamental topics in economic theory, constrained optimization, labor market dynamics, game theory and Leontief input-output model. Emphasizes logical clarity and mathematical rigor, along with the ability to follow and construct mathematical proofs. Credit may be earned for only one of the following courses: ECON 308 or ECON 401 or ECON 477. Mutually Exclusive: Credit cannot be earned for ECON 308 and ECON 401/ ECON 477.

ECON 310 - ECONOMETRICS
Short Title: ECONOMETRICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 209 or ECON 309 or ECON 446) and (ECON 308 or ECON 401 or ECON 477)
Description: Survey of estimation and forecasting models. Includes multiple regression time series analysis. A good understanding of linear algebra is highly desirable. Cross-list: STAT 376. Mutually Exclusive: Credit cannot be earned for ECON 310 and ECON 409/STAT 400.
ECON 343 - CORPORATE FINANCE  
Short Title: CORPORATE FINANCE  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): (ECON 100 or ECON 201 or ECON 211) and (STAT 280 or STAT 305 or STAT 310 or ECON 307 or STAT 312 or POLI 395 or PSYC 339) and BUSI 305  
Description: Corporate financial management including tools used to evaluate and select investment projects and the method of financing those investments. The influence of corporate control on investment decisions. The valuation of stocks, bonds and options using the time value of money, the trade-off between risk and return, and arbitrage. BUSI 343 and ECON 343 are Mutually Exclusive; therefore students may not receive credit for both courses. Recommended Prerequisite(s): ECON 200 or ECON 301 or ECON 370. Mutually Exclusive: Credit cannot be earned for ECON 343 and BUSI 343.

ECON 355 - FINANCIAL MARKETS  
Short Title: FINANCIAL MARKETS  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ECON 200 or ECON 301 or ECON 370  
Description: Principles governing U.S. and international equity and debt markets, and the interactions between such markets and national monetary and exchange rate policies. Focuses on the role of financial markets and institutions in the allocation and transfer of credit and risk, and examines various existing and suggested regulatory frameworks.

ECON 365 - WORLD ECONOMIC HISTORY  
Short Title: WORLD ECONOMIC HISTORY  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): (ECON 100 or ECON 201 or ECON 211) and (STAT 280 or STAT 305 or STAT 310 or ECON 307 or STAT 312 or POLI 395 or PSYC 339) and BUSI 305  
Description: Study and analysis of world economy focusing on the economic expansion of Western countries between the 14th and 21st centuries. Emphasis on contextual changes in economy, geography, history, society, culture, religion and politics in determining economic leadership of certain economies, such as Italy, Portugal, Spain, the United Kingdom, Belgium, the Netherlands, France, Germany, Sweden, the United States and Japan. Cross-list: HIST 365.

ECON 399 - INDEPENDENT RESEARCH  
Short Title: INDEPENDENT RESEARCH  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): (ECON 100 or ECON 201 or ECON 211) and (ECON 200 or ECON 301 or ECON 370) and (ECON 203 or ECON 303 or ECON 375) and (ECON 209 or ECON 309 or ECON 446) and (ECON 300 or ECON 305 or ECON 405) and (ECON 307 or STAT 310) and MATH 101 or (MATH 111 or MATH 112) and MATH 102  
Description: Independent research project under the supervision of a faculty member who must approve the topic, consult the department website under "Independent Research" for additional details. Students must have a GPA of 3.0 or higher in the prerequisite courses. Faculty advisors may require additional prerequisites. Instructor and department permission required. Not offered during the summer. Instructor Permission Required.

ECON 415 - LABOR ECONOMICS  
Short Title: LABOR ECONOMICS  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ECON 200 or ECON 301 or ECON 370  
Description: Empirical evidence and theories relating to several features of labor markets. Topics covered may include fertility, health, criminal behavior, labor force participation, hours of work, education and training, geographical and inter-firm labor mobility, static and dynamic labor demand, unions, discrimination, government intervention in labor markets, and "hedonic" equilibria in labor markets. Graduate/Undergraduate Equivalency: ECON 515. Mutually Exclusive: Credit cannot be earned for ECON 415 and ECON 515.

ECON 418 - ECONOMIC FORECASTING  
Short Title: ECONOMIC FORECASTING  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): (ECON 203 or ECON 303 or ECON 375) and (ECON 209 or ECON 309 or ECON 446)  
Description: Application of econometric techniques to problems in macroeconomics and financial economics. The course focuses on macroeconomic forecasting and test of economic theories using stationary and non-stationary time-series data. Methods include predictive regressions, vector autoregressions, impulse response functions, and variance decomposition. Tests and comparisons of forecast accuracy are also included. Projects will be completed in STATA.
ECON 419 - ADVANCED TOPICS IN ECONOMETRICS  
**Short Title:** ADV TOPICS IN ECONOMETRICS  
**Department:** Economics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ECON 310 or ECON 409 or ECON 400 or STAT 376 or STAT 400  
**Description:** Introduction to advanced econometrics, with an emphasis on methods used in microeconomic applications. Methods covered are used in the estimation of the demand for goods and services, production functions, and for analyzing the impact of social programs.

ECON 420 - INTERNATIONAL TRADE  
**Short Title:** INTERNATIONAL TRADE  
**Department:** Economics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ECON 203 or ECON 303 or ECON 375  
**Description:** Studies the economic relationships between countries. This course explores the concept of comparative advantage, and it analyzes why countries trade. It includes trade theory, tariffs and other trade restrictions, trade and development, and current policy issues.

ECON 421 - INTERNATIONAL FINANCE  
**Short Title:** INTERNATIONAL FINANCE  
**Department:** Economics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ECON 203 or ECON 303 or ECON 375  
**Description:** Analysis of foreign exchange and international capital markets and linkages between exchange rates, interest rates, and prices. Investigates demand functions, and for analyzing the impact of social programs.

ECON 422 - INTERNATIONAL ECONOMICS AND FINANCE  
**Short Title:** INTERNATIONAL ECON & FINANCE  
**Department:** Economics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ECON 203 or ECON 303 or ECON 375  
**Description:** Studies the economic relationships among countries. Explores the sources of comparative advantage and reasons for trade policies. Examines foreign exchange and international capital markets and linkages between exchange rates, interest rates, and prices. Includes trade theory, tariffs, and other trade restrictions, an overview of historical and institutional developments, and current policy issues.

ECON 432 - POLITICAL ECONOMY  
**Short Title:** POLITICAL ECONOMY  
**Department:** Economics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (ECON 200 or ECON 301 or ECON 370) and (ECON 205 or ECON 300 (may be taken concurrently) or ECON 305 (may be taken concurrently) or ECON 405)  
**Description:** Analyzes income redistribution, taxation, the production of public goods, and other actions of the public sector as determined by a political process simultaneously with the economic process of exchange and production. Investigates the connection between public policies and the political forces that shape them. ECON 300 or ECON 305 may be taken concurrently with ECON 432.

ECON 435 - INDUSTRIAL ORGANIZATION  
**Short Title:** INDUSTRIAL ORGANIZATION  
**Department:** Economics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (ECON 300 or ECON 305) and (ECON 209 or ECON 309 or ECON 310)  
**Description:** Covers topics in industrial organization and market design, including oligopoly, mergers, demand, matching and auctions.

ECON 437 - ENERGY ECONOMICS  
**Short Title:** ENERGY ECONOMICS  
**Department:** Economics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (ECON 300 or ECON 305) and (ECON 209 or ECON 309 or ECON 310)  
**Description:** Analysis of foreign exchange and international capital markets and linkages between exchange rates, interest rates, and prices. Investigates demand functions, and for analyzing the impact of social programs.

ECON 439 - ADVANCED TOPICS IN LAW AND ECONOMICS  
**Short Title:** ADV TOPICS IN LAW AND ECON  
**Department:** Economics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (ECON 200 or ECON 301 or ECON 370)  
**Description:** Addresses the role of economics in understanding the legal system, in particular how the law allocates entitlements and risk in property, tort and contract law. Intended primarily for students who are considering attending law school and uses instruction methods appropriate for that goal.
ECON 441 - EMPIRICAL METHODS FOR INDUSTRIAL ORGANIZATION
Short Title: EMPIRICAL METHODS FOR IO
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 209
Description: Covers empirical methods for the analysis of markets and industries.

ECON 443 - FINANCIAL ECONOMICS
Short Title: FINANCIAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 308 or MATH 211) and MATH 212 and (ECON 305 or ECON 405) and (ECON 307 or STAT 310 or ECON 382)
Description: Economic analysis of the operation of financial markets from a mathematical and theoretical perspective. Topics include asset pricing, risk management, portfolio theory, arbitrage theory, and market efficiency. Emphasizes the application of the financial concepts to decisions faced by households and firms.

ECON 445 - MANAGERIAL ECONOMICS
Short Title: MANAGERIAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 or ECON 301 or ECON 370
Description: Application of economics to the determination of the profitability of the firm. Includes organization theory and problems of control. A student may not receive credit for ECON 445 and ECON 245/ POLI 245.

ECON 449 - PRINCIPLES OF FINANCIAL ENGINEERING
Short Title: FINANCIAL ENGINEERING
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 308 or MATH 211) and MATH 212 and (ECON 310 or ECON 400 or STAT 376 or STAT 400 or ECON 409)
Description: Covers the use of financial securities and derivatives to take or hedge financial risk positions, including most commonly used instruments, from simple forwards and futures to exotic options and swaptions. Studies the pricing of derivative securities with emphasis on the mechanics and uses of financial engineering methods. ECON 449 and STAT 449 are Mutually Exclusive, so students may not receive credit for both courses. Mutually Exclusive: Credit cannot be earned for ECON 449 and STAT 449.

ECON 450 - ECONOMIC DEVELOPMENT
Short Title: ECONOMIC DEVELOPMENT
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 200 or ECON 301 or ECON 370) and (ECON 203 or ECON 303 or ECON 375)
Description: This course covers different dimensions of economic development, focusing on poverty, inequality, demography, and health. It provides an overview of the economies of less developed countries, the lives of the poor, and the theories for why some countries are rich and others are poor. It also describes how labor and credit markets function in poor countries, the consequences for health and education, and the role of institutions.

ECON 452 - RELIGION, ETHICS, AND ECONOMICS
Short Title: RELIGION, ETHICS, & ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 200 or ECON 301 or ECON 370) and (STAT 310 or ECON 382)
Description: Review economic models of the demand, supply, and markets for religion, including the effects of economic conditions on religious choice and vice versa. Students will write term paper on topics of their choosing, subject to professor's approval. Recommended Prerequisite(s): ECON 209 or ECON 309 or ECON 446, or ECON 310 or STAT 376 or ECON 400 or STAT 400 or ECON 409.

ECON 455 - MONEY AND BANKING
Short Title: MONEY AND BANKING
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 200 or ECON 301 or ECON 370) and (STAT 310 or ECON 382)
Description: Examines the unique roles of money and of banking in providing the mechanics of monetary, fiscal and financial theory. Reviews economic models of the demand, supply, and markets for money, including the effects of economic conditions on financial markets, including the effects of economic conditions on financial markets.

ECON 456 - SOCIAL POLICY
Short Title: SOCIAL POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 200 or ECON 301 or ECON 370) and (STAT 310 or ECON 382)
Description: Examines the unique roles of money and of banking in providing the mechanics of monetary, fiscal and financial theory. Reviews economic models of the demand, supply, and markets for money, including the effects of economic conditions on financial markets, including the effects of economic conditions on financial markets.
ECON 460 - ADVANCED TOPICS IN ECONOMIC DEVELOPMENT
Short Title: ADV TOPICS ECON DEVELOPMENT
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 or ECON 301 or ECON 370
Description: Focuses on role of taxation, finance and international trade, foreign investment and foreign aid in economic development.

ECON 462 - ECONOMICS OF HUMAN CAPITAL
Short Title: ECONOMICS OF HUMAN CAPITAL
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 200 or ECON 301 or ECON 370) and (ECON 209 or ECON 309 or ECON 446)
Description: This course covers theory that describes the central role of human capital in determining economic growth and inequality, uses advanced econometric techniques to test if the theory is consistent with data, and presents insights for public policy that can improve human capital formation, increase economic growth and reduce social inequality.

ECON 470 - MARKET DESIGN
Short Title: MARKET DESIGN
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 200 or ECON 301 or ECON 370) and (ECON 307 or STAT 310)
Description: Regulators, entrepreneurs and economists have recently been involved in the design of novel markets for radio spectrum, kidneys, on-line advertising, school choice, etc. This course utilizes game theory to provide the theoretical underpinning of such markets via real world examples, including the study of institutional details that can determine the success or failure of a market.

ECON 479 - ECONOMIC MODELING AND PUBLIC POLICY
Short Title: ECONOMIC MODLG & PUBLIC POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 or ECON 301 or ECON 370
Description: Examines the use of computable general equilibrium (CGE) models to analyze the economic effects of public policy reforms. Reviews theoretical aspects of general equilibrium modeling, introduces computational methods, constructs some basic CGE models, and shows how the models are used to analyze the efficiency, distributional, and transitional effects of various policy reforms. Federal tax reform in the U.S. is the primary policy application; other issues examined may include Social Security, environmental policy, and international trade.
ECON 484 - PUBLIC ECONOMICS
Short Title: PUBLIC ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Graduate
Prerequisite(s): (ECON 200 or ECON 301 or ECON 370) and MATH 212
Description: Theory and evidence on government expenditure policy. Topics include the theory of public goods, education; state and local public goods; redistribution and welfare policy; cost-benefit analysis; social insurance programs such as social security and unemployment insurance; and health care policy.

ECON 489 - ECONOMICS OF SOCIAL NETWORKS
Short Title: ECONOMICS OF SOCIAL NETWORKS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 209
Description: This course introduces research on social networks and analyzes how these networks affect our choices: the products we buy, the careers we follow, whom we marry, how we raise our children. Students will learn about network measurement and formation and the influence of social networks on our decisions.

ECON 496 - RESEARCH IN ECONOMIC THEORY
Short Title: RESEARCH IN ECONOMIC THEORY
Department: Economics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 203 or ECON 303 or ECON 375) and (ECON 310 or STAT 376 or ECON 400 or STAT 400 or ECON 409) and (ECON 305 or ECON 405)
Description: This course introduces research on social networks and analyzes how these networks affect our choices: the products we buy, the careers we follow, whom we marry, how we raise our children. Students will learn about network measurement and formation and the influence of social networks on our decisions.

ECON 497 - RESEARCH IN ECONOMETRICS
Short Title: RESEARCH IN ECONOMETRICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 203 or ECON 303 or ECON 375) and (ECON 310 or STAT 376 or ECON 400 or STAT 400 or ECON 409) and (ECON 305 or ECON 405)
Description: Capstone course for MTEC majors whose primary interest is in econometrics. Review and analysis of seminal and current research in econometrics, including independent analysis by the student. Topics vary from year to year. (Note: In 2015-2016, pre-requisite is ECON 305/405 may be waived or required as a co-requisite; see instructor.)

ECON 498 - HONORS PROGRAM IN ECONOMICS-I
Short Title: HONORS PROGRAM IN ECONOMICS-I
Department: Economics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 203 or ECON 303 or ECON 375) and (ECON 209 or ECON 310) and (ECON 300 or ECON 305 or ECON 405)
Description: Research workshop open to ECON and MTEC majors. GPA of at least 3.67 in all ECON courses and all courses required for major, and must have taken all ECON courses directly related to the topic of their research. Students develop a research idea, construct an economic model with testable hypotheses, test those hypotheses, and write and present in the workshop an academic quality paper. Econometrics pre-requisite is ECON 209 for ECON majors and ECON 310 for MTEC majors. Instructor may impose additional prerequisites. (In 2015-2016, prerequisite of ECON 300/305/405 may be waived or required as a co-requisite; see instructor.) Instructor Permission Required.

ECON 499 - HONORS PROGRAM IN ECONOMICS-II
Short Title: HONORS PROGRAM IN ECONOMICS-II
Department: Economics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 498
Description: Continuation of ECON 498. University credit only. Instructor Permission Required.

ECON 501 - MICROECONOMICS I
Short Title: MICROECONOMICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Consumer theory including choice under certainty, producer theory, partial and general equilibrium analysis.
ECON 502 - MACROECONOMICS
Short Title: MACROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Intertemporal general equilibrium models, dynamic programming, search theory, monetary models.

ECON 504 - COMPUTATIONAL ECONOMICS
Short Title: COMPUTATIONAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers numerical methods most commonly used in Economics, including solving systems of equations, numerical optimization, stochastic dynamic programming, numerical differentiation and integration, monte caro methods, and solving ordinary and partial differential equations. Cross-list: STAT 604.

ECON 505 - FINANCIAL ECONOMICS I
Short Title: FINANCIAL ECONOMICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 501 and ECON 502
Description: This course covers numerical methods most commonly used in Economics, including solving systems of equations, numerical optimization, stochastic dynamic programming, numerical differentiation and integration, monte caro methods, and solving ordinary and partial differential equations. Cross-list: BUSI 521.

ECON 507 - MATHEMATICAL ECONOMICS I
Short Title: MATHEMATICAL ECONOMICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 501 and MATH 321
Description: The purpose of this course is to provide the first-year PhD students in Economics with the essential mathematical tools. The course covers topics in real analysis, topology, linear algebra, etc. Aside from providing the mathematical tools, a primary aim of this course is to develop the level of mathematical sophistication necessary to conduct research in modern economics. The course will therefore emphasize logical clarity and mathematical rigor, along with the ability to follow and construct mathematical proofs.

ECON 508 - MICROECONOMICS II
Short Title: MICROECONOMICS II
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 501 and MATH 321
Description: Game theory, imperfect competition, information economics, voting and social choice, mechanism design.

ECON 509 - TOPICS IN MICROECONOMICS
Short Title: TOPICS IN MICROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 508
Description: Discussion of selected topics of current interest. Varies year to year. Repeatable for Credit.

ECON 510 - ECONOMETRICS I
Short Title: ECONOMETRICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Estimation and inference in single equation regression models, multicollinearity, autocorrelated and heteroskedastic disturbances, distributed lags, asymptotic theory, and maximum likelihood techniques. Emphasis is placed on the ability to analyze critically the literature. Cross-list: STAT 610.

ECON 511 - ECONOMETRICS II
Short Title: ECONOMETRICS II
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics in linear and nonlinear simultaneous equations estimation, including panel data, qualitative and categorical dependent variable models, duration analysis, simulation based estimation, treatment effects, stochastic production frontier estimation. Cross-list: STAT 611.

ECON 512 - INTERNATIONAL TRADE THEORY
Short Title: INTERNATIONAL TRADE THEORY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Exploration of classical, neoclassical, and modern trade theory. Includes welfare aspects of trade such as the theory of commercial policy, with emphasis on applications.
ECON 514 - INDUSTRIAL ORGANIZATION AND CONTROL
Short Title: INDUST'L ORGANIZATION&CONTROL
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Core topics include monopoly, price discrimination, vertical control, short-run price competition, dynamic price competition and tacit collusion, price and non-price competition with differentiated products, entry barriers, information and strategic behavior (e.g. limit pricing, auctions), and research and development.

ECON 515 - LABOR ECONOMICS
Short Title: LABOR ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate-level analysis of empirical evidence and theories relating to several features of labor markets. Topics covered may include fertility, health, criminal behavior, labor force participation, hours of work, education and training, geographical and inter-firm labor mobility, static and dynamic labor demand, unions, discrimination, government intervention in labor markets, and "hedonic" equilibria in labor markets. Graduate/Undergraduate Equivalency: ECON 415. Mutually Exclusive: Credit cannot be earned for ECON 515 and ECON 415.

ECON 516 - EMPIRICAL MICROECONOMICS
Short Title: EMPIRICAL MICROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 508
Description: Overview of methods used in empirical microeconomic research. Examples are drawn from health economics, law and economics, and business economics. Emphasis is placed on designing econometric and statistical analyses to test economic hypotheses. Class projects will expand on analyses from previously published studies.

ECON 517 - EMPIRICAL INDUSTRIAL ORGANIZATION
Short Title: EMPIRICAL INDUSTRIAL ORG
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 508 and ECON 510
Description: This field course aims to expose students to recent developments in the empirical structural analysis of data in industrial organization. Topics include demand, games and dynamics.

ECON 518 - INTERNATIONAL MACROECONOMICS
Short Title: INTERNATIONAL MACROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Effects of fiscal and monetary policies on exchange rates and the current account and balance of payments. Includes exchange market efficiency, exchange rates and prices, LDC debt, and policy coordination.

ECON 519 - ECONOMIC GROWTH AND DEVELOPMENT
Short Title: ECONOMIC GROWTH &DEVELOPMENT
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Analysis of theory and policy questions relating to the level and rate of economic development.

ECON 522 - PUBLIC ECONOMICS: TAX POLICY
Short Title: PUBLIC ECONOMICS: TAX POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the effects of taxation on individual and firm behavior; general equilibrium tax incidence analysis, optimal taxation theory, optimal implementation of tax reform, analysis of comprehensive income, and consumption taxes.

ECON 523 - DYNAMIC OPTIMIZATION
Short Title: DYNAMIC OPTIMIZATION
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of dynamic optimization in discrete and continuous time, including numerical methods and applications to macroeconomics, finance and resource and energy economics.
ECON 547 - ADVANCED TOPICS IN ENERGY ECONOMICS  
Short Title: ADV TOPICS IN ENERGY ECONOMICS  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): (ECON 301 or ECON 370) and (ECON 309 or ECON 446 or ECON 409 or ECON 400 or STAT 400) and ECON 437  
Description: A detailed development and analysis of topics in energy modeling. Topics include optimal extraction of depletable resources, models of storable energy commodities, energy demand by end-use sector, models of non-competitive behavior, energy security and the relationship between energy and commodity prices. ECON 547 requires an additional assignment in addition to the assignments of ECON 447. Recommended Prerequisite(s): ECON 477 or ECON 401. Mutually Exclusive: Credit cannot be earned for ECON 547 and ECON 447/ ECON 604.

ECON 556 - HEALTH ECONOMICS  
Short Title: HEALTH ECONOMICS  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Study of economic aspects of health. Includes production, cost, demand and supply factors; methods of payment and effects of regulation. Graduate/Undergraduate Equivalency: ECON 481. Mutually Exclusive: Credit cannot be earned for ECON 566 and ECON 481.

ECON 575 - TOPICS IN FINANCIAL ECONOMICS  
Short Title: TOPICS IN FINANCIAL ECONOMICS  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): ECON 505  
Description: Topics in asset pricing, corporate financial theory, and market microstructure, including asymmetric information, learning, heterogeneous priors, market frictions, nonstandard preferences, production models, q theory, real options, dynamic capital structure, quote-driven markets, order-driven markets, and dealer markets. Repeatable for Credit.

ECON 576 - TOPICS IN MACROECONOMICS  
Short Title: TOPICS IN MACROECONOMICS  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Discussion topics in macroeconomics. Repeatable for Credit.

ECON 577 - TOPICS IN ECONOMIC THEORY I  
Short Title: TOPICS IN ECONOMIC THEORY I  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Discussion of topics in advanced economic theory. Repeatable for Credit.

ECON 578 - TOPICS IN ECONOMETRICS I  
Short Title: TOPICS IN ECONOMETRICS I  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Discussion of selected topics in advanced econometrics. Repeatable for Credit.

ECON 579 - TOPICS IN ECONOMETRICS II  
Short Title: TOPICS IN ECONOMETRICS II  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): ECON 511  
Description: Discussion of selected topics in advanced econometrics. Repeatable for Credit.

ECON 592 - TOPICS IN POLICY AND APPLIED ECONOMICS  
Short Title: TOP-POLICY&APPL'D ECON  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Discussion of selected topics in applied economics. Repeatable for Credit.

ECON 593 - WORKSHOP IN MICROECONOMICS  
Short Title: WORKSHOP IN ECONOMICS  
Department: Economics  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Seminars on advanced topics in macroeconomics, microeconomics, econometrics and applied microeconomic theory, presented through guest lectures by leading researchers. Repeatable for Credit.
ECON 594 - WORKSHOP IN ECONOMICS I
Short Title: WORKSHOP IN ECONOMICS I
Department: Economics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of ECON 593. Repeatable for Credit.

ECON 596 - RESEARCH SEMINAR
Short Title: RESEARCH SEMINAR
Department: Economics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research presentations by graduate students. Students are expected to attend class when not presenting their work. Repeatable for Credit.

ECON 597 - READINGS IN ADVANCED TOPICS
Short Title: READINGS IN ADVANCED TOPICS
Department: Economics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

ECON 599 - READINGS IN ADVANCED TOPICS
Short Title: READINGS IN ADVANCED TOPICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

ECON 601 - ENERGY ECONOMICS I
Short Title: ENERGY ECONOMICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Introduces the energy sector to students, discusses key aspects of energy supply, demand and pricing, and is foundational for the MEECON degree. Topics include optimal extraction of depletable resources, trade of energy commodities, storage, end-use demand and energy efficiency, and the relationship between economic activity, energy and the environment. Graduate/Undergraduate Equivalency: ECON 437. Mutually Exclusive: Credit cannot be earned for ECON 601 and ECON 437.

ECON 602 - MICROECONOMICS OF THE ENERGY SECTOR
Short Title: MICROECONOMICS - ENERGY SECTOR
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Covers basic microeconomic concepts and applies them to contemporary issues in the energy sector. Topics covered include demand and supply analysis, market equilibrium and different market structures, international trade, investment and capacity expansion, risk and investment finance, and economic analysis of energy policy including environmental policy.

ECON 603 - APPLIED ECONOMETRICS FOR ENERGY MARKETS
Short Title: APPLIED ECONOMETRICS ENGY MKTS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Students will be introduced to basic concepts in statistical analysis and how to use statistical tools to analyze economic data and test economic theories. The course includes a laboratory session where students practice using the tools discussed in lectures with data that is particularly relevant to the energy industry.

ECON 604 - ENERGY ECONOMICS II
Short Title: ENERGY ECONOMICS II
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Explores a variety of topics in energy modeling and energy data analysis. Topics include optimal extraction of depletable resources, game theoretic approaches to OPEC behavior, national oil company behavior, models of storable energy commodities, energy demand by end-use sector, energy security and fundamental drivers of commodity prices. Credit may be earned by only one of the following courses: ECON 604 or ECON 547. Mutually Exclusive: Credit cannot be earned for ECON 604 and ECON 547.
ECON 605 - TAXATION IN THE ENERGY SECTOR
Short Title: TAXATION IN THE ENERGY SECTOR
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Introduces basic principles of taxation, and general equilibrium modeling of the economic effects of taxes, and applies them to federal and state taxes on the energy sector. Topics include royalties resource rent taxes, corporate income taxes including international tax issues such as transfer pricing and income shifting, excess profit taxes, production-sharing agreements, and environmental taxes.

ECON 606 - CORPORATE FINANCE FOR THE ENERGY SECTOR
Short Title: CORP FINANCE - ENERGY SECTOR
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Examines the investment decisions of corporations, the valuation of stock, bonds and options investments by individual investors. The implications of investor decisions for corporations, and specifically the manner in which they evaluate investment projects and finance investments are a core focus. Examples and case studies focus on the energy sector.

ECON 607 - THE ECONOMICS OF ENERGY AND THE ENVIRONMENT
Short Title: ECON OF ENERGY & ENVIRONMENT
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Focuses on environmental issues of relevance to the energy sector. It examines how markets, legal institutions, especially government policy in the form of environmental taxes and emissions quotas can all be used to affect the supply of amenities such as clean air, clean water and wilderness areas.

ECON 608 - RISK MANAGEMENT IN THE ENERGY INDUSTRY
Short Title: RISK MANAGEMENT/ENERGY INDUSTRY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: This course introduces quantitative risk management techniques often employed in the energy industry. It covers topics such as real options, value at risk, conditional value at risk, and expected shortfall, as well as the use of derivatives for trading and hedging various risk exposures. The course is methodologically self-contained and provides students with hands-on experience with state-of-the-art software to measure and manage risk-adjusted returns of heterogeneous asset portfolios.

ECON 610 - ENERGY AND THE MACROECONOMY
Short Title: ENERGY & THE MACROECONOMY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Discusses connections between energy and economic activity at the regional, national, and international level, and especially the role of energy shocks in economic fluctuations, innovations in energy supply as drivers of regional economic growth, and the role of energy commodities in transportation and international trade.

ECON 611 - GEOPOLITICS OF ENERGY
Short Title: GEOPOLITICS OF ENERGY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Explores the geopolitical issues around energy security and trade by focusing on role of energy as the world’s largest business and a strategic requirement of the modern nation-state, a source of power in international relations, and a major influence on national politics and institutions.

ECON 612 - MANAGEMENT OF PUBLIC POLICY ISSUES BY ENERGY COMPANIES
Short Title: MGMT OF PUBLIC POLICY ISSUES
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: This course discusses how to achieve best practices in government, media, and community relations, and interaction with NGOs. It uses case studies as a springboard to demonstrate how energy companies can set up processes to identify and manage public policy issues that can have significant impacts on the energy industry.
ECON 613 - INTERNATIONAL TRADE IN ENERGY
Short Title: INTERNATIONAL TRADE IN ENERGY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: This course explores the effects of international trade and the determinants of the amount of trade between countries in energy commodities, and the role of international capital flows in financing energy projects, in particular. It will also discuss the many ways that governments can alter international trade through various policies.

ECON 614 - POLITICAL ECONOMY OF OIL IN DEVELOPING COUNTRIES
Short Title: POLITICAL ECONOMY OF OIL
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: This course evaluates the political and economic determinants of oil and gas policies in developing countries and their impact on world markets, the interaction between states and oil companies, the challenges of oil wealth management, and the causal links between resource dependency, development, institutions, and political regimes. Although the main focus is on oil production, natural gas is also analyzed, and both are compared to other natural resources. Must be in Masters of Energy Economics Program.

ECON 615 - SOCIAL STUDIES OF ENERGY
Short Title: SOCIAL STUDIES OF ENERGY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Investigate the ways in which energy production and consumption impacts social life. By studying the implementation and use of renewable and on-renewable energy infrastructures in different parts of the world, the students will develop a contextual, self-reflexive and critical lens that will help them make decisions in later stages of their careers.

ECON 620 - INDUSTRIAL ORGANIZATION AND THE ENERGY SECTOR
Short Title: INDUSTRIAL ORG & ENERGY SECTOR
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: The course will discuss monopoly, oligopoly, and the underlying sources of monopoly power in energy industries and how the industries can be restructured to isolate the monopoly elements from the more competitive ones. Other topics include price discrimination, vertical control, mergers and acquisitions, and strategic behavior between firms.

ECON 621 - THE ECONOMICS OF THE ELECTRICITY INDUSTRY
Short Title: ELECTRICITY INDUSTRY ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Discusses the determinants of the cost of electricity, the effects of organizing the industry in different ways, the need to encourage sufficient investment in reserve capacity, and the use of information technology to allow for new ways of pricing electricity, operating the network and coordinating supply and demand.

ECON 622 - TRANSPORTATION ECONOMICS
Short Title: TRANSPORTATION ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Discusses transportation as a major source of energy demand in modern post-industrial economies and of future demands in emerging economies. Emphasizes that the demand for energy use in the transportation sector involves modeling household choices, economic growth and demographic transition, government decisions to support transportation infrastructure development, and the introduction of new technologies.

ECON 699 - PRACTICUM
Short Title: PRACTICUM
Department: Economics
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 4
Restrictions: Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Projects developed by an industry advisory group to be researched and presented to participating industry at completion of all course work. Internships with an approved employer may be substituted.

ECON 800 - GRADUATE RESEARCH
Short Title: GRADUATE RESEARCH
Department: Economics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
EDUC 305 - EDUCATIONAL PSYCHOLOGY
Short Title: EDUCATIONAL PSYCHOLOGY
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The goal of this course is to introduce students to a psychological understanding of teaching and learning through an overview of principles, issues, and related research in educational psychology. Students in this course will examine theories of learning, complex cognitive processes, cognitive and emotional development, and motivation. These constructs will be applied to effective instruction, the design of optimum learning environments, assessment of student learning, and teaching in diverse classrooms. Required for those seeking teacher certification. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 505. Mutually Exclusive: Credit cannot be earned for EDUC 305 and EDUC 505.

EDUC 310 - INTRODUCTION TO SPECIAL EDUCATION
Short Title: INTRODUCTION SPECIAL EDUCATION
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will introduce and expose students to the field of Special Education. Students will learn about the various individuals who receive special education as well as other types of exceptionality, including giftedness. Controversial issues in this field will be examined along with pertinent legislation. This course will familiarize students with instructional approaches in special education and the social issues impacting the field. Students will visit area schools. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 510. Mutually Exclusive: Credit cannot be earned for EDUC 310 and EDUC 510.

EDUC 315 - ADOLESCENT DEVELOPMENT
Short Title: ADOLESCENT DEVELOPMENT
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The goal of this course is to introduce students to basic theories of adolescent development and cognition. The course will examine principles and concepts in the areas of physical, emotional and psychological development, identity formation, sexuality, and family and peer relations. Other ‘hot topics’ such as substance abuse, eating disorders, and teenagers and the media will also be examined. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 515. Mutually Exclusive: Credit cannot be earned for EDUC 315 and EDUC 515.
EDUC 316 - ASSESSMENT
Short Title: ASSESSMENT
Department: Education
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course offers pedagogies for learners who have different ways of seeing the world, different experiences, and different learning needs. A variety of teaching methods and strategies help special needs students, gifted and talented students and English language learners succeed in the classroom. This course also addresses effective communication in ARDS, LPACS, and staffing within classrooms. Students learn about the support personnel who can assist the classroom teacher. Required for certification. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 516. Mutually Exclusive: Credit cannot be earned for EDUC 316 and EDUC 516.

EDUC 319 - TEACHING AND LEARNING WITH INQUIRY
Short Title: TEACHING & LEARNING W/INQUIRY
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Education for the 21st Century of change and innovation demands problem-solving and critical thinking skills. This course approaches the teaching of context areas with a student-focused lens that engages inquiring minds with the small group exploration of open-ended problems. Lesson structure, activities, and assessment will be integral to the course. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 519. Mutually Exclusive: Credit cannot be earned for EDUC 319 and EDUC 519.

EDUC 320 - TEACHING DIVERSE LEARNERS
Short Title: TEACHING DIVERSE LEARNERS
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this course, students will use formative and summative assessment to drive instructional decisions. Disaggregation of student data growth in the classroom and on standardized tests will foster academic achievement. Graduate/Undergraduate Equivalency: EDUC 516. Mutually Exclusive: Credit cannot be earned for EDUC 316 and EDUC 516.

EDUC 323 - CREATIVE WRITING IN THE CLASSROOM
Short Title: CREATIVE WRITING IN CLASSROOM
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Rice students enrolled in this intensive summer internship will work alongside master teachers and professional writers to promote creative thinking and writing with middle and high school students. Students in this course will explore arts integration pedagogy, engage in the classroom planning process, lead lessons, facilitate student writing, and develop anthologies to showcase student voices. Instructor Permission Required. Graduate/Undergraduate Equivalency: EDUC 523. Mutually Exclusive: Credit cannot be earned for EDUC 323 and EDUC 523. Repeatable for Credit.

EDUC 325 - ADOLESCENT LITERATURE
Short Title: ADOLESCENT LITERATURE
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The nature of adolescence in an increasingly complex and diversity society is examined through literature written for and about adolescents and young adults. This study of the cultural, literary and developmental issues in adolescent literature is relevant to students of literature, psychology, child development, anthropology and sociology, and is recommended for students preparing to become teachers. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 525. Mutually Exclusive: Credit cannot be earned for EDUC 325 and EDUC 525.

EDUC 330 - THE AMERICAN HIGH SCHOOL
Short Title: THE AMERICAN HIGH SCHOOL
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Historically one of the few universally experienced institutions in the U.S., the American high school has been an essential rite of passage for youth and an essential building block of democracy. Students in this course will study the historical origins of the high school and examine its roles in the economy, culture, and the lives of youth. Using field study of an urban high school (15 hours of observation required for undergraduates), students will analyze the contemporary high school and debate about its future. Graduate/Undergraduate Equivalency: EDUC 530. Mutually Exclusive: Credit cannot be earned for EDUC 330 and EDUC 530.
EDUC 335 - URBAN EDUCATION: ISSUES, POLICY, AND PRACTICE
Short Title: URBAN ED:ISSUES, POLICY & PRAC
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course focuses on the major issues facing urban education, including poverty, the implications of racial and ethnic diversity for educational institutions, and strategies for improving academic achievement in urban schools. Students will examine sociological, political, cultural and educational research and theory, as well as explore strategies for improvement of urban education at the classroom, school and policy levels. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 535. Mutually Exclusive: Credit cannot be earned for EDUC 335 and EDUC 535.

EDUC 345 - EDUCATIONAL TECHNOLOGIES & DIGITAL LEARNING
Short Title: EDUC TECH & DIGITAL LRNING
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The primary purposes of this course is to prepare teachers to identify and evaluate effective, appropriate data and curriculum management systems/programs that improve student achievement; to determine how technologies can personalize and accelerate learning goals for students; and understand how technology can be used to change communication and pedagogical practices in the classroom. This course is required for certification. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 545. Mutually Exclusive: Credit cannot be earned for EDUC 345 and EDUC 545.

EDUC 350 - EDUCATION POLICY: FROM LEGISLATURES TO CLASSROOMS
Short Title: EDUCATION POLICY
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Policy issues in this course include school funding, curriculum decisions, accountability systems, discipline policies, and other areas. What are the major policy discussions affecting K-12 education today, and how are they resolved in the political arena? Who drives policy in each of these areas and what role can or does research-based analysis play? We will answer these questions and more as we explore the political arena of educational policy. This class requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 550. Mutually Exclusive: Credit cannot be earned for EDUC 350 and EDUC 550/POST 340.

EDUC 421 - CURRICULUM DEVELOPMENT
Short Title: CURRICULUM DEVELOPMENT
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is the first of a two-part series for preservice teachers. It offers a reflective study of classroom practice through seventy-five (75) hours of observation in secondary schools and teaching activities under the guidance of cooperating teachers and education team members in an actual classroom setting. This course includes opportunities to structure lessons for diverse student populations with whole group and small group lessons. This course is required for certification. Instructor Permission Required. Graduate/Undergraduate Equivalency: EDUC 521. Mutually Exclusive: Credit cannot be earned for EDUC 421 and EDUC 521.

EDUC 422 - LITERACY ACROSS THE CURRICULUM
Short Title: LITERACY ACROSS THE CURRICULUM
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How students are taught to read and write in all academic and elective disciplines is critical to the academic development of adolescents. In this course multiple literacies will be discussed in terms of theory and practice. Students will examine reading, writing, listening, speaking and thinking strategies across the curriculum and their impact on learning. Additionally students will investigate, plan, and practice the skills of using literacy strategies for the specific discipline. Required for certification. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 522. Mutually Exclusive: Credit cannot be earned for EDUC 422 and EDUC 522.

EDUC 460 - THEORY AND METHODS: ART
Short Title: THEORY AND METHODS: ART
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 560. Mutually Exclusive: Credit cannot be earned for EDUC 460 and EDUC 560.
EDUC 461 - THEORY AND METHODS: ENGLISH LANGUAGE ARTS & READING (ELAR)
Short Title: THEORY AND METHODS: ELAR
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 561. Mutually Exclusive: Credit cannot be earned for EDUC 461 and EDUC 561.

EDUC 462 - THEORY AND METHODS: LOTE
Short Title: THEORY AND METHODS: LOTE
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 562. Mutually Exclusive: Credit cannot be earned for EDUC 462 and EDUC 562.

EDUC 463 - THEORY AND METHODS: MATHEMATICS
Short Title: THEORY AND METHODS: MATHEMATICS
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 1-3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 563. Mutually Exclusive: Credit cannot be earned for EDUC 463 and EDUC 563.

EDUC 464 - THEORY AND METHODS: PHYSICAL EDUCATION
Short Title: THEORY AND METHODS: PHYSICAL ED
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 564. Mutually Exclusive: Credit cannot be earned for EDUC 464 and EDUC 564.

EDUC 465 - THEORY AND METHODS: SCIENCE
Short Title: THEORY AND METHODS: SCIENCE
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 1-3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 565. Mutually Exclusive: Credit cannot be earned for EDUC 465 and EDUC 565.

EDUC 466 - THEORY AND METHODS: SOCIAL STUDIES
Short Title: THEORY AND METHODS: SOCIAL STUD
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 566. Mutually Exclusive: Credit cannot be earned for EDUC 466 and EDUC 566.
EDUC 467 - PRACTICUM FOR PRESERVICE TEACHERS
Short Title: PRACT FOR PRESERVICE TEACHERS
Department: Education
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (EDUC 460 or EDUC 461 or EDUC 462 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466) and EDUC 421
Description: This is the second course in the two-part series for preservice teachers. In this field-based practicum, the preservice teacher will have a concentrated experience in student teaching based on the lesson development, pedagogical explorations, and field-based work of the previous semester. Students are expected to follow the assigned district/campus academic calendar for the semester of student teaching. This course is required for certification. Graduate/Undergraduate Equivalency: EDUC 567. Mutually Exclusive: Credit cannot be earned for EDUC 467 and EDUC 567.

EDUC 470 - FIELD-BASED STUDIES IN TEACHING AND LEARNING
Short Title: FLD-BASED STDY TEACH & LRNG
Department: Education
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Students with a class of Freshman or Sophomore may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The study of critical issues in urban education uses ethnographic research methods to study a wide range of educational subjects, from policy impact to classroom practice, from curriculum and pedagogy to the cultures of the children. The course includes a seminar on research methodologies, with a focus on ethnography; independent research projects in a local school setting; and directed case studies. It is open particularly to students in education, sociology, psychology, anthropology and cultural studies. Graduate/Undergraduate Equivalency: EDUC 570. Mutually Exclusive: Credit cannot be earned for EDUC 470 and EDUC 570.

EDUC 491 - INDEPENDENT STUDY AND RESEARCH
Short Title: INDEPENDENT STUDY AND RESEARCH
Department: Education
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course uses ethnographic and quantitative research methods to study a specific issue in education. Independent research projects may include literature reviews and analysis, and/or case studies in school settings. Instructor Permission Required. Graduate/Undergraduate Equivalency: EDUC 591. Mutually Exclusive: Credit cannot be earned for EDUC 491 and EDUC 591. Repeatable for Credit.

EDUC 501 - PHILOSOPHICAL, HISTORICAL, AND SOCIAL FOUNDATIONS OF EDUCATION
Short Title: PHI,HIST,&SOC FOUNDTN OF EDUC
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course students analysis events and ideas that have shaped the philosophy and practice of American schools today. It is appropriate for all students interested in the influences and stresses that have created a unique educational system in our culturally diverse country. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 301. Graduate/Undergraduate Equivalency: EDUC 301. Mutually Exclusive: Credit cannot be earned for EDUC 501 and EDUC 301.

EDUC 502 - CONTEMPORARY ISSUES IN EDUCATION
Short Title: CONTEMPORARY ISSUES IN EDUC
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course examines the way globalization, immigration, privatization and the increasing diversity in our student population is shaping, and being shaped, by America's schools. An exploration of these and other issues from both micro- (student) and macro- (systemic) levels, will be the mainstay of the course. The lenses of sociology, psychology and political economy will be used throughout the semester. The course is open to students in these fields and to students exploring a career in teaching, and is recommended for students entering the teacher education program. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 202. Graduate/Undergraduate Equivalency: EDUC 202. Mutually Exclusive: Credit cannot be earned for EDUC 502 and EDUC 202.

EDUC 504 - RACE, CLASS, GENDER IN EDUC
Short Title: RACE, CLASS, GENDER IN EDUC
Department: Education
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the complex ways in which race, ethnicity, gender, and class intersect and influence the educational experience of students in American schools. By employing an interdisciplinary approach centered both on individuals’ lived experiences and educational system as a whole; EDUC 504 explores and critiques these critical issues and their impact on student learning. Likely topics include the historical foundations of race, class and gender in education, segregation, Title IX, and other contemporary topics. This graduate equivalent of EDUC 304 requires additional assignments. Graduate/Undergraduate Equivalency: EDUC 304. Mutually Exclusive: Credit cannot be earned for EDUC 504 and EDUC 304.
EDUC 505 - EDUCATIONAL PSYCHOLOGY
Short Title: EDUCATIONAL PSYCHOLOGY
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The goal of this course is to introduce students to a psychological understanding of teaching and learning through an overview of principles, issues, and related research in educational psychology. Students in this course will examine theories of learning, complex cognitive processes, cognitive and emotional development, and motivation. These constructs will be applied to effective instruction, the design of optimum learning environments, assessment of student learning, and teaching in diverse classrooms. Required for those seeking teacher certification. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 305. Mutually Exclusive: Credit cannot be earned for EDUC 505 and EDUC 305.

EDUC 510 - INTRODUCTION TO SPECIAL EDUCATION
Short Title: INTRODUCTION SPECIAL EDUCATION
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce and expose students to the field of Special Education. Students will learn about the various individuals who receive special education as well as other types of exceptionality, including giftedness. Controversial issues in this field will be examined along with pertinent legislation. This course will familiarize students with instructional approaches in special education and the social issues impacting the field. Students will visit area schools. This course requires five hours of observation in a local secondary school. Recommended for certification. Additional assignments are required beyond those for EDUC 310. Graduate/Undergraduate Equivalency: EDUC 310. Mutually Exclusive: Credit cannot be earned for EDUC 510 and EDUC 310.

EDUC 515 - ADOLESCENT DEVELOPMENT
Short Title: ADOLESCENT DEVELOPMENT
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The goal of this course is to introduce students to basic theories of adolescent development and cognition. The course will examine principles and concepts in the areas of physical, emotional and psychological development, identity formation, sexuality, and family and peer relations. Other ‘hot topics’ such as substance abuse, eating disorders, and teenagers and the media will also be examined. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 315 Graduate/Undergraduate Equivalency: EDUC 315. Mutually Exclusive: Credit cannot be earned for EDUC 515 and EDUC 315.

EDUC 516 - ASSESSMENT
Short Title: ASSESSMENT
Department: Education
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course, students will use formative and summative assessment to drive instructional decisions. Disaggregation of student data growth in the classroom and on standardized tests will foster academic achievement. Additional requirements are required beyond those for EDUC 316. Graduate/Undergraduate Equivalency: EDUC 316. Mutually Exclusive: Credit cannot be earned for EDUC 516 and EDUC 316.

EDUC 519 - TEACHING AND LEARNING WITH INQUIRY
Short Title: TEACHING & LEARNING W/INQUIRY
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers pedagogies for learners who have different ways of seeing the world, different experiences, and different learning needs. A variety of teaching methods and strategies help special needs students, gifted and talented students and English language learners succeed in the classroom. This course addresses effective communication in ARDS, LPACS, and staffing within classrooms. Students learn about the support personnel who can assist the classroom teacher. Required for certification. This course requires five hours of observation in a local secondary school. Graduate/Undergraduate Equivalency: EDUC 319. Mutually Exclusive: Credit cannot be earned for EDUC 519 and EDUC 319.

EDUC 520 - TEACHING DIVERSE LEARNERS
Short Title: TEACHING DIVERSE LEARNERS
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers pedagogies for learners who have different ways of seeing the world, different experiences, and different learning needs. A variety of teaching methods and strategies help special needs students, gifted and talented students and English language learners succeed in the classroom. This course addresses effective communication in ARDS, LPACS, and staffing within classrooms. Students learn about the support personnel who can assist the classroom teacher. Required for certification. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 320. Graduate/Undergraduate Equivalency: EDUC 320. Mutually Exclusive: Credit cannot be earned for EDUC 520 and EDUC 320.
EDUC 521 - CURRICULUM DEVELOPMENT
Short Title: CURRICULUM DEVELOPMENT
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is the first of a two-part series for preservice teachers. It offers a reflective study of classroom practice through seventy-five (75) hours of observation in secondary schools and teaching activities under the guidance of cooperating teachers and education team members in an actual classroom setting. This course includes opportunities to structure lessons for diverse student populations with whole group and small group lessons. This course is required for certification. Additional assignments are required beyond those for EDUC 421. Instructor Permission Required. Graduate/Undergraduate Equivalency: EDUC 421. Mutually Exclusive: Credit cannot be earned for EDUC 521 and EDUC 421.

EDUC 522 - LITERACY ACROSS THE CURRICULUM
Short Title: LITERACY ACROSS THE CURRICULUM
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How students are taught to read and write in all academic and elective disciplines is critical to the academic development of adolescents. In this course multiple literacies will be discussed in terms of theory and practice. Students will examine reading, writing, listening, speaking and thinking strategies across the curriculum and their impact on learning. Additionally students will investigate, plan, and practice the skills of using literacy strategies for the specific discipline. Required for certification. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 422. Graduate/Undergraduate Equivalency: EDUC 422. Mutually Exclusive: Credit cannot be earned for EDUC 522 and EDUC 422.

EDUC 523 - CREATIVE WRITING IN THE CLASSROOM
Short Title: CREATIVE WRITING IN CLASSROOM
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Rice students enrolled in this intensive summer internship will work alongside master teachers and professional writers to promote creative thinking and writing with middle and high school students. Students in this course will explore arts integration pedagogy, engage in the classroom planning process, lead lessons, facilitate student writing, and develop anthologies to showcase student voices. Additional assignments are required beyond those for EDUC 323. Instructor Permission Required. Graduate/Undergraduate Equivalency: EDUC 323. Mutually Exclusive: Credit cannot be earned for EDUC 523 and EDUC 323. Repeatable for Credit.

EDUC 525 - ADOLESCENT LITERATURE
Short Title: ADOLESCENT LITERATURE
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The nature of adolescence in an increasingly complex and diversity society is examined through literature written for and about adolescents and young adults. This study of the cultural, literary and developmental issues in adolescent literature is relevant to students of literature, psychology, child development, anthropology and sociology, and is recommended for students preparing to become teachers. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 325. Graduate/Undergraduate Equivalency: EDUC 325. Mutually Exclusive: Credit cannot be earned for EDUC 525 and EDUC 325.

EDUC 530 - THE AMERICAN HIGH SCHOOL
Short Title: THE AMERICAN HIGH SCHOOL
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Historically one of the few universally experienced institutions in the U.S., the American high school has been an essential rite of passage for youth and an essential building block of Democracy. This course will study the historical origins of the high school; examine its roles in the economy, our culture, and the lives of youth. We will examine the contemporary high school and debates about its future, through the field of study of an urban high school (20 hours of observation required for graduates). Required for certification unless EDUC 501 is substituted. Additional assignments are required. Graduate/Undergraduate Equivalency: EDUC 330. Mutually Exclusive: Credit cannot be earned for EDUC 530 and EDUC 330.

EDUC 535 - URBAN EDUCATION: ISSUES, POLICY, AND PRACTICE
Short Title: URBAN ED: ISSUES, POLICY & PRACTICE
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on the major issues facing urban education, including poverty, the implications of racial and ethnic diversity for educational institutions, and strategies for improving academic achievement in urban schools. Students will examine sociological, political, cultural and educational research and theory, as well as explore strategies for improvement of urban education at the classroom, school and policy levels. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 335. Graduate/Undergraduate Equivalency: EDUC 335. Mutually Exclusive: Credit cannot be earned for EDUC 535 and EDUC 335.

2017-2018 General Announcements
EDUC 540 - SEMINAR FOR FIRST-YEAR TEACHERS
Short Title: SEMINAR FOR FIRST-YR TEACHERS
Department: Education
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this single-year internship, first year teachers will be supported in their work by field supervisors. In a weekly seminar, teachers will analyze their practice with current theories in education. Teachers will also develop and defend portfolios of their work. This course is required for stand certification and for the Master of Arts in Teaching. Repeatable for Credit.

EDUC 545 - EDUCATIONAL TECHNOLOGIES & DIGITAL LEARNING
Short Title: EDUC TECH & DIGITAL LEARNING
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The primary purposes of this course is to prepare teachers to identify and evaluate effective, appropriate data and curriculum management systems/programs that improve student achievement; to determine how technologies can personalize and accelerate learning goals for students; and understand how technology can be used to change communication and pedagogical practices in the classroom. This course is required for certification. This course requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 345. Graduate/Undergraduate Equivalency: EDUC 345. Mutually Exclusive: Credit cannot be earned for EDUC 545 and EDUC 345.

EDUC 550 - EDUCATION POLICY: FROM LEGISLATURES TO CLASSROOMS
Short Title: EDUCATION POLICY
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Policy issues in this course include school funding, curriculum decisions, accountability systems, discipline policies, and other areas. What are the major policy discussions affecting K-12 education today, and how are they resolved in the political arena? Who drives policy in each of these areas and what role can or does research-based analysis play? We will answer these questions and more as we explore the political arena of educational policy. This class requires five hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 350. Graduate/Undergraduate Equivalency: EDUC 350. Mutually Exclusive: Credit cannot be earned for EDUC 550 and EDUC 350/POST 340.

EDUC 560 - THEORY AND METHODS: ART
Short Title: THEORY AND METHODS: ART
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 460. Graduate/Undergraduate Equivalency: EDUC 460. Mutually Exclusive: Credit cannot be earned for EDUC 560 and EDUC 460.

EDUC 561 - THEORY AND METHODS: ENGLISH LANGUAGE ARTS & READING (ELAR)
Short Title: THEORY AND METHODS: ELAR
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 461. Graduate/Undergraduate Equivalency: EDUC 461. Mutually Exclusive: Credit cannot be earned for EDUC 561 and EDUC 461.

EDUC 562 - THEORY AND METHODS: LOTE
Short Title: THEORY AND METHODS: LOTE
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 462. Graduate/Undergraduate Equivalency: EDUC 462. Mutually Exclusive: Credit cannot be earned for EDUC 562 and EDUC 462.
EDUC 563 - THEORY AND METHODS: MATHEMATICS
Short Title: THEORY AND METHODS:MATHMATICS
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 463. Graduate/Undergraduate Equivalency: EDUC 463. Mutually Exclusive: Credit cannot be earned for EDUC 563 and EDUC 463.

EDUC 564 - THEORY AND METHODS: PHYSICAL EDUCATION
Short Title: THEORY AND METHODS:PHYSICAL ED
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 464. Graduate/Undergraduate Equivalency: EDUC 464. Mutually Exclusive: Credit cannot be earned for EDUC 564 and EDUC 464.

EDUC 565 - THEORY AND METHODS: SCIENCE
Short Title: THEORY AND METHODS: SCIENCE
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 465. Graduate/Undergraduate Equivalency: EDUC 465. Mutually Exclusive: Credit cannot be earned for EDUC 565 and EDUC 465.

EDUC 566 - THEORY AND METHODS: SOCIAL STUDIES
Short Title: THEORY AND METHODS:SOCIAL STUD
Department: Education
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves the study and integration of theory and methods with observation and practice in the classroom through the facilitation of student-led, student-centered activities. Under the guidance of education support team members, the course offers multiple methods for implementing curriculum with diverse students. Required for certification. This course includes a minimum of 5 hours of observation in a local secondary school. Additional assignments are required beyond those for EDUC 466. Graduate/Undergraduate Equivalency: EDUC 466. Mutually Exclusive: Credit cannot be earned for EDUC 566 and EDUC 466.

EDUC 567 - PRACTICUM FOR PRESERVICE TEACHERS
Short Title: PRACT FOR PRESERVICE TEACHERS
Department: Education
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (EDUC 560 or EDUC 561 or EDUC 562 or EDUC 563 or EDUC 564 or EDUC 565 or EDUC 566) and EDUC 521
Description: This is the second course in the two-part series for preservice teachers. In this field-based practicum, the preservice teacher will have a concentrated experience in student teaching based on the lesson development, pedagogical explorations, and field-based work of the previous semester. Students are expected to follow the assigned district/campus academic calendar for the semester of student teaching. This course is required for certification. Additional assignments are required beyond those for EDUC 467. Graduate/Undergraduate Equivalency: EDUC 467. Mutually Exclusive: Credit cannot be earned for EDUC 567 and EDUC 467. Repeatable for Credit.

EDUC 570 - FIELD-BASED STUDIES IN TEACHING AND LEARNING
Short Title: FLD-BASED STDY & LRNG
Department: Education
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The study of critical issues in urban education uses ethnographic research methods to study a wide range of educational subjects, from policy impact to classroom practice, from curriculum and pedagogy to the cultures of the children. The course includes a seminar on research methodologies, with a focus on ethnography; independent research projects in a local school setting; and directed case studies. It is open particularly to students in education, sociology, psychology, anthropology and cultural studies. Additional assignments are required beyond those for EDUC 470. Graduate/Undergraduate Equivalency: EDUC 470. Mutually Exclusive: Credit cannot be earned for EDUC 570 and EDUC 470.
EDUC 590 - INSTRUCTIONAL LEADERSHIP
Short Title: INSTRUCTIONAL LEADERSHIP
Department: Education
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): EDUC 516 and EDUC 519 and EDUC 520 and EDUC 522 and EDUC 545
Description: A focus on professional student-centered coaching techniques empowers students in this course to become catalysts for instructional improvement and student achievement. As current practitioners in the field, students use their personal experiences while adding foundational and progressive research, advanced methodologies, and curriculum tools to enhance the capacity of leaders in the educational arena. Repeatable for Credit.

EDUC 591 - INDEPENDENT STUDY AND RESEARCH
Short Title: INDEPENDENT STUDY AND RESEARCH
Department: Education
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course uses ethnographic and quantitative research methods to study a specific issue in education. Independent research projects may include literature reviews and analysis, and/or case studies in school settings. Additional assignments are required beyond those for EDUC 491. Instructor Permission Required. Graduate/Undergraduate Equivalency. EDUC 491. Mutually Exclusive: Credit cannot be earned for EDUC 591 and EDUC 491. Repeatable for Credit.

EDUC 595 - CAPSTONE
Short Title: CAPSTONE
Department: Education
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Capstone Project is the culmination of the program as the student melds the MAT course of study specialization with classroom experience. The work in this two-semester course is showcased in a portfolio to be defended before an academic committee. Repeatable for Credit.

EDUC 596 - ORGANIZATIONAL LEADERSHIP
Short Title: ORGANIZATIONAL LEADERSHIP
Department: Education
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Students with a class of Freshman, Junior, Sophomore or Senior may not enroll. Enrollment is limited to Graduate level students.
Course Level: Graduate
Corequisite: EDUC 590
Description: Students will be challenged in workshops that test a leader's ability to solve problems that include school finance management, student demographics and test scores, teachers' effectiveness, and the community's needs. Department Permission Required.

EDUC 597 - PRACTICUM FOR PRINCIPALS
Short Title: PRACTICUM FOR PRINCIPALS
Department: Education
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): EDUC 504 and EDUC 516 and EDUC 590 and EDUC 596
Description: During this two-semester course students will be implementing the knowledge gained from classroom experiences into tasks in their home schools under guidance of a school mentor and a field supervisor. Department Permission Required. Repeatable for Credit.

Electrical & Comp. Engineering (ELEC)

ELEC 101 - ELEMENTS OF ELECTRICAL ENGINEERING
Short Title: ELEMENTS OF ELECTRIC ENGINEERING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Freshman or Sophomore. Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to fundamentals of electrical engineering through the hands-on design of a micro-controlled model electric car. Topics from fields of circuits, signals, computing, and sensing are covered as needed to support the student in designing systems to power, monitor, and control the vehicle's speed, and to guide its trajectory, in order to pass a series of vehicle tests. Instructor Permission Required.

ELEC 207 - MATHEMATICAL TOOLS AND METHODS IN ELECTRICAL AND COMPUTER ENGINEERING
Short Title: MATH TOOLS AND METHODS IN ECE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): MATH 101 and MATH 102
Description: This course is based on matrix theory and linear algebra, with emphasis given to useful topics in Electrical and Computer Engineering. These topics include the evaluation of systems of equations (algebraic and differential), vector spaces, determinants, eigenvalues, similarity, and positive definite matrices. Numerical methods for solving ordinary and partial differential equations are also included.
ELEC 220 - FUNDAMENTALS OF COMPUTER ENGINEERING
Short Title: FUND COMPUTER ENGINEERING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to students with a major in Computer Science, Engineering Division, Electrical & Computer Eng. or Electrical Engineering. Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An overview of computer engineering, starting with fundamental building blocks including transistors, bits, data representation, logic and state machines, progressing to computer organization, instruction sets, interrupts, input/output, assembly language programming, and linkage conventions, and ending with an introduction to architectural performance enhancements and computing services.
Course URL: www.owlnet.rice.edu/~elec220

ELEC 240 - FUNDAMENTALS OF ELECTRICAL ENGINEERING I LABORATORY
Short Title: FUND EE I LAB
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): MATH 101 and MATH 102
Corequisite: ELEC 241
Description: Laboratory course that introduces basic electronic measurement techniques and demonstrates the principles of information management by electronic means. Lectures supplement the laboratory experiments.

ELEC 241 - FUNDAMENTALS OF ELECTRICAL ENGINEERING I
Short Title: FUND ELECTRICAL ENGINEERING I
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): MATH 101 and MATH 102
Corequisite: ELEC 240
Description: The creation, manipulation, transmission, and reception of information by electronic means, elementary signal theory; time and frequency-domain analysis; sampling theorem. Digital information theory; digital transmission of analog signals; error-correcting codes.

ELEC 242 - FUNDAMENTALS OF ELECTRICAL ENGINEERING II
Short Title: FUND ELEC ENGINEERING II
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ELEC 241
Corequisite: ELEC 244
Description: Formulation and solution of equations describing electric circuits and electromechanical systems. Behavior of dynamic systems in the time and frequency domains. Basic electronic devices and circuits, including diodes, transistors, optoelectronics, gates, and amplifiers. Introduction to feedback control and digital systems. Students must register for both ELEC 242 and ELEC 244.

ELEC 243 - ELECTRONIC MEASUREMENT SYSTEMS
Short Title: ELECTRONIC MEASUREMENT SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): MATH 101 and MATH 102 and PHYS 102
Corequisite: ELEC 242
Description: The course will give students the skills to design, construct, and assess electronic systems to measure, monitor, and control physical properties and events; spans the areas of circuits, signals, systems, and digital processing. Intended for non-ECE majors.
Course URL: www.owlnet.rice.edu/~elec243

ELEC 244 - FUNDAMENTALS OF ELECTRICAL ENGINEERING II LABORATORY
Short Title: FUND ELEC ENGINEERING II LAB
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Corequisite: ELEC 242
Description: Lab skills covered including breadboarding, use of oscilloscopes, and circuit debugging. Topics covered include design, construction, and testing of basic electronic circuits; RLC networks; diodes; transistors; operational amplifiers; comparators; interfacing digital and analog circuits; pulse width modulation; motors; and feedback control. Students must register for both ELEC 242 and ELEC 244.
ELEC 261 - ELECTRONIC MATERIALS AND QUANTUM DEVICES
Short Title: ELECTRONIC MATERIALS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): MATH 102 and (PHYS 102 or PHYS 112)
Description: An overview of fundamental topics in physical electronics including a semiclassical approach to the electrical, magnetic, and optical properties of materials as well as an introduction to quantum mechanics, atomic physics, crystal lattices, and electronic band structure.

ELEC 262 - INTRODUCTION TO WAVES AND PHOTONICS
Short Title: INTRO TO WAVES AND PHOTONICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and (PHYS 102 or PHYS 112 or PHYS 126 or PHYS 142)
Description: Introduction to the concepts of waves and oscillatory motion with a particular focus on electromagnetic waves and their interaction with dielectric materials, and on the use of these ideas in the fields of optical fiber communications, laser design, non-linear optics, and Fourier optics.

ELEC 281 - HISTORY OF NUMBERS AND GAMES OF CHANCE
Short Title: NUMBER HISTORY/GAMES OF CHANCE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Starting with the colorful history of numbers, we discover their use to characterize chance or luck through probability; students will participate in one major project and submit a report application areas include physics, computer science, sports, finance, etc. The course is accessible to sophomores and juniors in science, engineering or business. Cross-list: COMP 281, STAT 281.

ELEC 301 - SIGNALS, SYSTEMS, AND LEARNING
Short Title: SIGNALS, SYSTEMS, AND LEARNING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 241
Corequisite: ELEC 303
Description: Analytical framework for analyzing signals and systems. Time and frequency domain analysis of continuous and discrete time signals and systems, convolution, and the Laplace and Z transforms. Introduction to algorithms for machine learning on signals, including clustering, regression, and classification. Instructor Permission Required. Recommended Prerequisite(s): CAAM 335 or MATH 355

ELEC 302 - INTRODUCTION TO SYSTEMS
Short Title: INTRODUCTION TO SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 301 or MATH 355 or CAAM 335
Description: In many applications one is faced with the task of simulating or controlling complex dynamical systems. Such applications include for instance, weather prediction, air quality management, VLSI chip design, molecular dynamics, active noise reduction, chemical reactors, etc. In all these cases complexity manifests itself as the number of first order differential equations which arise. For the above examples, depending on the level of modeling detail required, complexity may range anywhere from a few thousand to a few million first order equations, and above. Simulating (controlling) systems of such complexity becomes a challenging problem, irrespective of the computational resources available. In this course we will set the foundations for model of linear systems. For this, state space representation will be introduced and analyzed. One of the main conclusions will be that certain appropriately defined singular values will provide the trade-off between accuracy and complexity of these dynamical systems.

ELEC 303 - RANDOM SIGNALS IN ELECTRICAL ENGINEERING SYSTEMS
Short Title: RANDOM SIGNALS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 301 (may be taken concurrently)
Description: An introduction to probability theory and statistics with applications to electrical engineering problems in signal processing, communications and control; probability spaces, conditional probability, independence, random variables, distribution and density functions, random vectors, signal detection and parameter estimation.

ELEC 305 - INTRODUCTION TO PHYSICAL ELECTRONICS
Short Title: INTRO PHYSICAL ELECTRONICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 261
Description: Survey of devices and physical principles that are used in modern electronic systems such as cellphones: diodes, transistors, integrated circuits; scaling and Moore's Law; transmission lines; signal integrity; antennas.
ELEC 306 - APPLIED ELECTROMAGNETICS
Short Title: APPLIED ELECTROMAGNETICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 241 and MATH 212 and PHYS 102
Description: An introduction to the theory of static and dynamic
electromagnetic fields with a focus on engineering applications.
Principles will be illustrated with applications in various areas. Topics
include computational electromagnetics, transmission lines, antennas,
electromagnetic interference, and signal propagation in high speed
circuits.

ELEC 322 - APPLIED ALGORITHMS AND DATA STRUCTURES
Short Title: APPL ALGORITHMS&DATA STRUCTURE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 211 and COMP 280 (may be taken concurrently)
Description: Design analysis of computer algorithms and data structures
useful for applied problems. Laboratory assignments will use these
techniques in conjunction with advanced programming methods. Cross-
list: COMP 314. Recommended Prerequisite(s): COMP 280 or may be
taken the same semester.

ELEC 323 - PRINCIPLES OF PARALLEL PROGRAMMING
Short Title: FUNDAMENTALS OF PARALLEL PROG
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 211 or COMP 215
Description: Fundamentals of parallel programming: abstract models of
parallel computers, parallel algorithms and data structures, and common
parallel programming patterns including task parallelism, undirected
and directed synchronization, data parallelism, divide-and-conquer
parallelism, and map-reduce. Laboratory assignments will explore these
topics through the use of parallel extensions to the Java language. Cross-
list: COMP 322. Recommended Prerequisite(s): COMP 221.

ELEC 326 - DIGITAL LOGIC DESIGN
Short Title: DIGITAL LOGIC DESIGN
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 220
Description: Study of gates, flip-flops, combinational and sequential
switching circuits, registers, logical and arithmetic operations,
introduction to the Verilog hardware description language. Cross-list:
COMP 326.

ELEC 327 - IMPLEMENTATION OF DIGITAL SYSTEMS
Short Title: IMPLEMENTATION OF DIGITAL SYS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 326
Description: Embedded microsystems are widely employed to provide
intelligence to sensors and actuators throughout our daily life. In this
course, we learn the software and hardware frameworks which underly
embedded systems design. Students will learn the fundamentals of
embedded system programming and feel competent to design, build,
and manufacture their own embedded devices. In particular, we focus on
principles of low-power design and interface with external peripherals.
In addition, students will learn how to design their own manufacturable
hardware and discover how application-specific blocks enable modern
commercial devices to function. There are weekly lab assignments and
two projects. Instructor Permission Required.

ELEC 332 - ELECTRONIC SYSTEMS PRINCIPLES AND PRACTICE
Short Title: ELEC SYS PRINCIPLES & PRACTICE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 242
Description: This course covers the theory and techniques necessary
to realize modern, high performance electronic systems. Design
considerations for systems utilizing high speed, high frequency analog
digital integrated circuits will be covered. SECTION 001: Topics
will include measurement and simulation techniques, signal integrity,
printed circuit layout, mixed signal systems, rf circuits, and EMI/EMC
considerations. Topics will be lectured and illustrated by a series of
laboratory exercises. SECTION 002: Students develop a microcontroller
system for controlling the functions of a model electric car. Power and
sensor circuits will be designed to monitor and control the vehicle's
speed, and to guide its trajectory, in order to pass a series of vehicle
tests. Instructor Permission Required.

ELEC 342 - ANALOG ELECTRONIC CIRCUITS
Short Title: ANALOG ELECTRONIC CIRCUITS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 242 or ELEC 243
Description: The course starts with a review of 1st order and 2nd order
linear circuits. It emphasizes time-domain techniques and discusses
step and impulse responses, reviews basic device physics of a CMOS
transistor, followed by a derivation of current-voltage equations.
The course also covers an in-depth analysis of large-signal behavior,
linearization, and small signal models. Furthermore, it discusses single-
stage and multi-stage amplifiers as well as differential amplifiers,
common mode rejection ratio (CMRR), and techniques for increasing gain
and improving linearity.
ELEC 361 - QUANTUM MECHANICS FOR ENGINEERS
Short Title: QUANTUM MECHANICS FOR ENGINEER
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course provides the background in quantum mechanics and solid state physics necessary for further studies in semiconductor optoelectronic devices, quantum nanotechnology, and photonics. Examples include: electronic energy levels in semiconductor quantum wells and superlattices; tunneling phenomena in semiconductor devices; the Kronig-Penney model; crystal momentum, effective mass, and Bloch oscillations; band structure of graphene and carbon nanotubes; and introduction to quantum information science.
Course URL: www.ece.rice.edu/~kono/ELEC361.html

ELEC 364 - PHOTONICS MEASUREMENTS: PRINCIPLES AND PRACTICE
Short Title: PHOTONICS MEASUREMENTS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 261
Prerequisite(s): ELEC 262 or PHYS 201
Description: After completing this course, students will have the knowledge and experimental skills to design and apply a photonic measurement system to monitor an environment, process, device, or system. The course will combine predefined labs to develop skills with application projects. Instructor Permission Required.

ELEC 365 - NANOMATERIALS FOR ENERGY
Short Title: NANOMATERIALS FOR ENERGY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to the fundamental science of nanomaterials. Many of the concepts will be explained by drawing from applications in sustainability (photovoltaics, solar-to-fuel conversion thermionic, thermoelectric, fuel cells). Students will design a lab demo from scratch using amongst others the infrastructure provided by the photonics measurement lab. Cross-list: MSNE 365.

ELEC 360 - INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY
Short Title: INTRO TO NEUROENGINEERING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and (PHYS 102 or PHYS 112 or PHYS 126 or PHYS 142)
Description: This course will serve as an introduction to quantitative modeling of neural activity and the methods used to stimulate and record brain activity. Cross-list: BIOE 380, NEUR 383. Mutually Exclusive: Credit cannot be earned for ELEC 380 and BIOE 480/BIOE 590/ELEC 480/ELEC 580.

ELEC 381 - FUNDAMENTALS OF NERVE AND MUSCLE ELECTROPHYSIOLOGY
Short Title: FUND OF ELECTROPHYSIOLOGY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 262 or PHYS 201
Description: An introduction to cellular electrophysiology. Includes development of whole-cell models for neurons and muscle (cardiac and skeletal muscle) cells, based on ion channel currents obtained from whole-cell voltage-clamp experiments. Material balance equations are developed for various ions and chemical signaling agents (e.g., second messengers). Numerical methods are introduced for solving the ordinary and partial differential equations associated with these models. Several types of cell models are discussed ranging from neurons and muscle cells to sensory cells of mechanoreceptors, auditory hair cells and photoreceptor cells. Volume conductor boundary-value problems frequently encountered in electrophysiology are posed. Course provides a cellular basis for the interpretation of macroscopic bioelectric signals such as the electrocardiogram (ECG), electromyogram (EMG), electroretinogram (ERG) and electroencephalogram. Cross-list: BIOE 381.

ELEC 382 - INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE
Short Title: INTRO COMPUTATIONAL NEURSCI
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and (PHYS 102 or PHYS 112 or PHYS 126 or PHYS 142)
Description: Introduction to methods and theories used to describe and understand neural information processing in the brain. Models covered will range from single neuron to networks for sensory, motor, and learning tasks. Programming exercises will be done using Matlab. Cross-list: NEUR 382. Recommended Prerequisite(s): CAAM 210. Mutually Exclusive: Credit cannot be earned for ELEC 382 and NEUR 582.
ELEC 395 - TRANSFER CREDIT - JUNIOR
Short Title: TRANSFER CREDIT - JUNIOR
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is intended for transfer credit for courses not offered at Rice. Permission of ECE Undergraduate Committee and review by faculty in related specialization area is required. ELEC 395 is for Junior level ECE Specialization course credit. Department Permission Required. Repeatable for Credit.

ELEC 419 - INNOVATION LAB FOR MOBILE HEALTH
Short Title: INNOVATION LAB - MOBILE HEALTH
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will be an innovation lab for mobile health products. The students will organize themselves in groups with complementary skills and work on a single project for the whole semester. The aim will be to develop a product prototype which can then be demonstrated to both medical practitioners and potential investors. For successful projects with an operational prototype, the next steps could be applying for OWLspark (Rice accelerator program) or crowd sourcing (like Kickstarter) and/or work in Scalable Health Labs over summer. ELEC Juniors can also continue the project outcomes as a starting point for their senior design. Cross-list: BIOE 419. Graduate/Undergraduate Equivalency: ELEC 559. Mutually Exclusive: Credit cannot be earned for ELEC 419 and ELEC 559. Repeatable for Credit.
Course URL: www.ece.rice.edu/~ashu/ELEC419.html

ELEC 421 - OPERATING SYSTEMS AND CONCURRENT PROGRAMMING
Short Title: OP SYS/CONCURRENT PROGRAMMING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 215 and (COMP 221 or COMP 321)
Description: Introduction to the design, construction, and analysis of concurrent programs with an emphasis on operating systems, including filing systems, schedulers, and memory allocators. Specific attention is devoted to process synchronization and communication within concurrent programs. Cross-list: COMP 421. Graduate/Undergraduate Equivalency: ELEC 552. Mutually Exclusive: Credit cannot be earned for ELEC 421 and ELEC 552.
Course URL: www.clear.rice.edu/comp421/

ELEC 422 - VLSI SYSTEMS DESIGN
Short Title: VLSI SYSTEMS DESIGN
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 395
Description: A study of VLSI technology and design. MOS devices, Characteristics and fabrication. Logic design and implementation. VLSI design methodology, circuit simulation and verification. Graduate/Undergraduate Equivalency: ELEC 527. Mutually Exclusive: Credit cannot be earned for ELEC 422 and ELEC 527.

ELEC 424 - MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION
Short Title: MOBILE & EMBEDDED SYSTEM
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 220
Description: ELEC 424 introduces mobile and embedded system design and applications to undergraduate students and provides them hands-on design experience. It consists of three interleaving parts: lectures, student project, and student presentations. Cross-list: COMP 424. Graduate/Undergraduate Equivalency: ELEC 553. Mutually Exclusive: Credit cannot be earned for ELEC 424 and ELEC 553.
Course URL: www.ruf.rice.edu/~mobile/elec424/

ELEC 425 - COMPUTER SYSTEMS ARCHITECTURE
Short Title: COMPUTER SYSTEMS ARCHITECTURE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 326 or COMP 326
Description: Evolution of key architecture concepts found in advanced uniprocessor systems. Fundamental and advanced pipelining techniques and associated issues for improving processor performance. Illustrated with RISC processors such as the ARM processor. Examine several metrics for processor performance, such as Amdahl's law. Key concepts of data and program memory systems found in modern systems with memory hierarchies and caches. Perform experiments in cache performance analysis. Influence of technology trends, such as Moore's law, on processor implementation Approaches for exploiting instruction level parallelism, such as VLIW. Introduction to parallel and multicore architectures. Introduction to processor architectures targeted for imbedded applications. Cross-list: COMP 425. Graduate/Undergraduate Equivalency: ELEC 554. Mutually Exclusive: Credit cannot be earned for ELEC 425 and ELEC 554.
ELEC 427 - ADVANCED DIGITAL HARDWARE DESIGN, IMPLEMENTATION, AND OPTIMIZATION
Short Title: ADV DIGITAL DESIGN & IMPLEMENT
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 326 or COMP 326
Description: This senior level course will investigate design and implementation of modern digital signal processing, machine learning, and security algorithms in hardware (including FPGAs and ASICs). Along with learning the principals of design, students will acquire hands-on experience in hardware implementation and the use of the hardware in modern applications including but not limited to mobile phones, biomedical devices, and smart cards. Emphasis is on digital processors, design implementation on FPGA/ASIC fabrics and testing real systems on board, architectures, control, functional units, and circuit topologies for increased performance and reduced circuit size and power dissipation. Graduate/Undergraduate Equivalency: ELEC 555. Mutually Exclusive: Credit cannot be earned for ELEC 427 and ELEC 555. Repeatable for Credit.

ELEC 429 - INTRODUCTION TO COMPUTER NETWORKS
Short Title: INTRO TO COMPUTER NETWORKS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 221 or COMP 321
Course URL: www.clear.rice.edu/comp429/

ELEC 430 - DIGITAL COMMUNICATION
Short Title: DIGITAL COMMUNICATION
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 301 and ELEC 303
Description: Course in digital communications, designed to prepare students for engineering work in high-tech industries and for graduate work in communications, signal processing, and computer systems. Covers basic concepts and useful tools for design and performance analysis of transmitters and receivers in the physical layer of a communication system. Graduate/Undergraduate Equivalency: ELEC 551. Mutually Exclusive: Credit cannot be earned for ELEC 430 and ELEC 551.

ELEC 431 - DIGITAL SIGNAL PROCESSING
Short Title: DIGITAL SIGNAL PROCESSING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 301
Description: Methods for analysis of discrete-time signals and design of discrete-time systems including topics of: discrete-time linear systems, difference equations, z-transforms, discrete convolution, stability, discrete-time Fourier transforms, analog-to-digital and digital-to-analog conversion, digital filter design, discrete Fourier transforms, fast Fourier transforms, multi-rate signal processing, filter banks, and spectral analysis. Graduate/Undergraduate Equivalency: ELEC 558. Mutually Exclusive: Credit cannot be earned for ELEC 431 and ELEC 558.

ELEC 432 - MOBILE BIO-BEHAVIORAL SENSING
Short Title: MOBILE BIO-BEHAVIORAL SENSING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 301
Description: In the next-generation of devices, designed for diverse fields as healthcare and education, the devices will understand the human user. At the core of this understanding will be data that is gathered from a new class of sensors, that can measure both biological and behavioral markers. This course introduces the fundamentals of bio- and behavioral sensing. Graduate/Undergraduate Equivalency: ELEC 534. Mutually Exclusive: Credit cannot be earned for ELEC 432 and ELEC 534.

ELEC 433 - ARCHITECTURE FOR WIRELESS COMMUNICATIONS
Short Title: ARCH - WIRELESS COMMUNICATIONS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 301 and ELEC 326
Description: This is an FPGA laboratory course in which students will embark upon a detailed study and implementation of digital communications systems. Major functional blocks of end-to-end wireless communication systems will be discussed, built, and tested in hardware. Students will work in groups on weekly lab assignments and a major semester project. Mutually Exclusive: Credit cannot be earned for ELEC 433 and ELEC 536.
ELEC 435 - INTRODUCTION TO ENERGY-EFFICIENT MECHATRONICS
Short Title: INTRO TO MECHATRONICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 242 or ELEC 243
Description: Introduction to electromechanical systems, focusing on motor mechanics, electric drives & electronics, & modern digital control algorithms. Covers basic principles of electromechanical energy conversion & motor control. Students are introduced to energy efficiency considerations of modern electric drives. Includes hands-on laboratory projects involving digital computer control of various motor types. Cross-list: MECH 435. Graduate/Undergraduate Equivalency: ELEC 532. Mutually Exclusive: Credit cannot be earned for ELEC 435 and ELEC 532.

ELEC 436 - FUNDAMENTALS OF CONTROL SYSTEMS
Short Title: FUNDAMENTALS OF CONTROL SYST
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 343 or (ELEC 242 and ELEC 244) or (CAAM 335 or MATH 355)
Description: Linear systems and the fundamental principles of classical feedback control, state variable analysis of linear dynamic systems, stability of linear control systems, time-domain analysis and control of linear systems, root-locus analysis and design and pole-zero synthesis, frequency domain techniques for the analysis and design of control systems. Cross-list: MECH 420.

ELEC 437 - INTRODUCTION TO COMMUNICATION NETWORKS
Short Title: INTRO TO COMMUNICATION NETWORK
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 303
Description: Introduction to design and analysis of communication networks. Topics include wireless networks, media access, routing traffic modeling, congestion control, and scheduling. Graduate/Undergraduate Equivalency: ELEC 539. Mutually Exclusive: Credit cannot be earned for ELEC 437 and ELEC 539.

ELEC 438 - WIRELESS NETWORKING FOR UNDER-RESOURCED URBAN COMMUNITIES
Short Title: WIRELESS NETWKG UNDER-RESRC'D
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The Rice Networks Group and the non-profit organization Technology For All have recently deployed a state-of-the-art wireless network in one of Houston's most economically disadvantaged neighborhoods. The objective of this network is to empower under-resourced communities with access to technology and educational and work-at-home tools. In this course project teams will perform measurement studies both in the Rice Networks Lab and in the East End neighborhood to characterize the system capacity, optimize placement of wireless nodes; study the effects of traffic and channel characteristics on system-wide performance; and plan deployment of additional nodes to extend the coverage area.

ELEC 440 - ARTIFICIAL INTELLIGENCE
Short Title: ARTIFICIAL INTELLIGENCE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): COMP 310 and (STAT 310 or ECON 307 or ECON 382 or STAT 312 or STAT 331 or ELEC 331 or ELEC 303) and (MATH 354 or MATH 355 or CAAM 335)
Description: This is a foundational course in artificial intelligence, the discipline of designing intelligent agents. The course will cover the design and analysis of agents that do the right thing in the face of limited information and computational resources. The course revolves around two main questions: how agents decide what to do, and how they learn from experience. Tools from computer science, probability theory, and game theory will be used. Interesting examples of intelligent agents will be covered, including poker playing programs, bots for various games (e.g. WoW), DS1 -- the spacecraft that performed an autonomous flyby of Comet Borrely in 2001, Stanley -- the Stanford robot car that won the Darpa Grand Challenge, Google Maps and how it calculates driving directions, face and handwriting recognizers, Fedex package delivery planners, airline fare prediction sites, and fraud detectors in financial transactions. Cross-list: COMP 440. Graduate/Undergraduate Equivalency: ELEC 557. Mutually Exclusive: Credit cannot be earned for ELEC 440 and ELEC 557.
Course URL: www.owlnet.rice.edu/~comp440
ELEC 447 - INTRODUCTION TO COMPUTER VISION
Short Title: INTRO TO COMPUTER VISION
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 301 or ELEC 475 or COMP 314 or ELEC 322 or COMP 330
Description: An introduction to the basic concepts, algorithms and applications in computer vision. Topics include: cameras, camera models and imaging pipeline, low-level vision/image processing methods such as filtering and edge detection; mid-level vision topics such as segmentation and clustering; shape reconstruction from stereo, introduction to high-level vision tasks such as object recognition and face recognition. The course will involve programming and implementing basic computer vision algorithms in Matlab. Cross-list: COMP 447. Graduate/Undergraduate Equivalency: ELEC 546. Mutually Exclusive: Credit cannot be earned for ELEC 447 and ELEC 345/ELEC 546.

ELEC 450 - ALGORITHMIC ROBOTICS
Short Title: ALGORITHMIC ROBOTICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (COMP 221 or COMP 321) and COMP 215
Description: Robots have fascinated people for generations. Today, robots are built for applications as diverse as exploring remote planets, de-mining war zones, cleaning toxic waste, assembling cars, inspecting pipes in industrial plants and mowing lawns. Robots are also interacting with humans in a variety of ways: robots are museum guides, robots assist surgeons in life threatening operations, and robotic cars can drive us around. The field of robotics studies not only the design of new mechanisms but also the development of artificial intelligence frameworks to make these mechanism useful in the physical world, integrating computer science, engineering, mathematics and more recently biology and sociology, in a unique way. This class will present fundamental algorithmic advances that enable today's robots to move in real environments and plan their actions. It will also explore fundamentals of the field of Artificial Intelligence through the prism of robotics. The class involves a significant programming project. Cross-list: COMP 450, MECH 450. Graduate/Undergraduate Equivalency: ELEC 550. Mutually Exclusive: Credit cannot be earned for ELEC 450 and ELEC 550.

ELEC 461 - SOLID STATE PHYSICS
Short Title: SOLID STATE PHYSICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 261
Description: This is a course for juniors and seniors whose specialization is in photonics, electronics, and nanoengineering. This course will provide an introduction to elementary topics in solid state physics, including free electron Fermi gas, crystal structure, reciprocal lattice, lattice vibrations, electronic band structure, Bloch electron dynamics, superconductivity, magnetism, and optical properties.

ELEC 462 - OPTOELECTRONIC DEVICES
Short Title: OPTOELECTRONIC DEVICES
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 305
Description: This course provides an introduction to the fundamental principles of semiconductor optoelectronic devices. After reviewing the basic elements of quantum mechanics of electrons and photons, light-matter interaction (including laser oscillations), and semiconductor physics (band structure, heterostructures and alloys, optical processes), we will study the details of modern semiconductor devices for the generation, detection, and modulation of light. Graduate/Undergraduate Equivalency: ELEC 562. Mutually Exclusive: Credit cannot be earned for ELEC 462 and ELEC 562.
Course URL: www.ece.rice.edu/~kono/ELEC462.html
ELEC 475 - LEARNING FROM SENSOR DATA  
**Short Title:** LEARNING FROM SENSOR DATA  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** The first half of this course develops the basic machine learning tools for signals images, and other data acquired from sensors. Tools covered include principal components analysis, regression, support vector machines, neural networks, and deep learning. The second half of this course overviews a number of applications of sensor data science in neuroscience, image and video processing, and machine vision. Graduate/Undergraduate Equivalency: ELEC 575. Mutually Exclusive: Credit cannot be earned for ELEC 475 and ELEC 575.

ELEC 481 - COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING  
**Short Title:** COMP/NEUROSCIENCE/NEURAL ENGNR  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** An introduction to the anatomy and physiology of the brain. Includes basic electrophysiology of nerve and muscle. Develops mathematical models of neurons, synaptic transmission and natural neural networks. Leads to a discussion of neuromorphic circuits which can represent neuron and neural network behavior in silicon. Recommendation: Knowledge of electrical circuits, operational amplifier circuits and ordinary differential equations. Involves programming Matlab. Cross-list: BIOE 481, NEUR 481. Graduate/Undergraduate Equivalency: ELEC 583. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits; and ordinary differential equations. Mutually Exclusive: Credit cannot be earned for ELEC 481 and ELEC 583.

ELEC 482 - PHYSIOLOGICAL CONTROL SYSTEMS  
**Short Title:** PHYSIOLOGICAL CONTROL SYSTEMS  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A study of the somatic and autonomic nervous system control of biological systems. Simulation methods, as well as, techniques common to linear and nonlinear control theory are used. Also included is an introduction to sensors and instrumentation techniques. Examples are taken from the cardiovascular, respiratory, and visual systems. Cross-list: BIOE 482. Graduate/Undergraduate Equivalency: ELEC 582. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits; and ordinary differential equations. Mutually Exclusive: Credit cannot be earned for ELEC 482 and ELEC 582.

ELEC 485 - FUNDAMENTALS OF MEDICAL IMAGING I  
**Short Title:** FUND MEDICAL IMAGING I  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course will introduce basic principles of image acquisition, formation and processing of several medical imaging modalities such as X-Ray, CT, MRI, and US that are used to evaluate the human anatomy. The course also includes visits to a clinical site to gain experience with the various imaging modalities covered in class. Cross-list: BIOE 485, COMP 485. Graduate/Undergraduate Equivalency: ELEC 585. Recommended Prerequisite(s): MATH 211 and MATH 212. Mutually Exclusive: Credit cannot be earned for ELEC 485 and ELEC 585.

ELEC 486 - FUNDAMENTALS OF MEDICAL IMAGING II  
**Short Title:** FUND MEDICAL IMAGING II  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ELEC 485 or BIOE 485 or COMP 485  
**Description:** This course focuses on functional imaging modalities used specifically in nuclear medicine such as Gamma cameras, SPECT, and PET imaging. The course will introduce the basic principles of image acquisition, formation, processing and the clinical applications of these imaging modalities and lays the foundations for understanding the principles of radionuclide kinetic modeling. A trip to a clinical site in also planned to gain experience with nuclear medicine imaging. Cross-list: BIOE 486, COMP 486. Graduate/Undergraduate Equivalency: ELEC 586. Mutually Exclusive: Credit cannot be earned for ELEC 486 and ELEC 586.

ELEC 488 - THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS  
**Short Title:** THEORETICAL NEUROSCIENCE  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** We present the theoretical foundations of cellular and systems neuroscience from distinctly quantitative point of view. We develop the mathematical and computational tools as they are needed to model, analyze, visualize and interpret a broad range of experimental data. Cross-list: CAAM 415, NEUR 415. Graduate/Undergraduate Equivalency: ELEC 588. Recommended Prerequisite(s): CAAM 210 or MATH 211 or CAAM 335 or MATH 355. Mutually Exclusive: Credit cannot be earned for ELEC 488 and ELEC 588.
ELEC 489 - NEURAL COMPUTATION
Short Title: NEURAL COMPUTATION
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How does the brain work? Understanding the brain requires sophisticated theories to make sense of the collective actions of billions of neurons and trillions of synapses. Word theories are not enough; we need mathematical theories. The goal of this course is to provide an introduction to the mathematical theories of learning and computation by neural systems. These theories use concepts from dynamical systems (attractors, oscillations, chaos) and concepts from statistics (information, uncertainty, inference) to relate the dynamics and functions of neural networks. We will apply these theories to sensory computation, learning and memory, and motor control. Students will learn to formalize and mathematically answer questions about neural computations, including “what does a network compute?”, “how does it compute?”, and “why does it compute that way?”. Prerequisites: knowledge of calculus, linear algebra, and probability and statistics. Cross-list: CAAM 416, NEUR 416. Graduate/Undergraduate Equivalency: ELEC 589. Mutually Exclusive: Credit cannot be earned for ELEC 489 and ELEC 589.

ELEC 490 - UNDERGRADUATE ELECTRICAL ENGINEERING RESEARCH PROJECTS
Short Title: UG ELEC ENG’G RES PROJECTS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Theoretical and experimental investigations under staff direction. A research project plan should be prepared and approved by the faculty member advising the project. Information about ELEC 490 project plans is available on the ECE Web site on the Academics section under ECE forms. May be repeated for a total of 6 credit hours for undergraduates. Instructor Permission Required. Repeatable for Credit.
Course URL: www.ece.rice.edu/uploadedFiles/ECE/ECE_Home/Academics/ECE_forms/ELEC%20490.pdf

ELEC 491 - UNDERGRADUATE ELECTRICAL ENGINEERING RESEARCH PROJECTS-VERTICALLY INTEGRATED PROJECTS
Short Title: UG ELEC ENG’G RESEARCH VIP
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Vertically Integrated Projects (VIP) teams include students from multiple years working on one larger, multi-year project defined by the instructor. Students participating in VIP for 3 or more semesters may be eligible for the Distinction in Research and Creative Work graduation award. Instructor Permission Required. Graduate/Undergraduate Equivalency: ELEC 591. Mutually Exclusive: Credit cannot be earned for ELEC 491 and ELEC 591. Repeatable for Credit.

ELEC 492 - NAKATANI RIES FELLOWSHIP
Short Title: NAKATANI RIES FELLOWSHIP
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The Nakatani RIES: Research & International Experiences for Students connects undergraduates with the best of science & engineering research in the U.S. or Japan. While abroad, fellows participate in language, cultural, and communication training and conduct a hands-on research internship in a leading science or engineering research host laboratory. Instructor Permission Required.

ELEC 494 - SENIOR DESIGN
Short Title: SENIOR DESIGN
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Senior Design is a year-long course required of all BSEE-degree students. In order to fulfill the BSEE degree requirements, students must register for ELEC 494 for both fall and spring semesters of the same academic year. The course is taught in conjunction with the Senior Design courses in BioEngineering and in Mechanical Engineering and Materials Science. Teams of students will design, construct, and document a prototype system to meet specifications determined by the team and the instructor. Senior design projects are the culmination of the Rice engineering experience. Cross-departmental projects are allowed and encouraged, and extensive use will be made of the Oshman Engineering Design Kitchen. Many projects will involve advisors from industrial affiliates. Throughout the year there will be several opportunities for presentations on the project. Top projects will be eligible for several awards from within Rice and outside the university, including some nation-wide competitions. Instructor Permission Required. Repeatable for Credit.

ELEC 495 - TRANSFER CREDIT - SENIOR
Short Title: TRANSFER CREDIT - SENIOR
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is intended for transfer credit for courses not offered at Rice. Permission of ECE Undergraduate Committee and review by faculty in related specialization area is required. ELEC 495 is for Senior level ECE Specialization course credit. Department Permission Required. Repeatable for Credit.
ELEC 497 - DESIGN OF ANALOG PRINTED CIRCUIT BOARDS
Short Title: ANALOG PRINTED CIRCUIT BOARDS
Department: Electrical & Computer Eng.
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 494 (may be taken concurrently) or BIOE 451 (may be taken concurrently) or MECH 407 (may be taken concurrently)
Description: This course covers the basics of designing, fabricating, and testing daughter cards for microcontrollers such as the Arduino. Using PCB design software such as Eagle, students will design, fabricate, and test their printed circuit board.

ELEC 498 - INTRODUCTION TO ROBOTICS
Short Title: INTRODUCTION TO ROBOTICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 354 or MATH 355 or CAAM 335
Description: The course will provide the student with a mathematical introduction to many of the key ideas used in today's intelligent robot systems. The focus of the course is on the analysis and control of manipulators. The course will also give an overview of common approaches to building intelligent robot systems. Cross-list: COMP 498, MECH 498. Graduate/Undergraduate Equivalency: ELEC 598. Mutually Exclusive: Credit cannot be earned for ELEC 498 and ELEC 598.

ELEC 501 - DATA DRIVEN APPROXIMATION OF DYNAMICAL SYSTEMS
Short Title: APPROXIMATION OF SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Model reduction seeks to replace a large-scale system described in terms of differential or difference equations by a system of much lower dimension that has nearly the same response characteristics. Model (order) reduction (MOR) is commonly used in the simulation and control of complex physical processes. The systems that inevitably arise in such cases are often too complex to meet the expediency requirements of interactive design, optimization, or real time control. MOR has been advised as a means to reduce the dimensionality of these complex systems to a level that is amendable to such requirements. The ensuing methods have been an indispensable tool for speeding up the simulations arising in various engineering applications involving large-scale dynamical systems. In this course we will develop the underlying approximation theory paying particular attention to its data-driven aspects.

ELEC 502 - NEURAL MACHINE LEARNING I
Short Title: NEURAL MACHINE LEARNING I
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of major neural machine learning (Artificial Neural Network) paradigms. Analytical discussion of supervised and unsupervised neural learning algorithms and their relation to information theoretical methods. Practical applications to data analysis such as pattern recognition, clustering, classification, function approximation/regression, non-linear PCA, projection pursuit, independent component analysis, with lots of examples from image and digital processing. Details are posted at www.ece.rice.edu/~erzsebet/ANNcourse.html. Cross-list: COMP 502, STAT 502. Recommended Prerequisite(s): ELEC 430 and ELEC 431 or equivalent or permission of instructor.
Course URL: www.ece.rice.edu/~erzsebet/ANNcourse.html

ELEC 507 - NON LINEAR DYNAMIC SYSTEMS ANALYSIS
Short Title: NONLINEAR DYNAMIC SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Analytical methods for the study of nonlinear systems are introduced, including singular point and phase plane analysis, the describing function technique, Lyapunov and Lagrangian state functions, stability analysis, bifurcation analysis, and chaotic behavior in nonlinear dynamic systems. As a substrate for the study of nonlinear systems, numerical analysis of ordinary and partial differential equations, boundary value problems, simulation methods, parameter estimation and sensitivity analysis methods are also included.

ELEC 508 - NONLINEAR SYSTEMS: ANALYSIS AND CONTROL
Short Title: NONLINEAR SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
ELEC 511 - DESIGN AND ANALYSIS OF SECURE EMBEDDED SYSTEMS FOR IoT ERA
Short Title: SECURE EMBEDDED SYS FOR IoT
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course emphasizes the security of small embedded devices that are central to the Internet of Things (IoT) Era. We discuss the practical security attacks, challenges, constraints, and opportunities that arise in the IoT domain. Covered topics include security engineering, real-world attacks, practical and side channel attacks, and hands-on lab/projects. Cross-list: COMP 508. Repeatable for Credit.

ELEC 512 - GRADUATE DESIGN AND ANALYSIS OF ALGORITHMS
Short Title: GR DESGN ANALY OF ALGORITHMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 310 or ECON 307 or STAT 331 or ELEC 331 or ELEC 303 or STAT 312
Description: Methods for designing and analyzing computer algorithms and data structures. The focus of this course will be on the theoretical and mathematical aspects of algorithms and data structures. Cross-list: COMP 582.

ELEC 513 - COMPLEXITY IN MODERN SYSTEMS
Short Title: COMPLEXITY IN MODERN SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A modern computer is a system with enormous complexity in both software and hardware. The course presents the principles for managing such complexity using examples from modern computing systems. It covers emergent issues from system complexity such as energy efficiency, bug finding, and heterogeneous hardware. It also covers designing experiments and writing systems papers. The course consists of lectures, student presentation of classic papers, and a final project. Cross-list: COMP 513.

ELEC 514 - SUSTAINABILITY, ENERGY, AND INFORMATION TECHNOLOGY: AN INTERDISCIPLINARY APPROACH
Short Title: SUSTAINABILITY & ENERGY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate.
Course Level: Graduate
Description: An interdisciplinary course addressing the energy issues facing computing in the coming decade and beyond. In a student research-driven format we will ask how IT may address its power consumption problem and serve as a vehicle for energy efficiency, sustainability, and reduced carbon emissions across all human activity. Cross-list: COMP 514.
Course URL: www.cs.rice.edu/~kvpl/spring2008/comp514.htm

ELEC 516 - ANALOG INTEGRATED CIRCUITS
Short Title: ANALOG INTEGRATED CIRCUITS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ELEC 342
Description: This course starts with an in-depth study of physics of P-N junctions and CMOS transistors. It covers transistor level analysis and design of analog circuits, with emphasis on intuitive design methods, quantitative performance measures, and practical circuit limitations. Students use hand calculations and computer simulations to compare the results. This course discusses low-frequency behavior of single-stage and multistage amplifiers, current sources, active loads, operational amplifiers, as well as supply and temperature and independent biasing. It also covers high-frequency response of amplifiers, feedback in electronic circuits, stability feedback amplifiers, and noise in electronic circuits.

ELEC 517 - ARCHITECTING MODERN LEARNING ALGORITHMS
Short Title: ARCHITECTING ALGORITHMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on architecture development and hardware realization of contemporary learning algorithms. A multitude of new learning algorithms have been recently developed, in particular in the sparse approximation domain. Thus far, the basic functionality of the new algorithms have been mostly verified and evaluated in simulation packages such as Matlab and software implementation. Application-specific customization and hardware implementation would bring orders-of-magnitude energy-performance efficiency improvement to important learning methods. The course will include FPGA reconfigurable fabric architecture and design flow, high analysis of multimedia processing VLSI architectures, and prototyping on FPGA. The focus of the project will be implementation of the state-of-the-art signal processing and learning algorithms on FPGA. Recommended Prerequisite(s): A digital logic design course and hands-on experience such as ELEC 326/ELEC 327. Background in VLSI, computer architecture, and signal processing/learning is also very useful, but the course is designed to be self-contained.
ELEC 518 - ENERGY EFFICIENCY IN MODERN SYSTEMS
Short Title: ENERGY EFFICIENCY MODERN SYS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Energy efficiency has become critically important for modern computing systems, from battery-powered mobile devices to wall-powered high-performance servers. The course presents the fundamentals of energy characteristics of modern systems, and introduces basic energy-saving mechanisms and methodologies for system energy characterization. It also covers emerging technologies in energy-efficient design. Instructor Permission Required. Cross-list: COMP 518.
Course URL: www.ruf.rice.edu/~mobile/elec518/

ELEC 519 - NETWORK SYSTEMS ARCHITECTURE
Short Title: NETWORK SYSTEMS ARCHITECTURE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 320 or ELEC 326
Description: Design and Implementation of network systems, including hardware and software architectures of network routers and servers. Students will design and implement wither the hardware or software components of a network system, depending on their experience and preferences. This course is suitable for students with expertise in either software or hardware. Cross-list: COMP 519. Recommended Prerequisite(s): COMP 221

ELEC 520 - DISTRIBUTED SYSTEMS
Short Title: DISTRIBUTED SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 320 or ELEC 326
Course URL: www.cs.rice.edu/~alc/comp520/

ELEC 521 - ADVANCED DIGITAL INTEGRATED CIRCUITS DESIGN
Short Title: ADV DIGITAL IC DESIGN
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 421 OR ELEC 421.
Description: Design and analysis of algorithm-specific VLSI processor architectures. Topics include the implementation of pipelined and systolic processor arrays. Techniques for mapping numerical algorithms onto custom processor arrays. Course includes design project using high-level VLSI synthesis tools.
Course URL: www.owlnet.rice.edu/~elec521

ELEC 522 - ADVANCED VLSI DESIGN
Short Title: ADV VLSI DESIGN
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 429 or ELEC 429
Description: Fundamental topics in computer-aided design for VLSI. Logic synthesis and formal verification, timing analysis and optimization, technology mapping, logic and fault simulation, testing, and physical design will be covered. Relevant topics in algorithms and data structures, generic programming, and the C++ standard template library will also be covered. Cross-list: COMP 523.

ELEC 523 - COMPUTER-AIDED DESIGN FOR VLSI
Short Title: COMPUTER-AIDED DESIGN FOR VLSI
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 429 or ELEC 429
Description: Study of network protocols for mobile and wireless networking, particularly at the media access control, network, and transport protocol layers. Focus is on the unique problems and challenges presented by the properties of wireless transmission and host or router mobility. Cross-list: COMP 524. Recommended Prerequisite(s): COMP 421 OR ELEC 421.
ELEC 525 - VIRTUALIZATION AND CLOUD RESOURCE MANAGEMENT
Short Title: VIRTUAL & CLOUD RESOURCE MGMT
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (ELEC 425 or COMP 425)

ELEC 526 - HIGH PERFORMANCE COMPUTER ARCHITECTURE
Short Title: HIGH PERFORMANCE COMPUTER ARCH
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 425 or ELEC 425
Description: Design of high performance computer systems, including shared-memory and message-passing multiprocessors and vector systems. Hardware and software techniques to tolerate and reduce memory and communication latency. Case studies and performance simulation of high-performance systems. Cross-list: COMP 526.

ELEC 527 - VLSI SYSTEMS DESIGN
Short Title: VLSI SYSTEMS DESIGN
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of VLSI technology and design. MOS devices, Characteristics and fabrication. Logic design and implementation. VLSI design methodology, circuit simulation and verification. Additional course work required beyond the undergraduate course requirement. Graduate/Undergraduate Equivalency: ELEC 422. Mutually Exclusive: Credit cannot be earned for ELEC 527 and ELEC 422.

ELEC 529 - ADVANCED COMPUTER NETWORKS
Short Title: ADVANCED COMPUTER NETWORKS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 429 or ELEC 429
Description: This course explores advanced solutions in computer networks that are driven by the need to go beyond the best-effort capabilities of the Internet. Topics include network fault tolerance, traffic engineering, scalable data center network architectures, network support for big data processing, network support for cloud computing, extensible network control via software defined networking, denial-of-service-attack defense mechanisms. Readings from original research papers. Also include design project and oral presentation components. This course assumes students already have a good understanding of the best-effort Internet. Cross-list: COMP 529.

ELEC 530 - DETECTION THEORY
Short Title: DETECTION THEORY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Classic and modern methods of optimal decisions in communications and signal processing. Continuous- and discrete-time methods. Gaussian and non-Gaussian problems.

ELEC 531 - STATISTICAL SIGNAL PROCESSING
Short Title: STATISTICAL SIGNAL PROCESSING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ELEC 431
Description: Statistical models for single- and multi-channel signals. Optimal detection and estimation solutions for Gaussian and non-Gaussian environments. Recommended Prerequisite(s): ELEC 533.

ELEC 532 - INTRODUCTION TO ENERGY-EFFICIENT MECHATRONICS
Short Title: INTRO TO MECHATRONICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to electromechanical systems, focusing on motor mechanics, electric drives & electronics, & modern digital control algorithms. Covers basic principles of electromechanical energy conversion & motor control. Students are introduced to energy efficiency considerations of modern electric drives. Includes hands-on laboratory projects involving digital computer control of various motor types. Additional coursework required beyond the undergraduate course requirements. Cross-list: MECH 535. Graduate/Undergraduate Equivalency: ELEC 435. Mutually Exclusive: Credit cannot be earned for ELEC 532 and ELEC 435.
ELEC 533 - INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS  
Short Title: INTRO RANDOM PROCESSES & APPL  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Review of basic probability; Sequences of random variables; Random vectors and estimation; Basic concepts of random processes; Random processes in linear systems, expansions of random processes; Wiener filtering; Spectral representation of random processes, and white-noise integrals. Cross-list: CAAM 583, STAT 583.

ELEC 534 - MOBILE BIO-BEHAVIORAL SENSING  
Short Title: MOBILE BIO-BEHAVIORAL SENSING  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: In the next-generation of devices, designed for diverse fields as healthcare and education, the devices will understand the human user. At the core of this understanding will be data that is gathered from a new class of sensors, that can measure both biological and behavioral markers. This course introduces the fundamentals of bio- and behavioral sensing. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 432. Mutually Exclusive: Credit cannot be earned for ELEC 534 and ELEC 432.

ELEC 535 - INFORMATION THEORY  
Short Title: INFORMATION THEORY  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Introduction to information theory concepts; basic theorems of channel coding and source coding with a fidelity criterion. The course material requires background of a first course in probability, like Rice ELEC 303.

ELEC 536 - ARCHITECTURE FOR WIRELESS COMMUNICATIONS  
Short Title: ARCH - WIRELESS COMMUNICATIONS  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This is an FPGA laboratory course in which students will embark upon a detailed study and implementation of digital communications systems. Major functional blocks of end-to-end wireless communication systems will be discussed, built, tested in hardware. Students will work in groups on weekly lab assignments and a major semester project. Mutually Exclusive: Credit cannot be earned for ELEC 536 and ELEC 433.

ELEC 537 - COMMUNICATION NETWORKS  
Short Title: COMMUNICATION NETWORKS  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate-level introduction to design and analysis of communication networks. Topics include wireless networks, medium access, routing, traffic modeling, congestion control, and scheduling. Cross-list: MECH 537.

ELEC 538 - ADVANCED TOPICS IN COMPUTER NETWORKING  
Short Title: ADV TOP COMPUTER NETWORKING  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Advanced topics in next generation mobile and wireless networks.

ELEC 539 - INTRODUCTION TO COMMUNICATION NETWORKS  
Short Title: INTRO TO COMMUNICATION NETWORK  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Introduction to design and analysis of communication networks. Topics include wireless networks, medium access, routing traffic modeling, congestion control, and scheduling. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 437. Mutually Exclusive: Credit cannot be earned for ELEC 539 and ELEC 437.

ELEC 540 - ADVANCED WIRELESS COMMUNICATIONS  
Short Title: ADVANCED WIRELESS COMM  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Course will teach advanced techniques in wireless, e.g. MIMO, Massive MIMO, Full-duplex and Coordinated Multi-point. The focus will be on both the theoretical foundations and practical use in actual systems, explored with a combination of lectures, homeworks, data-driven evaluations and mini-projects. Recommended Prerequisite(s): ELEC 430 or ELEC 551 or ELEC 535.
ELEC 541 - ERROR CORRECTING CODES  
Short Title: ERROR CORRECTING CODES  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): ELEC 430  
Description: Introductory course on error correcting codes. Topics covered include linear block codes, convolutional codes, turbo codes and LDPC codes.

ELEC 542 - THE APPLICATION OF VECTOR SPACE METHODS AND OTHER ADVANCED TECHNIQUES TO DSP  
Short Title: VECTOR SPACES AND DSP  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): ELEC 431 (may be taken concurrently)  
Description: The course will introduce the application of vector space methods to digital signal processing. This includes topics such as representing a signal using basis expansions, Gram-Schmidt orthogonalization, linear inverse problems, gradient-descent, the use of regularization in approximation, and other advanced topics. The course may be taken in the same semester as ELEC 431.

ELEC 543 - HIGH-SPEED DSP AND ANALOG SYSTEM DESIGN  
Short Title: HS DSP & ANALOG SYS DESIGN  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): (ELEC 342 or ELEC 332)  
Description: This course is intended for seniors and graduate students in Electrical Engineering. It covers practical aspects of high-speed DSP system design, and highlights system design and simulation challenges, and demonstrates common pitfalls and how to prevent them. Students learn how to design, simulate, and apply good high-speed and analog design practices that minimize both component and system noise and ensure system design success.

ELEC 544 - ADVANCED DSP  
Short Title: ADVANCED DSP  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The course will cover advanced topics in FIR and IIR digital filter design, advanced topics in signal processing algorithms, especially in FFTs and high speed convolution and correlation, and in wavelet based signal processing and the discrete wavelet transform. The course will be one-half lecture based and one-half project based.

ELEC 545 - THIN FILMS  
Short Title: THIN FILMS  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Deposition methods, structure, properties, performance and failure mechanisms of thin solid films for various applications. Deposition methods include sputtering, plating, evaporation and chemical vapor deposition. Material types include crystalline and amorphous metals as well as semiconductors and insulators. Applications are primarily in microelectronics; data storage; micro-electro-mechanical systems, wear and corrosion prevention and thermal barriers. NOTE: Not offered every year. Cross-list: MSNE 545.

ELEC 546 - INTRODUCTION TO COMPUTER VISION  
Short Title: INTRO TO COMPUTER VISION  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: An introduction to the basic concepts, algorithms and applications in computer vision. Topics include: cameras, camera models and imaging pipeline, low-level vision/image processing methods such as filtering and edge detection; mid-level vision topics such as segmentation and clustering; shape reconstruction from stereo, introduction to high-level vision tasks such as object recognition and face recognition. The course will involve programming and implementing basic computer vision algorithms in Matlab. Additional coursework required beyond the undergraduate course requirements. Additional coursework required beyond the undergraduate requirements. Cross-list: COMP 546. Graduate/Undergraduate Equivalency: ELEC 447. Mutually Exclusive: Credit cannot be earned for ELEC 546 and ELEC 447.

ELEC 547 - COMPUTER VISION  
Short Title: COMPUTER VISION  
Department: Electrical & Computer Eng.  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The goal of computer vision is to make sense of the three dimensional world from captured images and videos. This requires understanding how light interacts with objects in the environment and then captured by a camera. The goal is to solve problems such as estimating 3D shape of an environment (How does Kinect work?), how to detect and recognize people (How to build your own iPhoto?), detect and track how things move. The course provides an introduction to solving such problems using vision tools such as feature detection, image segmentation, motion estimation, image mosaics, 3D shape reconstruction, and object recognition.
ELEC 548 - MACHINE LEARNING AND SIGNAL PROCESSING FOR NEURO ENGINEERING
Short Title: NEURAL SIGNAL PROCESSING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The activity of a complex network of billions of interconnected neurons underlies our ability to sense, represent and store the details of experienced life, and enables us to interact with our environment and other organisms. Modern neuroscience techniques enable us to access this activity, and thus to begin to understand the processes whereby individual neurons enable complex behaviors. In order to increase this understanding and to design biomedical systems which might therapeutically interact with neural circuits, advanced statistical signal processing and machine learning approaches are required. This class will cover a range of techniques and their application to basic neuroscience and neural interfaces. Topics include latent variable models, point processes, Bayesian inference, dimensionality reduction, dynamical systems, and spectral analysis. Neuroscience applications include modeling neural firing rates, spike sorting, decoding, characterization of neural systems, and field potential analysis. Cross-list: BIOE 548.

ELEC 549 - COMPUTATIONAL PHOTOGRAPHY
Short Title: COMPUTATIONAL PHOTOGRAPHY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Computational photography is an emerging field that aims to overcome the limitations of conventional digital imaging and display devices by using novel optics, signal processing and computer vision to perform more efficient and accurate measurement as well as produce more compelling and meaningful visualizations of the world around us. It is a convergence of many areas, such as optics, computer vision, computer graphics, image processing, photography, and so on. We will cover topics such as computational sensors with assorted pixel, mobile camera control, light field capture and rendering, computational flash photography, computational illumination for appearance acquisition and 3D reconstruction, reflectance transformation imaging, light transport analysis and novel displays.

ELEC 550 - ALGORITHMIC ROBOTICS
Short Title: ALGORITHMIC ROBOTICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (COMP 221 or COMP 321) and COMP 215
Description: Robots have fascinated people for generations. Today, robots are built for applications as diverse as exploring remote planets, de-mining war zones, cleaning toxic waste, assembling cars, inspecting pipes in industrial plants and mowing lawns. Robots are also interacting with humans in a variety of ways: robots are museum guides, robots assist surgeon sin life threatening operations, and robotic cars can drive us around. The field of robotics studies not only the design of new mechanisms but also the development of artificial intelligence frameworks to make these mechanism useful in the physical world, integrating computer science, engineering, mathematics and more recently biology and sociology, in a unique way. This class will present fundamental algorithmic advances that enable today’s robots to move in real environments and plan their actions. It will also explore fundamentals of the field of Artificial Intelligence through the prism of robotics. The class involves a significant programming project. Graduate/Undergraduate Equivalency: ELEC 450. Mutually Exclusive: Credit cannot be earned for ELEC 550 and ELEC 450.

ELEC 551 - DIGITAL COMMUNICATION
Short Title: DIGITAL COMMUNICATION
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ELEC 421. Mutually Exclusive: Credit cannot be earned for ELEC 551 and ELEC 430.
Description: Cover topics such as computational sensors with assorted pixel, mobile camera control, light field capture and rendering, computational flash photography, computational illumination for appearance acquisition and 3D reconstruction, reflectance transformation imaging, light transport analysis and novel displays.

ELEC 552 - OPERATING SYSTEMS AND CONCURRENT PROGRAMMING
Short Title: OP SYS/CONCURRENT PROGRAMMING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 215 and (COMP 221 or COMP 321)
Description: Cover topics such as computational sensors with assorted pixel, mobile camera control, light field capture and rendering, computational flash photography, computational illumination for appearance acquisition and 3D reconstruction, reflectance transformation imaging, light transport analysis and novel displays.
ELEC 553 - MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION

Short Title: MOBILE & EMBEDDED SYSTEM
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: ELEC 553 introduces mobile and embedded system design and applications to students and provides them hands-on design experience. It consists of three interlearning parts: lectures, student project, and student presentations. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 424. Mutually Exclusive: Credit cannot be earned for ELEC 553 and ELEC 424.
Course URL: www.ruf.rice.edu/~mobile/elec424/

ELEC 554 - COMPUTER SYSTEMS ARCHITECTURE

Short Title: COMPUTER SYSTEMS ARCHITECTURE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Evolution of key architecture concepts found in advanced uniprocessor systems. Fundamental and advanced pipelining techniques and associated issues for improving processor performance. Illustrated with RISC processors such as the ARM processor. Examine several metrics for processor performance, such as Amdahl's law. Key concepts of data and program memory systems found in modern systems with memory hierarchies and caches. Perform experiments in cache performance analysis. Influence of technology trends, such as Moore's law, on processor implementation Approaches for exploiting instruction level parallelism, such as VLIW. Introduction to parallel and multicores. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 427. Mutually Exclusive: Credit cannot be earned for ELEC 554 and ELEC 427. Repeatable for Credit.

ELEC 555 - ADVANCED DIGITAL HARDWARE DESIGN, IMPLEMENTATION, AND OPTIMIZATION

Short Title: ADV DIGITAL DESIGN & IMPLEMENT
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This graduate level course will investigate design and implementation of modern digital signal processing, machine learning, and security algorithms in hardware (including FPGAs and ASICs). Along with learning the principals of design, students will acquire hands-on experience in hardware implementation and the use of the hardware in modern applications including but not limited to mobile phones, biomedical devices, and smart cards. Emphasis is on digital processors, design implementation on FPGA/ASIC fabrics and testing real systems on board, architectures, control, functional units, and circuit topologies for increased performance and reduced circuit size and power dissipation. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 427. Mutually Exclusive: Credit cannot be earned for ELEC 555 and ELEC 427.

ELEC 556 - INTRODUCTION TO COMPUTER NETWORKS

Short Title: INTRO TO COMPUTER NETWORKS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 221 or COMP 321
ELEC 557 - ARTIFICIAL INTELLIGENCE
Short Title: ARTIFICIAL INTELLIGENCE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): COMP 310 and (STAT 310 or ECON 307 or ECON 382 or STAT 312 or STAT 331 or ELEC 331 or ELEC 303) and (MATH 354 or MATH 355 or CAAM 335)
Description: This is a foundational course in artificial intelligence, the discipline of designing intelligent agents. The course will cover the design and analysis of agents that do the right thing in the face of limited information and computational resources. The course revolves around two main questions: how agents decide what to do, and how they learn from experience. Tools from computer science, probability theory, and game theory will be used. Interesting examples of intelligent agents will be covered, including poker playing programs, bots for various games (e.g. WoW), DS1 -- the spacecraft that performed an autonomous flyby of Comet Borrely in 2001, Stanley -- the Stanford robot car that won the Darpa Grand Challenge, Google Maps and how it calculates driving directions, face and handwriting recognizers, Fedex package delivery planners, airline fare prediction sites, and fraud detectors in financial transactions. Additional coursework required beyond the undergraduate course requirements. Cross-list: COMP 557. Graduate/Undergraduate Equivalency: ELEC 440. Mutually Exclusive: Credit cannot be earned for ELEC 557 and ELEC 440.
Course URL: www.owlnet.rice.edu/~comp440

ELEC 558 - DIGITAL SIGNAL PROCESSING
Short Title: DIGITAL SIGNAL PROCESSING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Methods for analysis of discrete-time signals and design of discrete-time systems including topics of: discrete-time linear systems, difference equations, z-transforms, discrete convolution, stability, discrete-time Fourier transforms, analog-to-digital and digital-to-analog conversion, digital filter design, discrete Fourier transforms, fast Fourier transforms, multi-rate signal processing, filter banks, and spectral analysis. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 431. Mutually Exclusive: Credit cannot be earned for ELEC 558 and ELEC 431.

ELEC 559 - INNOVATION LAB FOR MOBILE HEALTH
Short Title: INNOVATION LAB - MOBILE HEALTH
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will be an innovation lab for mobile health products. The students will organize themselves in groups with complementary skills and work on a single project for the whole semester. The aim will be to develop a product prototype which can then be demonstrated to both medical practitioners and potential investors. For successful projects with an operational prototype, the next steps could be applying for OWLspark (Rice accelerator program) or crowd sourcing (like Kickstarter) and/or work in Scalable Health Labs over summer. ELEC Juniors can also continue the project outcomes as a starting point for their senior design. Additional course work required beyond the undergraduate course requirements. Cross-list: BIOE 534. Graduate/Undergraduate Equivalency: ELEC 419. Mutually Exclusive: Credit cannot be earned for ELEC 559 and ELEC 419. Repeatable for Credit.
Course URL: www.ece.rice.edu/~ashu/ELEC419.html

ELEC 562 - OPTOELECTRONIC DEVICES
Short Title: OPTOELECTRONIC DEVICES
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an introduction to the fundamental principles of semiconductor optoelectronic devices. After reviewing the basic elements of quantum mechanics of electrons and photons, light-matter interaction (including laser oscillations), and semiconductor physics (band structure, heterostructures and alloys, optical processes), we will study the details of modern semiconductor devices for the generation, detection, and modulation of light. Additional coursework required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 462. Mutually Exclusive: Credit cannot be earned for ELEC 562 and ELEC 462.

ELEC 563 - INTRODUCTION TO SOLID STATE PHYSICS I
Short Title: INTRO TO SOLID STATE PHYSICS I
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Fundamental concepts of crystalline solids, including crystal structure, band theory of electrons, and lattice vibration theory. Cross-list: PHYS 563.
**ELEC 564 - SOLID-STATE PHYSICS II**  
*Short Title:* INTRO SOLID STATE PHYSICS II  
*Department:* Electrical & Computer Eng.  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* Continuation of PHYS 563, including scattering of waves by crystals, transport theory, and magnetic phenomena. Cross-list: PHYS 564.

**ELEC 565 - MATERIALS FOR ENERGY AND PHOTOCATALYSIS**  
*Short Title:* MATERIALS FOR ENERGY&CATALYSIS  
*Department:* Electrical & Computer Eng.  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* This course will cover the basic physics and chemistry of solar energy conversion and storage devices, and the current state of the art and future challenges in materials for energy and photocatalysis. In addition, physical and chemical characterization techniques will be covered.

**ELEC 566 - NANOPHOTONICS AND METAMATERIALS**  
*Short Title:* NANOPHOTONICS & METAMATERIALS  
*Department:* Electrical & Computer Eng.  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* The course will discuss basic concepts of nanophotonics and focus on what metamaterials are, how they work and how to build them. The course will conclude with applications of various meta-devices and upcoming research topics.

**ELEC 567 - NANO-OPTICS**  
*Short Title:* NANO-OPTICS  
*Department:* Electrical & Computer Eng.  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* The goal of this course is to understand concepts of light localization and light-matter interactions on the nanoscale, and to familiarize the students with the state-of-the-art research in the field of nano-optics.

**ELEC 568 - LASER SPECTROSCOPY**  
*Short Title:* LASER SPECTROSCOPY  
*Department:* Electrical & Computer Eng.  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* Introduction to the theory and practice of laser spectroscopy as applied to atomic and molecular systems. The course covers fundamentals of spectroscopy, lasers and spectroscopic light sources, high resolution and time resolved laser spectroscopy with applications in atmospheric chemistry, environmental science and medicine. Repeatable for Credit.

**ELEC 569 - ULTRAFAST OPTICAL PHENOMENA**  
*Short Title:* ULTRAFAST OPTICAL PHENOMENA  
*Department:* Electrical & Computer Eng.  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* This course covers the generation, propagation, and measurement of short laser pulses, of duration less than one picosecond. Concepts include mode locking, the effects of dispersion, optical pulse amplification, and time-domain non-linear optical phenomena. Intended as an introduction to ultrafast phenomena for graduate students or advanced undergraduates; a basic understanding of electromagnetic waves and of quantum mechanics is assumed. Cross-list: PHYS 569.  
*Course URL:* [www.ece.rice.edu/~daniel/569/569files.html](http://www.ece.rice.edu/~daniel/569/569files.html)

**ELEC 571 - IMAGING AT THE NANOSCALE**  
*Short Title:* IMAGING AT THE NANOSCALE  
*Department:* Electrical & Computer Eng.  
*Grade Mode:* Standard Letter  
*Course Type:* Seminar  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* A survey of the techniques used in imaging micron and nanometer structures with an emphasis on applications in chemistry, physics, biology, and engineering. The course includes an introduction to scanning probe, submicron optical, and electron microscopies, as well as discussions on the fundamental and practical aspects of image acquisition, artifacts, filtering, and machine learning analysis of such data. Homeworks will involve some familiarity and proficiency with Matlab. The final project will include analysis of the student's own research data.

**ELEC 572 - NANOPHOTONIC DEVICES AND CIRCUITS**  
*Short Title:* PHOTONIC DEVICES  
*Department:* Electrical & Computer Eng.  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture  
*Credit Hours:* 3  
*Restrictions:* Enrollment is limited to Graduate level students.  
*Course Level:* Graduate  
*Description:* An introduction to the theory and applications of nanophotonic devices built with high refractive index contrast. Topics include waveguides, couplers, resonators, photonic crystals and nonlinear optical devices. Both analytical and numerical techniques for devices design will be discussed.
ELEC 575 - LEARNING FROM SENSOR DATA
Short Title: LEARNING FROM SENSOR DATA
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The first half of this course develops the basic machine learning tools for signals images, and other data acquired from sensors. Tools covered include principal components analysis, regression, support vector machines, neural networks, and deep learning. The second half of this course overviews a number of applications of sensor data science in neuroscience, image and video processing, and machine vision. Additional course work required beyond the undergraduate course requirements. Graduate/Undergraduate Equivalency: ELEC 475. Mutually Exclusive: Credit cannot be earned for ELEC 575 and ELEC 475. Repeatable for Credit.

ELEC 576 - A PRACTICAL INTRODUCTION TO DEEP MACHINE LEARNING
Short Title: INTRODUCTION TO DEEP LEARNING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Deep Machine Learning has recently made many advances in difficult perceptual tasks, including object and phoneme recognition, and natural language processing. However, the field has a steep learning curve, both conceptually and practically. The point of this course is to engage students by jumping into the deep end, and building their own architectures and algorithms. Cross-list: COMP 576.

ELEC 577 - ALGORITHMS AND OPTIMIZATION FOR DATA SCIENCE
Short Title: OPTIMIZATION FOR DATA SCIENCE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course, we study algorithms for analyzing data with provable performance, statistical, and computational guarantees. We focus on applications in machine learning and signal processing. Topics include: efficient algorithms for convex optimization, inverse problem, low-rank and sparse models, dimensionality reduction, and randomized algorithms. Recommended Prerequisite(s): MATH 355 and (ECON 307 or STAT 310) or digital circuit courses.

ELEC 581 - CARDIOVASCULAR AND RESPIRATORY SYSTEM DYNAMICS
Short Title: CARDIO - RESP SYSTEM DYNAMICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Autonomic nervous system control of the cardiovascular and respiratory systems. Development of models of neuron and cardiac cell activity; models of ventricular and vascular system mechanics; models of pulmonary mechanics and gas transport. Includes a study of instrumentation and techniques used in the cardiac catherization laboratory. Discussions of different types of ventricular assist devices is also included. The course serves as an introduction to engineering in cardiovascular and respiratory system diagnosis and critical care medicine. Cross-list: BIOE 581. Recommended Prerequisite(s): Knowledge of ordinary differential equations; electricity and magnetism, and solid mechanics form elementary physics; linear control theory and elementary physiology of the cardiovascular and respiratory systems.

ELEC 582 - PHYSIOLOGICAL CONTROL SYSTEMS
Short Title: PHYSIOLOGICAL CONTROL SYSTEMS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of the somatic and autonomic nervous system control of biological systems. Simulation methods, as well as, techniques common to linear and nonlinear control theory are used. Also included is an introduction to sensors and instrumentation techniques. Examples are taken from the cardiovascular, respiratory, and visual systems. Additional coursework required beyond the undergraduate course requirements. Cross-list: BIOE 582. Graduate/Undergraduate Equivalency: ELEC 482. Mutually Exclusive: Credit cannot be earned for ELEC 582 and ELEC 482.

ELEC 583 - COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING
Short Title: COMP/NEUROSCIENCE/NEURAL ENGR
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to the anatomy and physiology of the brain. Includes basic electrophysiology of nerve and muscle. Develops mathematical models of neurons, synaptic transmission and natural neural networks. Leads to a discussion of neuromorphic circuits which can represent neuron and neural network behavior in silicon. Recommendation: Knowledge of electrical circuits, operational amplifier circuits and ordinary differential equations. Involves programming Matlab. Cross-list: BIOE 583, NEUR 583. Graduate/Undergraduate Equivalency: ELEC 481. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits; and ordinary differential equations. Mutually Exclusive: Credit cannot be earned for ELEC 583 and ELEC 481.
ELEC 585 - FUNDAMENTALS OF MEDICAL IMAGING I
Short Title: FUND MEDICAL IMAGING I
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce basic principles of image acquisition, formation and processing of several medical imaging modalities such as X-Ray, CT, MRI, and US that are used to evaluate the human anatomy. The course also includes visits to a clinical site to gain experience with the various imaging modalities covered in class. Additional coursework required beyond the undergraduate course requirements. Cross-list: BIOE 591. Graduate/Undergraduate Equivalency: ELEC 485. Mutually Exclusive: Credit cannot be earned for ELEC 585 and ELEC 485.

ELEC 586 - FUNDAMENTALS OF MEDICAL IMAGING II
Short Title: FUND MEDICAL IMAGING II
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on functional imaging modalities used specifically in nuclear medicine such as Gamma cameras, SPECT, and PET imaging. The course will introduce the basic principles of image acquisition, formation, processing and the clinical applications of these imaging modalities and lays the foundations for understanding the principles of radiotracer kinetic modeling. A trip to a clinical site in also planned to gain experience with nuclear medicine imaging. Additional coursework required beyond the undergraduate course requirements. Cross-list: BIOE 596. Graduate/Undergraduate Equivalency: ELEC 486. Mutually Exclusive: Credit cannot be earned for ELEC 586 and ELEC 486.

ELEC 588 - THEORETICAL NEUROSCIENCE I: BIOPHYSICAL MODELING OF CELLS AND CIRCUITS
Short Title: THEORETICAL NEUROSCIENCE
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We present the theoretical foundations of cellular and systems neuroscience from distinctly quantitative point of view. We develop the mathematical and computational tools as they are needed to model, analyze, visualize and interpret a broad range of experimental data. Additional course work required beyond the undergraduate course requirements. Cross-list: CAAM 615, NEUR 615. Graduate/Undergraduate Equivalency: ELEC 488. Mutually Exclusive: Credit cannot be earned for ELEC 588 and ELEC 488.

ELEC 589 - NEURAL COMPUTATION
Short Title: NEURAL COMPUTATION
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How does the brain work? Understanding the brain requires sophisticated theories to make sense of the collective actions of billions of neurons and trillions of synapses. Word theories are not enough; we need mathematical theories. The goal of this course is to provide an introduction to the mathematical theories of learning and computation by neural systems. These theories use concepts from dynamical systems (attractors, oscillations, chaos) and concepts from statistics (information, uncertainty, inference) to relate the dynamics and functions of neural networks. We will apply these theories to sensory computation, learning and memory, and motor control. Students will learn to formalize and mathematically answer questions about neural computations, including "what does a network compute?", "how does it compute?", and "why does it compute that way?" Prerequisites: knowledge of calculus, linear algebra, and probability and statistics. Graduate/Undergraduate Equivalency: ELEC 489. Mutually Exclusive: Credit cannot be earned for ELEC 589 and ELEC 489.

ELEC 590 - GRADUATE NON-THESIS RESEARCH PROJECTS
Short Title: GR NON-THESIS RES PROJECTS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Theoretical and experimental investigations under staff direction. Instructor Permission Required. Repeatable for Credit.

ELEC 591 - GRADUATE ELECTRICAL ENGINEERING RESEARCH PROJECTS-VERTICALLY INTEGRATED PROJECTS
Short Title: GRAD ELEC EN'G RESEARCH VIP
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Vertically Integrated Projects (VIP) teams include students from multiple years working on one larger, multi-year project defined by the instructor. Instructor Permission Required. Graduate/Undergraduate Equivalency: ELEC 491. Mutually Exclusive: Credit cannot be earned for ELEC 591 and ELEC 491. Repeatable for Credit.
ELEC 598 - INTRODUCTION TO ROBOTICS
Short Title: INTRODUCTION TO ROBOTICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the kinematics, dynamics, and control of robot manipulators and to applications of artificial intelligence and computer vision in robotics. Additional work required for Graduate course. Cross-list: COMP 598, MECH 598. Graduate/Undergraduate Equivalency: ELEC 498. Mutually Exclusive: Credit cannot be earned for ELEC 598 and ELEC 498.

ELEC 603 - TOPICS IN NANOPHOTONICS
Short Title: TOPICS IN NANOPHOTONICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The goal of this seminar is to understand concepts of light localization and light-matter interactions on the nanoscale, and to familiarize the students with the state-of-the-art research in the field of nano-optics through student-led research paper presentations and discussions.

ELEC 604 - NANO-OPTICS
Short Title: NANO-OPTICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Additional topics in ANN theories, with a focus on learning high-dimensional complex manifolds with neural maps (Self-Organizing Maps, Learning Vector Quantizers and variants), and application to data mining, clustering, classification, dimension reduction, sparse representation. The course will be a mix of lectures and seminar discussions with active student participation, based on most recent research publications. Students will have access to professional software environment to implement theories. Cross-list: COMP 602, STAT 602. Repeatable for Credit.
Course URL: www.ece.rice.edu/~erzsebet/NMLcourseII.html

ELEC 605 - COMPUTATIONAL ELECTRODYNAMICS AND NANOPHOTONICS
Short Title: COMPUTATIONAL ELECTRODYNAMICS & NANOPHOTONICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ELEC 502 or COMP 502 or STAT 502
Description: The goal of this seminar is to understand concepts of network information theory: multiple access, broadcast, relay and interference channels. Further topics will be explored as part of projects.

ELEC 631 - ADVANCED TOPICS IN SIGNAL PROCESSING
Short Title: ADVANCED TOPICS IN SIGNAL PROCESSING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (ELEC 531 and ELEC 533)
Description: Topic vary from semester to semester. Repeatable for Credit.

ELEC 632 - ADVANCED TOPICS IN IMAGE AND VIDEO PROCESSING
Short Title: ADVANCED TOPICS IN IMAGE & VIDEO PROCESS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on topics of current research interest in image and video processing. Students participate in selecting and presenting papers from technical literature. Discussions aim at identifying common themes and important trends in the field.

ELEC 635 - NETWORK INFORMATION THEORY
Short Title: NETWORK INFORMATION THEORY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ELEC 535
Description: This course will introduce the key building blocks in network information theory: multiple access, broadcast, relay and interference channels. Further topics will be explored as part of projects.
ELEC 638 - INFO-GAP THEORY AND ITS APPLICATIONS
Short Title: INFO-GAP THEORY & ITS APPS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Course Level: Graduate

ELEC 661 - NANOPHOTONICS, SPECTROSCOPY, AND MATERIALS FOR SUSTAINABILITY
Short Title: NANOPHOTONICS & SUSTAINABILITY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will cover the contributions that nanophotonic concepts and advanced spectroscopy techniques can make to the development and characterization of novel materials for energy and sustainability. Students will cover nanophotonic concepts for novel materials and characterization techniques, ultrafast and nanoscale spectroscopy techniques, and applications in energy and sustainability. For each topic, background information will be provided about the relevant science and engineering aspects, as well as examining the state-of-the-art in the topic, via student-presentations and literature reviews. Cross-list: CHEM 661, MSNE 661.

ELEC 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture, Seminar, Internship/Practicum, Laboratory
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ELEC 680 - NANO-NEUROTECHNOLOGY
Short Title: NANO-NEUROTECHNOLOGY
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will review current nanofabricated technologies for measuring, manipulating, and controlling neural activity. The course will be based on reviewing current academic literature and topics will include nano-electronic, -photonic, -mechanical, and -fluidic neural devices. Cross-list: BIOE 680.

ELEC 681 - FUNDAMENTALS OF MACHINE LEARNING
Short Title: FUNDAMENTALS MACHINE LEARNING
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the fundamentals of machine learning, including supervised learning, unsupervised learning, and reinforcement learning. This course will provide the student with the formal concepts and the basic intuition for the different topics of machine learning, from artificial neural networks to value function approximation. Because of the shared problems of machine learning, statistical inference, and signal processing, a focus of the course will be on share solution, e.g., dimensionality reduction, of these three fields. Repeatable for Credit.

ELEC 691 - NANOPHOTONICS, SPECTROSCOPY, AND MATERIALS FOR SUSTAINABILITY
Short Title: NANOPHOT, SPECT, MAT4SUST
Department: Electrical & Computer Eng.
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will cover the contributions that nanophotonic concepts and advanced spectroscopy techniques can make to the development and characterization of novel materials for energy and sustainability. We will cover nanophotonic concepts for novel materials and characterization techniques, ultrafast and nanoscale spectroscopy techniques, and applications in energy and sustainability. We will cover nanophotonic concepts for novel materials and characterization techniques, ultrafast and nanoscale spectroscopy techniques, and applications in energy and sustainability. Repeatable for Credit.

ELEC 692 - ADVANCED TOPICS IN DISTRIBUTED SYSTEMS
Short Title: ADV TOPICS IN DISTRIBUTED SYST
Department: Electrical & Computer Eng.
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We will learn and discuss recent advances in various areas in computer systems, including topics on security, distributed systems, networking, operating systems, and databases. The seminar will be divided into several sections, with each section focusing on one research trend. In each class, students will read one classic paper on the topic, and present two recent papers that describe the state of the art. Students can also team up and do a semester-long research project on any relevant topics. All students will need to make a final presentation at the end of the class on a potential project idea; for students that choose to do a semester-long project, they will also submit a six-page report on their project, in addition to giving a final presentation. Instructor Permission Required. Repeatable for Credit.
ELEC 693 - ADVANCED TOPICS-COMPUTER SYSTEMS  
**Short Title:** ADV TOPICS - COMPUTER SYSTEMS  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 1-3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course is a discussion based seminar about state of the art embedded and digital signal processing systems, with emphasis on both hardware architectures as well as software tools, programming models, and compilers. The seminar focuses on state of the art academic and commercial offerings in these areas. Cross-list: COMP 693. Repeatable for Credit.  

ELEC 694 - HOW TO BE A CHIEF TECHNOLOGY OFFICER  
**Short Title:** HOW TO BE A CTO  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Survey of the component and standards trends that are the basis of personal computers and digital appliances with the aim of predicting technologies, solutions, and new products five years into the future. Examples of these technologies are dual Core processors, iPods and their evolution, mobile wireless data devices, and even Google vs. Microsoft. Students will each pick a topic important to the digital lifestyle and through a series of one-on-one sessions develop a depth of understanding that is presented to the class. Formerly "Future Personal Computing Technologies." Cross-list: COMP 694. Repeatable for Credit.  
**Course URL:** [www.ece.rice.edu/Courses/694/](http://www.ece.rice.edu/Courses/694/)  

ELEC 695 - ADVANCED TOPICS IN COMMUNICATIONS AND STATISTICAL SIGNAL PROCESSING  
**Short Title:** INNOVATIONS IN MOBILE HEALTH  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a class of Graduate, Junior, Sophomore or Senior.  
**Course Level:** Graduate  
**Description:** This course is a discussion based seminar about state of the art embedded and digital signal processing systems, with emphasis on both hardware architectures as well as software tools, programming models, and compilers. The seminar focuses on state of the art academic and commercial offerings in these areas. Cross-list: COMP 693. Repeatable for Credit.  

ELEC 698 - ECE PROFESSIONAL MASTERS SEMINAR SERIES  
**Short Title:** ECE PROFESSIONAL MASTER SEM  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Electrical Eng degree.  
**Course Level:** Graduate  
**Description:** The Professional Masters Seminar Series presents a combination of seminars on emerging research topics in the many areas of ECE and industry-focused professional development. This course includes attendance and reports based on the seminars, colloquia, and distinguished lectures held each semester. Repeatable for Credit.  

ELEC 699 - FRONTIERS OF ELECTRICAL AND COMPUTER ENGINEERING  
**Short Title:** FRONTIERS OF ECE  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to students with a major in Electrical & Computer Eng.. Enrollment is limited to Graduate level students. Enrollment limited to students in a Doctor of Philosophy or Master of Electrical Eng degrees.  
**Course Level:** Graduate  
**Description:** Frontiers of Electrical and Computer Engineering presents emerging research topics in the many areas of ECE. This course includes attendance and reports based on the seminars, colloquia, and distinguished lectures held each semester. Repeatable for Credit.  

ELEC 800 - RESEARCH AND THESIS  
**Short Title:** RESEARCH AND THESIS  
**Department:** Electrical & Computer Eng.  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Research  
**Credit Hours:** 1-15  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Repeatable for Credit.  

### Emergency Med Studies/Practice (EMSP)  

**EMSP 281 - EMT-B: INTRODUCTION TO EMERGENCY CARE**  
**Short Title:** EMT-B INTRO TO EMERGENCY CARE  
**Department:** Kinesiology  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course is a state-sanctioned EMT-B Certification course which includes practical and didactic exploration into pre-hospital care. This class culminates with a national certification to practice pre-hospital care on the EMT-B level. This course will discuss anatomy, body systems, and the biochemical basis of emergency intervention in addition to practical application of EMT-B skills. Formerly HEAL 308 and BIOS 281 and NSCI 281. Instructor Permission Required.
EMSP 282 - ADVANCED EMT  
Short Title: ADVANCED EMT  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Continuation of EMSP 281, Emergency Care. Formerly BIOS 282, HEAL 310, and NSCI 282. Instructor Permission Required.

EMSP 375 - EMS INCHARGE LEADERSHIP COURSE  
Short Title: EMS INCHARGE LEADERSHIP COURSE  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Students preparing to hold leadership positions in EMS will expand their competency in emergency services, including emergency management and incident response, in addition to improving patient care and leadership skills. Participants will achieve certification in national emergency services courses, and will work as a team to manage a major event. Formerly UNIV 275. Instructor Permission Required.

EMSP 492 - EMERGENCY MEDICAL SERVICES RESEARCH COURSE  
Short Title: EMS RESEARCH COURSE  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: EMSP 492 is an independent program of study for students interested in research in prehospital medicine. All students will complete a research project under the supervision of a physician faculty member from Baylor College of Medicine. Projects may vary based on each student’s interest and faculty projects. Formerly NSCI 491. Instructor Permission Required. Repeatable for Credit.

EMSP 499 - EMT TEACHING PRACTICUM  
Short Title: EMT TEACHING PRACTICUM  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course is open to an undergraduate student who serves as an instructor for the Emergency Medical Technician course. As an instructor, he/she would need to participate in course planning, course assignments, and student evaluation. They would also be expected to present course material through preparing and delivering lectures, presentations, and practical skills instructions. Grade would be assigned based on student self-evaluation, class evaluation, and primary instructor assessment. Formerly NSCI 289. Instructor Permission Required. Repeatable for Credit.

Engineering (ENGI)

ENGI 100 - INTRODUCTION TO SPATIAL VISUALIZATION  
Short Title: INTRO SPATIAL VISUALIZATION  
Department: Engineering Division  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Laboratory  
Credit Hour: 1  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: The ability to mentally visualize in three dimensions is an important skill for engineers and scientists. In this course, students will move through ten different modules that will strengthen spatial reasoning and visualization skills. All assigned work will be completed during the scheduled class time. Only students scoring <70% on the PSVT:R will be allowed into the course. Course is limited to new first time matriculants only. Instructor Permission Required.

ENGI 120 - INTRODUCTION TO ENGINEERING DESIGN  
Short Title: INTRO TO ENGINEERING DESIGN  
Department: Engineering Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Students learn the engineering design process and use it to solve meaningful problems drawn from the community and around the world. Teams of students evaluate design requirements and construct innovative solutions in the Oshman Engineering Design Kitchen. Students develop teaming and communication skills. Only first year students may enroll. Non-first year students wishing to take introductory engineering design may enroll in ENGI 220. ENGI 120 does not fulfill the FWIS requirement or carry D3 credit. Mutually Exclusive: Credit cannot be earned for ENGI 120 and FWIS 188.
ENGI 128 - INTRODUCTION TO ENGINEERING SYSTEMS
Short Title: INTRO TO ENGINEERING SYSTEMS
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will be a fun, hands-on introduction to the key concepts of electrical/mechanical/computational systems. Each student will use a small mobile robot to learn about block diagrams, abstraction and modularity, energy storage and conservation, feedback and control, digital communications, and software design. All interested freshman are welcome, no previous experience or prerequisites are required. The course will conclude with a multi-robot final project.

ENGI 140 - ENGINEERING LEADERSHIP DEVELOPMENT
Short Title: ENG’G LEADERSHIP DEVELOPMENT
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The purpose of this course is to prepare students to begin developing the skills, knowledge, and motivations needed to become an engineering leader. Learning methods for the class include assessments of current leadership skills, skill-learning via lectures and discussions, skill-practice and feedback via experiential exercises, and skill development via self-directed action planning. Major deliverables for the class include an autobiographical paper, an engineering leadership portfolio, and a leadership development plan.

Course URL: rcel.rice.edu

ENGI 150 - SURVEY OF ENGINEERING DISCIPLINES
Short Title: SURVEY OF ENGR DISCIPLINES
Department: Engineering Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This seminar provides a survey of practice of engineering, including traditional and non-traditional career paths; graduate and professional options; and introductions to ethics, intellectual property, and written and oral communication. Engineering departments will provide overviews of their specific disciplines. Assignments include team presentations. Instructor Permission Required.

ENGI 150 - PROTOTYPING AND FABRICATION
Short Title: PROTOTYPING & FABRICATION
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ENGI 120
Description: Students in ENGI 210 will learn and practice advanced prototyping and fabrication skills useful in the construction of physical objects for engineering design projects. The course is structured as lecture and demonstration of basic and advanced prototyping techniques and out-of-class work practicing and honing the application of these techniques. Example techniques include low fidelity prototyping, 2D and 3D Computer Aided Design, electronics, foam cutting, laser cutting, plasma cutting, 3D printing, and molding/casting methods. Students will individually apply these techniques to create physical objects.

Course URL: engi210.blogs.rice.edu

ENGI 218 - ENGINEERING LEADERSHIP LAB I
Short Title: ENGINEERING LEADERSHIP LAB I
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Students develop a variety of leadership skills and abilities by solving weekly engineering challenges in small teams. Students practice various roles as team members and leaders, then receive rapid performance assessments and mentoring from fellow students and staff.
ENGI 219 - ENGINEERING LEADERSHIP LAB II
Short Title: ENGINEERING LEADERSHIP LAB II
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ENGI 218
Description: Students develop a variety of leadership skills and abilities by solving weekly engineering challenges in small teams. Students practice various roles as team members and leaders, then receive rapid performance assessments and mentoring from fellow students and staff. Instructor Permission Required.
Course URL: rcel.rice.edu/courses

ENGI 220 - INTRODUCTION TO ENGINEERING DESIGN II
Short Title: INTRO TO ENGINEERING DESIGN II
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Students with a class of Freshman may not enroll. Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Students learn the engineering design process and use it to solve meaningful problems drawn from the community and around the world. Teams of students evaluate design requirements and construct innovative solutions in the Oshman Engineering Design Kitchen. Students develop teaming and communication skills. Students may not be in their first year of school. First year students wishing to take introductory engineering design may enroll in ENGI 120. ENGI 220 is taught as the same time as ENGI 120.

ENGI 221 - NEW ENTERPRISES
Short Title: NEW ENTERPRISES
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, students will learn and experience a process for innovation-based venture development. During the semester, students will form teams and create a plan for a new venture.

ENGI 242 - COMMUNICATION FOR ENGINEERS: BUILDING A PRACTICAL TOOLBOX
Short Title: COMMUNICATION FOR ENGINEERS
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Students develop communication skills starting with critical thinking about communication strategy and how to best organize a message for different audiences. They will build skills in oral presentations, writing, data visualization, and interpersonal communication to communicate clearly and confidently in a variety of professional situations. Graduate/Undergraduate Equivalency: ENGI 542. Mutually Exclusive: Credit cannot be earned for ENGI 242 and ENGI 542.
Course URL: rcelconnect.org (http://rcelconnect.org)

ENGI 300 - ENGINEERING DESIGN WORKSHOP
Short Title: ENGINEERING DESIGN WORKSHOP
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 2-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced design students will have the opportunity to further their design projects in an independent study course. Students will work with faculty to develop their own schedule, set their own deadlines, goals, and expectations to be met for grading purposes. Students may complete advanced prototyping for their designs, conduct tests, perform safety evaluations with external committee and/or write up their work for publication. The specific tasks that will be completed are dependent on the project needs. Students will be held accountable through technical mentorship, weekly meetings, and prototype evaluations. To be eligible for ENGI 300 students must have taken ENGI 120 (or equivalent), ENGI 210, and ENGI 200. Instructor Permission Required. Repeatable for Credit.

ENGI 301 - INTRODUCTION TO PRACTICAL ELECTRICAL ENGINEERING
Short Title: INTRO TO PRACTICAL EE
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGI 120 or ENGI 220
Description: Students will acquire intermediate-level proficiency in the tools (both physical and software) used to design, build and debug embedded hardware designs. Students will learn the basics of electronic components and how to use those components in a successful embedded hardware design.
ENGI 302 - SUSTAINABLE DESIGN
Short Title: SUSTAINABLE DESIGN
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The objective of this course is to develop skills in formulating and solving problems arising from emerging technologies for the energy and water industries, such as green construction or renewable energy technologies, in the context of sustainable design. Students will be challenged to examine the economic, social, and environmental dimensions of emerging challenges and opportunities, by identifying the relevant objectives, constraints, and decision variables as viewed by various stakeholders. Grad students will have extra research assignments involving some aspect of a design solution. Cross-list: CEVE 302.

ENGI 303 - ENGINEERING ECONOMICS
Short Title: ENGINEERING ECONOMICS
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to the evaluation of alternative investment opportunities with emphasis on engineering projects and capital infrastructure. Time value of money concepts are developed in the context of detailed project evaluation and presentations. In addition, concepts and applications of risk analysis and investment under uncertainty are introduced. Requires oral and written presentations by students. Cross-list: CEVE 322. Graduate/Undergraduate Equivalency: ENGI 528. Mutually Exclusive: Credit cannot be earned for ENGI 303 and ENGI 528.

ENGI 315 - LEADING TEAMS AND INNOVATION
Short Title: LEADING TEAMS AND INNOVATION
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students learn the principles of engineering leadership, strategies for launching and leading engineering teams, and methods for utilizing creativity and innovation in engineering environments. Learning methods include case studies, simulations, group projects, and interactions with industry professionals. Graduate/Undergraduate Equivalency: ENGI 515. Mutually Exclusive: Credit cannot be earned for ENGI 315 and ENGI 515.
Course URL: recl.rice.edu

ENGI 317 - LEADERSHIP ACTION LEARNING
Short Title: LEADERSHIP ACTION LEARNING
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course allows students to practice leadership skills in an applied context as the leader of a team or project with a defined scope, schedule, and goal. Students will identify areas of leadership growth, and receive guided mentorship and feedback as they develop these skills through practice.

ENGI 318 - LEADING ENGINEERING LEADERSHIP LAB I
Short Title: LEADING ENG LEADERSHIP LAB I
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGI 315
Description: Students organize, execute, and debrief the leadership development activities completed by novice students in ENGI 218 (Engineering Leadership Lab I). ENGI 318 students learn advanced leadership and communication skills; get frequent practice delivering feedback; and receive intensive mentoring from course staff.

ENGI 319 - LEADING ENGINEERING LEADERSHIP LAB II
Short Title: LEADING ENG LEADERSHIP LAB II
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGI 315
Description: Students organize, execute, and debrief the leadership development activities completed by novice students in ENGI 219 (Engineering Leadership Lab II). ENGI 319 students learn advanced leadership and communication skills; get frequent practice delivering feedback; and receive intensive mentoring from course staff. This course is a continuation of ENGI 318. Instructor Permission Required.

ENGI 320 - ETHICS AND ENGINEERING LEADERSHIP
Short Title: ETHICS & ENGINRNG LEADERSHIP
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Civil & Environmental Engineer, Civil Engineering or Environment Analysis&Decisions. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 101
Description: Seminar introduces students to a framework for discussing and making ethical engineering and professional decisions. Using case studies and exercises, students will look at their own profession and its Engineering Code of Ethics as well as at the issues and risks they may face as managers and executives. Cross-list: CEVE 320. Graduate/Undergraduate Equivalency: ENGI 529. Mutually Exclusive: Credit cannot be earned for ENGI 320 and ENGI 529.
ENGI 330 - ENGINEERING PRACTICUM
Short Title: ENGINEERING PRACTICUM
Department: Engineering Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This undergraduate course is designed to supplement technical coursework in the school of engineering with practical application and reflection on the challenges and value of applying knowledge to real-world problems in professional settings. Student undertakes a work internship and writes a report under supervision of a faculty member. NOTE: Instructor permission required, and must be obtained prior to the start of the internship. Instructor Permission Required. Repeatable for Credit.

ENGI 350 - NEEDS IDENTIFICATION AND DESIGN IMPLEMENTATION
Short Title: NEEDS ID & DESIGN IMPLEMENT
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGI 120 or ENGI 220 or FWIS 188
Description: Students in this course will identify needs situated in two or more environments, and learn to ask questions that elucidate the problem, needed features and criteria for success. Students also develop implementation plans and conduct testing for refined design solutions that may include standards and safety compliance, patent applications, and manufacturing and user documents.

ENGI 355 - DIGITAL DESIGN AND VISUALIZATION
Short Title: DIGITAL DESIGN & VISUALIZATION
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGI 120 or ENGI 220 or FWIS 188
Description: Students will acquire intermediate-level proficiency in the creation of virtual models and engineering drawings using computer aided design. Emphasis will be placed on best modeling practices including efficient part creation, dimensioning, tolerancing, and formatting of engineering drawings. Students will use a number of programs to format data and create models.

ENGI 428 - ENTREPRENEURSHIP INDEPENDENT STUDY
Short Title: ENTREPRENEURSHIP IND STUDY
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students who have completed entrepreneurship coursework/training may use this course to learn the process of developing startups or launching new ventures. Students will meet weekly with course instructors and complete periodic assignments on advancing ventures. Instructor Permission Required.

ENGI 505 - ENGINEERING PROJECT MANAGEMENT AND ECONOMICS
Short Title: ENGINEERING PROJ MGMT & ECON
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Life cycle economic analysis approach to project development and management, project planning, and project economic analysis, contracting network scheduling techniques, risk management, organizational structures, and cases. 505 requires an additional paper. Cross-list: CEVE 505. Mutually Exclusive: Credit cannot be earned for ENGI 505 and CEVE 201.

ENGI 510 - TECHNICAL AND MANAGERIAL COMMUNICATIONS
Short Title: TECHNICAL AND MANAGERIAL COMM
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this communications course designed for Professional Masters students, the approach will be experiential and interactive, with in-class exercises, analyses and numerous presentations. The focus will be on your practicing and refining the oral and written presentation skills you will need in your professional career. You should be prepared to participate in class and must be very comfortable speaking and writing English. You should not take this course in your first semester at Rice. Preference will be given to PM students.

ENGI 515 - LEADING TEAMS AND INNOVATION
Short Title: LEADING TEAMS AND INNOVATION
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students learn the principles of engineering leadership, strategies for launching and leading engineering teams, and methods for utilizing creativity and innovation in engineering environments. Learning methods include case studies, simulations, group projects, and interactions with industry professionals. Graduate students are required to complete an additional paper focusing on leadership development. Instructor Permission Required. Graduate/Undergraduate Equivalency: ENGI 315. Mutually Exclusive: Credit cannot be earned for ENGI 515 and ENGI 315.
Course URL: rcel.rice.edu
ENGI 528 - ENGINEERING ECONOMICS
Short Title: ENGINEERING ECONOMICS
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Introduction to the evaluation of alternative investment opportunities with emphasis on engineering projects and capital infrastructure. Time value of money concepts are developed in the context of detailed project evaluation and presentations. In addition, concepts and applications of risk analysis and investment under uncertainty are developed. Requires oral and written presentations by students. Grad students will have an extra case study to perform. Cross-list: CEVE 528. Graduate/Undergraduate Equivalency: ENGI 303. Mutually Exclusive: Credit cannot be earned for ENGI 528 and ENGI 303.

ENGI 529 - ETHICS AND ENGINEERING LEADERSHIP
Short Title: ETHICS & ENGINEERING LEADERSHIP
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Civil & Environmental Engineer, Civil Engineering or Environment Analysis&Decisions. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar introduces students to a framework for discussing and making ethical engineering and professional decisions. Using case studies and exercises, students will look at their own profession and its Engineering Code of Ethics as well as at the issues and risks they may face as managers and executives. Graduate students will do an extra paper. Instructor Permission Required. Cross-list: CEVE 529. Graduate/Undergraduate Equivalency: ENGI 320. Mutually Exclusive: Credit cannot be earned for ENGI 529 and ENGI 320.

ENGI 530 - ENGINEERING PRACTICUM
Short Title: ENGINEERING PRACTICUM
Department: Engineering Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed to supplement technical coursework in the school of engineering with practical application and reflection on the challenges and value of applying knowledge to real-world problems in professional settings. Students undertake a work internship and write a report under supervision of a faculty member. NOTE: Instructor permission required, and must be obtained prior to the start of the internship. Instructor Permission Required. Repeatable for Credit.

ENGI 542 - COMMUNICATION FOR ENGINEERS: BUILDING A PRACTICAL TOOLBOX
Short Title: COMMUNICATION FOR ENGINEERS
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: This course shows how to solve complex, ill-defined, non-immediate problems. It explains how to combine innovative and critical thinking to: -1- frame the problem, -2- diagnose the problem, -3- identify potential solutions, and -4- choose a solution and implement it. The approach is based on cases, each student will work on a project of their choosing. The course is equally applicable to academic and non-academic projects (such as consulting) in an industry; as such, it is open to students from all schools and departments. It is a part of a larger professional development initiative at Rice to equip students with skills that employers are specifically asking for. Cross-list: LEAD 545.

ENGI 545 - STRATEGIC THINKING FOR COMPLEX PROBLEM SOLVING
Short Title: STRATEGIC THINKING
Department: Engineering Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course shows how to solve complex, ill-defined, non-immediate problems. It explains how to combine innovative and critical thinking to: -1- frame the problem, -2- diagnose the problem, -3- identify potential solutions, and -4- choose a solution and implement it. The approach is based on cases, each student will work on a project of their choosing. The course is equally applicable to academic and non-academic projects (such as consulting) in an industry; as such, it is open to students from all schools and departments. It is a part of a larger professional development initiative at Rice to equip students with skills that employers are specifically asking for. Cross-list: LEAD 545.
### ENGL 100 - INTRODUCTION TO LITERATURE

**Short Title:** INTRODUCTION TO LITERATURE  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.

**Description:** This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

### ENGL 121 - AP/OTH CREDIT IN ENGLISH

**Short Title:** AP/OTH CREDIT IN ENGLISH  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Transfer  
**Credit Hours:** 3  
**Course Level:** Undergraduate Lower-Level  
**Restrictions:** Graduate level students may not enroll.

**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

### ENGL 122 - AP/OTH CREDIT IN ENGLISH

**Short Title:** AP/OTH CREDIT IN ENGLISH  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Transfer  
**Credit Hours:** 3  
**Course Level:** Undergraduate Lower-Level  
**Restrictions:** Graduate level students may not enroll.

**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

### ENGL 175 - GLOBAL LITERATURES IN ENGLISH

**Short Title:** GLOBAL LITERATURES IN ENGLISH  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.

**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

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### ENGI 610 - MANAGEMENT FOR SCIENCE AND ENGINEERING

**Short Title:** MGT FOR SCIENCE/ENGINEERING  
**Department:** Engineering Division  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.

**Course Level:** Graduate  
**Description:** This course is for graduate and undergraduate students who want to understand the basics of management in new and/or small technology-based businesses and is particularly relevant to students who are interested in careers in technology or entrepreneurial ventures. NSCI 610/ENGI 610 is team taught to provide insight into how technology oriented firms manage people, projects, accounting, marketing, strategy, intellectual property, organizations and entrepreneurship. Student's active participation is essential. Students who take this course are eligible for MGMT 625. Please contact Dr. Harry Wilkinson: hewilkinson@sbcglobal.net. Cross-list: NSCI 610.

### ENGI 614 - LEARNING HOW TO INNOVATE?

**Short Title:** LEARNING HOW TO INNOVATE?  
**Department:** Engineering Division  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 2  
**Restrictions:** Enrollment is limited to Graduate level students.

**Course Level:** Graduate  
**Description:** Innovation has become a buzzword. Many of us aspire to be successful innovators, but how? There is ample attention for entrepreneurship, but less is available to support your innovation ambition. This course aims to give you an unconventional innovation experience. Repeatable for Credit.

### ENGI 615 - LEADERSHIP COACHING FOR ENGINEERS

**Short Title:** LEADERSHIP COACHING FOR ENGR  
**Department:** Engineering Division  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.

**Course Level:** Graduate  
**Description:** Leadership coaching is a professional skill that leaders use to enhance another person’s ability to achieve their goals. Students will learn how to lead others in their own professional development through the use of coaching. This course emphasizes experiential learning and some graduates will be selected to become coaches to Rice engineering undergraduates. Repeatable for Credit.

### ENGI 779 - BUSINESS AND URBAN ANALYTICS

**Short Title:** BUSINESS & URBAN ANALYTICS  
**Department:** Engineering Division  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.

**Course Level:** Graduate  
**Description:** The project based class offers the unique opportunity for students from distinct fields of business and engineering to solve a real world data driven problem in a collaborative way. The data and the problem statement will come from the Rice University’s Administrative Center for Sustainability and Energy Management (ACSEM) at the start of the semester. Instructor Permission Required. Cross-list: MGMT 779.

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### English (ENGL)

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ENGL 200 - CRITICAL READING AND WRITING
Short Title: CRITICAL READING AND WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A course designed for and required of all prospective English majors. Emphasis is on close reading, literary interpretation, and critical writing. Attention is paid to the major genres (poetry, drama, and fiction) across a range of historical periods.
Course URL: www.english.rice.edu

ENGL 201 - INTRODUCTION TO CREATIVE WRITING
Short Title: INTRO TO CREATIVE WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A course dedicated to the craft of the cultural essay: writing that analyzes and creatively engages the art forms, texts, and cultural experiences that move us, challenge us, and compel us to write through our responses to the world. Students will develop prose skills, a portfolio, and a sense of today's publishing environment.
Course URL: www.english.rice.edu

ENGL 202 - THE CREATIVE CULTURAL ESSAY
Short Title: THE CULTURAL ESSAY
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A course dedicated to the study and craft of fiction, nonfiction, and poetry. Through engaged reading and creative exercises, students will analyze the use of various elements of creative writing - including image, voice, tension, character, setting, and story. Students will develop a writing portfolio as well as a sense of the possibilities inherent in and unique to each genre.
Course URL: www.english.rice.edu

ENGL 203 - TOPICS IN CREATIVE WRITING
Short Title: TOPICS IN CREATIVE WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introductory, variable topics workshop in creative writing that asks students to work in multiple genres (fiction, non-fiction, poetry, reviewing, etc.). Topics will vary from semester to semester and may include "Food Writing," "Writing Green," "Persona," and more. Repeatable for Credit.
Course URL: english.rice.edu

ENGL 204 - FORMS OF POETRY
Short Title: FORMS OF POETRY
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines the fundamental architecture of poetry. How do poets create a sense of shape? What are the nuts and bolts of a poem? Students will read widely in the history of poetry from traditional meters and historical forms to contemporary free verse and experimental or open forms. Part workshop and part seminar, this course will feature critical and creative assignments and is designed for majors and non-majors, writers and non-writers alike.
Course URL: www.english.rice.edu

ENGL 210 - BEGINNINGS: BRITISH LITERATURE TO 1800
Short Title: BRITISH LITERATURE TO 1800
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A survey of representative British authors of the Middle Ages, the Renaissance, and the 18th century for both majors and non-majors.
Course URL: www.english.rice.edu

ENGL 211 - MAJOR BRITISH WRITERS: 1800 TO PRESENT
Short Title: MAJOR BRIT WRITERS:1800-PRESENT
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A survey of representative British authors of the 19th and 20th centuries for both majors and non-majors.
Course URL: www.english.rice.edu

ENGL 212 - SURVEY OF OLD ENGLISH
Short Title: SURVEY OF OLD ENGLISH
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to Old English Literature, this course will focus on the following: Anglo-Saxon literature and culture, especially the tradition of oral poetry, the textuality of manuscripts, and the relationship between the spoken and written word.
Course URL: www.english.rice.edu
ENGL 222 - THE WORLD AND SOUTH ASIA  
Short Title: WORLD AND SOUTH ASIA  
Department: English  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Introduction to important 20th and 21st-century writers in English from South Asia - the region that includes India, Pakistan, Bangladesh and Sri Lanka. Readings include award-winning and bestselling works (fiction and non-fiction) by writers who address a wide range of issues including national and cultural identity, colonialism, sexuality, religion, globalization and political violence. Cross-list: ASIA 222.  
Course URL: www.english.rice.edu

ENGL 255 - THE IDEA OF SHAKESPEARE  
Short Title: SHAKESPEARE  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Who was Shakespeare? How do we understand the global multimedia icon that is "Shakespeare"? Designed for non-majors or for potential English majors, this course offers an introductory approach to the works of William Shakespeare and to the Shakespeare "phenomenon" through close attention to his poems, play texts, and after effects.  
Course URL: www.english.rice.edu

ENGL 251 - POETRY AND POETICS  
Short Title: POETRY AND POETICS  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Course designed to introduce first and second year students to significant works of the poetic tradition, from ancient to contemporary, and from American and English masterworks to world poetry in translation.
ENGL 268 - INTRODUCTION TO NATIVE AMERICAN LITERATURE
Short Title: NATIVE AMERICAN LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This multi-genre course introduces students to Native American literature through the contemporary novel, autobiography, critical essays, poetry, and film. An awareness of historical, cultural, and political movements important to American Indian peoples will supplement literary analysis. The class will address issues of sovereignty, land claims, activism, and identity.
Course URL: www.english.rice.edu

ENGL 269 - GREEN WORLDS: SCIENCE FICTION AND THE ENVIRONMENT
Short Title: SCI FI AND THE ENVIRONMENT
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Examines the ways that science fiction has expressed and challenged ideas about nature, culture, society and politics and imagined alternative 'green' worlds. Will focus on authors such as Margaret Atwood, Octavia Butler and Paolo Bacigalupi: films such as "Wall-E" and "Avatar"; and accessible secondary criticism. Cross-list: ENST 265.

ENGL 270 - ASPECTS OF MODERN LITERATURE
Short Title: ASPECTS OF MODERN LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to modern/postmodern culture that may include readings of novels, plays, short stories, poems, psychoanalytic theory, and art criticism/philosophy. The emphasis is on reading and interpreting different kinds of texts in broad cultural contexts.
Course URL: www.english.rice.edu

ENGL 272 - LITERATURE AND MEDICINE
Short Title: LITERATURE AND MEDICINE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Designed for, but not limited to, students interested in the medical profession, this course introduces the study of medicine through reading imaginative literature—novels, plays, essays, poems—by and about doctors and patients, focusing on understanding ethical issues and on developing critical and interpretive skills.
Course URL: www.english.rice.edu

ENGL 273 - MEDICINE AND MEDIA
Short Title: MEDICINE AND MEDIA
Department: English
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An interdisciplinary exploration of the role of imaging technologies in the practice of medicine, and the role of mass media in shaping our understandings of the body, health, and disease. This course examines visual media structure "ways of seeing" for physicians and for the public. Emphasis will be placed on developing media literacy skills. Cross-list: SWGS 273.
Course URL: www.english.rice.edu

ENGL 274 - LITERATURE AND RELIGION
Short Title: LITERATURE AND RELIGION
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Literature and Religion examines the place of religious thought in literature and culture from the pre-modern to the modern world. The course examines how religious problems and questions from an investment in a theological world view to the critique of God and the providence have shaped literary form and function.
Course URL: www.english.rice.edu

ENGL 275 - FILM CRITICISM
Short Title: FILM CRITICISM
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course focuses on the concepts and techniques necessary to write film criticism and interpretation. Each two-week section will concentrate on a film, sample critical essays on that film and writing about the film to develop their skills, analytic techniques, and strategies for effective critical contribution. This course will draw on films in Hollywood, avant-garde, contemporary and international cinema. Cross-list: FILM 273, HART 285.
Course URL: www.english.rice.edu
ENGL 277 - LITERATURE AND FORENSICS
Short Title: LITERATURE AND FORENSICS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This pre-law course develops the skills necessary for legal and other argumentative writing. We learn the tactics associated with the interpretation of texts, muster evidence, and employ persuasive rhetorics. The course doubles its forensic investment by working through literary, historical and legal texts.
Course URL: www.english.rice.edu

ENGL 278 - MEDICINE IN THE AGE OF NETWORKED INTELLIGENCE
Short Title: MED IN AGE OF NETWORKED INTELL
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course imagines and predicts the future of medicine at its evolving intersection with technology. Examines how developments in mobile, social, personal and global health are transforming medical research, communication, practice. Emphasis on active learning through hands-on creative projects. Topics include social media, quantified self, big data, ethics, doctor-patient relationship.
Course URL: www.english.rice.edu

ENGL 286 - CLASSICAL AND CONTEMPORARY FILM AND THEORY
Short Title: CLASSICAL & CONTEMPORARY FILM
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A course focusing on contexts such as movies and ads, familiar plots and conventions define their significance. Cross-list: HART 286.
Course URL: www.english.rice.edu

ENGL 290 - TOPICS IN LITERARY AND CULTURAL ANALYSIS
Short Title: LITERARY CULTURAL ANALYSIS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introductory courses that cover a range of texts in social, political and aesthetic contexts, and can also include introductory courses on literary theory, cultural theory, and narrative. Please consult English department website for specific details. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 299 - ENGLISH LITERATURE AND THE PUBLIC HUMANITIES
Short Title: ENGLISH LIT/PUBLIC HUMANITIES
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, students learn to apply critical humanistic methods to issues of public importance, especially in the Houston area. Participants study necessary applications of humanistic inquiry to civic life and contribute to this work themselves. Consult the Humanities Research Center or the English department for more information. Cross-list: HURC 299. Repeatable for Credit.

ENGL 300 - PRACTICES OF LITERARY STUDY: READING METHODS
Short Title: PRACTICES OF LITERARY STUDY
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course makes students learn to apply critical humanistic methods to issues of public importance, especially in the Houston area. Participants study necessary applications of humanistic inquiry to civic life and contribute to this work themselves. Consult the Humanities Research Center or the English department for more information. Cross-list: HURC 299. Repeatable for Credit.

ENGL 301 - INTRODUCTION TO FICTION WRITING
Short Title: INTRO TO FICTION WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A course that teaches the fundamentals of fiction writing, and includes a mixture of reading and writing assignments. The goal is for each student to produce two short stories possessing imaginative ingenuity, structural integrity, and literary merit by the end of the semester.
Course URL: www.english.rice.edu

ENGL 302 - SCREENWRITING
Short Title: SCREENWRITING
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to the art and craft of screenwriting through a focused study of terminology, formatting and cinematic technique. Assignments will include writing exercises, weekly viewing of films and readings of screenplays. Students will write their own treatments, outlines and full-length screenplays. Repeatable for Credit.
Course URL: www.english.rice.edu
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<th>Course Code</th>
<th>Course Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course URL</th>
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<tr>
<td>ENGL 303</td>
<td>PLAYWRITING</td>
<td>PLAYWRITING</td>
<td>English</td>
<td>Standard Letter</td>
<td>Seminar</td>
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<td>Graduate level students may not enroll.</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
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<tr>
<td>ENGL 304</td>
<td>INTRODUCTION TO POETRY WRITING</td>
<td>INTRO TO POETRY WRITING</td>
<td>English</td>
<td>Standard Letter</td>
<td>Seminar</td>
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<td>Graduate level students may not enroll.</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
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<td>ENGL 305</td>
<td>INTRODUCTION TO CREATIVE NONFICTION WRITING</td>
<td>INTRO CREATIVE NONFICT WRITING</td>
<td>English</td>
<td>Standard Letter</td>
<td>Seminar</td>
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<td>Graduate level students may not enroll.</td>
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<td>ENGL 306</td>
<td>TOPICS IN FICTION WRITING</td>
<td>TOPICS IN FICTION WRITING</td>
<td>English</td>
<td>Standard Letter</td>
<td>Seminar</td>
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<td>Graduate level students may not enroll.</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
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<td>ENGL 307</td>
<td>TOPICS IN POETRY WRITING</td>
<td>TOPICS IN POETRY WRITING</td>
<td>English</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
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<td>ENGL 309</td>
<td>TOPICS IN CREATIVE NONFICTION WRITING</td>
<td>TOPICS IN CREATIVE NONFICTION WRITING</td>
<td>English</td>
<td>Standard Letter</td>
<td>Seminar</td>
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<td>Graduate level students may not enroll.</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
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<td>ENGL 311</td>
<td>TOPICS IN MEDIEVAL LITERATURE AND/OR CULTURE</td>
<td>MEDIEVAL TOPICS</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
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<td>ENGL 312</td>
<td>TOPICS IN OLD ENGLISH</td>
<td>TOPICS IN OLD ENGLISH</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
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<td>Graduate level students may not enroll.</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
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<td>ENGL 313</td>
<td>BEOWULF FOR THE 21ST CENTURY</td>
<td>BEOWULF FOR THE 21ST CENTURY</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
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<td>Course Code</td>
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<td>Department</td>
<td>Grade Mode</td>
<td>Course Type</td>
<td>Credit Hours</td>
<td>Restrictions</td>
<td>Course Description</td>
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<td>ENGL 314</td>
<td>MEDIEVAL ROMANCE</td>
<td>MEDIEVAL ROMANCE</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>A course that examines the development of romance as a genre during the medieval period. Cross-list: MDEM 319.</td>
</tr>
<tr>
<td>ENGL 315</td>
<td>MEDIEVAL CULTURES THROUGH FILM</td>
<td>MEDIEVAL CULTURES</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>4</td>
<td>Graduate level students may not enroll.</td>
<td>An interdisciplinary course exploring the literature, art, philosophy, history, music, and science of the Middle Ages, with films by Pasolini, Bergman, Dreyer, Einstein, Annaud, Vigne, and others, and highlighted by a medieval banquet. Cross-list: MDEM 315.</td>
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<tr>
<td>ENGL 316</td>
<td>CHAUCER</td>
<td>CHAUCER</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>An introduction to Geoffrey Chaucer’s The Canterbury Tales, Middle English, and the political and cultural climate of the fourteenth century. Cross-list: MDEM 316, SWGS 305.</td>
</tr>
<tr>
<td>ENGL 317</td>
<td>ARTHURIAN LITERATURE</td>
<td>ARTHURIAN LITERATURE</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>An examination of representative early Shakespearean plays, including tragedies, comedies, and histories. Plays vary from year to year. Cross-list: MDEM 317, SWGS 301.</td>
</tr>
<tr>
<td>ENGL 319</td>
<td>INTRODUCTION TO RENAISSANCE LITERATURE</td>
<td>INTRO RENAISSANCE LITERATURE</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Some of the greatest drama, poetry, and art in the Western tradition (British or European) flourished amid the religious and political tumult of the Renaissance. This course will survey the work of Renaissance literary figures who have profoundly influenced Western thought and culture, and it will introduce students to terminology and methods for analyzing them. Cross-list: MDEM 319.</td>
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<tr>
<td>ENGL 320</td>
<td>SHAKESPEARE ON FILM</td>
<td>SHAKESPEARE ON FILM</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>A course that examines both the text of selected Shakespearean plays and films based on them, focusing on the difference between film and drama. Cross-list: MDEM 319.</td>
</tr>
<tr>
<td>ENGL 321</td>
<td>EARLY SHAKESPEARE</td>
<td>EARLY SHAKESPEARE</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>An examination of representative early Shakespearean plays, including tragedies, comedies, and histories. Plays vary from year to year. Cross-list: MDEM 319.</td>
</tr>
<tr>
<td>ENGL 322</td>
<td>LATE SHAKESPEARE</td>
<td>LATE SHAKESPEARE</td>
<td>English</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>A survey of the origins and development of the Arthurian legend from the earliest chronicles in the sixth century and later medieval French, Welsh, Irish, and English Arthurian poems to modern adaptations of Arthurian material, including films. Cross-list: MDEM 317, SWGS 301. Cross-list: MDEM 317, SWGS 301.</td>
</tr>
</tbody>
</table>
ENGL 323 - RENAISSANCE DRAMA
Short Title: RENAISSANCE DRAMA
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course focusing on selected plays of Elizabethan and Jacobean England, read both for their literary significance and for the way they were part of the period’s social, economic, and political forces. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 325 - STUDY ABROAD: RICE ENGL MAJORS AT THE UNIVERSITY OF EXETER
Short Title: STUDY ABROAD: RICE AT EXETER
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 200 and ENGL 300
Description: Special course for the transfer credit of pre-approved coursework taken at the University of Exeter, as part of the English department’s study abroad program for English majors at the University of Exeter. Department Permission Required. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 326 - EARLY MODERN LITERATURE
Short Title: EARLY MODERN LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course focusing on various genres of English literature from the early modern period. Topics vary and have recently included “Love, Sex and Death in the Renaissance” and “Heaven and Hell.” Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 328 - MILTON
Short Title: MILTON
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course on the major poems and prose of John Milton with an emphasis on ‘Paradise Lost.’ Graduate/Undergraduate Equivalency: ENGL 528. Mutually Exclusive: Credit cannot be earned for ENGL 328 and ENGL 528.
Course URL: www.english.rice.edu

ENGL 330 - ORIGINS OF THE ENGLISH NOVEL
Short Title: ORIGINS OF THE ENGLISH NOVEL
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course focusing on the most important literary innovation of the 18th-century: the birth of the novel. We will examine the modern social and cultural forces crucial to and inextricable from this watershed development: the emergence of liberalism, conservatism, feminism, class, secular culture, the sex/gender system, individualism, and the separation of public and private spheres.
Course URL: www.english.rice.edu

ENGL 331 - TOPICS IN 18TH CENTURY BRITISH LITERATURE
Short Title: TOPICS IN 18TH C. BRITISH LIT
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course that covers the major themes, forms, authors, and genres in 18th-century British literature. Topics may include studies in the early novel tradition, literature’s connection to Enlightenment innovations in philosophy, politics, social structure, religion, and gender relations. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 332 - LITERATURE OF THE BRITISH ENLIGHTENMENT
Short Title: LIT OF BRITISH ENLIGHTENMENT
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course that examines a representative range of British prose and poetry from 1660-1790, the period known as the Enlightenment. This was a volatile age of plots, revolution, philosophical and scientific innovation, and literary transformation. Our readings will cover poems of several genres, short prose narratives, essays and philosophical treatises.
Course URL: www.english.rice.edu

ENGL 333 - 18TH CENTURY BRITISH FICTION
Short Title: 18TH CENTURY BRITISH FICTION
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course that explores the emergence and consolidation of the English novel and its dynamic relationship to many other 18th-century legacies: the modern individual, capitalism, civil society, the middle class, democracy, and colonialism.
Course URL: www.english.rice.edu
<table>
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<th>Course Code</th>
<th>Course Title</th>
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<th>Department</th>
<th>Grade Level</th>
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<th>Grade Mode</th>
<th>Credit Hours</th>
<th>Distribution Group</th>
<th>Course URL</th>
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<tr>
<td>ENGL 336</td>
<td>IRISH LITERATURE</td>
<td>Irish Literature</td>
<td>English</td>
<td>Graduate</td>
<td>Lecture</td>
<td>Standard</td>
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<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
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<td>ENGL 338</td>
<td>BRITISH ROMANTICISM</td>
<td>British Romanticism</td>
<td>English</td>
<td>Graduate</td>
<td>Lecture</td>
<td>Standard</td>
<td>3</td>
<td>I</td>
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<tr>
<td>ENGL 339</td>
<td>ROMANTICISM IN RUINS</td>
<td>Romanticism in Ruins</td>
<td>English</td>
<td>Graduate</td>
<td>Lecture</td>
<td>Standard</td>
<td>3</td>
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<tr>
<td>ENGL 341</td>
<td>VICTORIAN LITERATURE AND CULTURE</td>
<td>Victorian Literature &amp; Culture</td>
<td>English</td>
<td>Graduate</td>
<td>Lecture</td>
<td>Standard</td>
<td>3</td>
<td>I</td>
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<tr>
<td>ENGL 342</td>
<td>SURVEY OF VICTORIAN FICTION</td>
<td>Victorian Fiction</td>
<td>English</td>
<td>Graduate</td>
<td>Lecture</td>
<td>Standard</td>
<td>3</td>
<td>I</td>
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<tr>
<td>ENGL 343</td>
<td>JANE AUSTEN'S WORLDS</td>
<td>Jane Austen's Worlds</td>
<td>English</td>
<td>Graduate</td>
<td>Seminar</td>
<td>Standard</td>
<td>3</td>
<td>I</td>
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<td>ENGL 346</td>
<td>20TH CENTURY BRITISH LITERATURE</td>
<td>20th Century British Literature</td>
<td>English</td>
<td>Graduate</td>
<td>Lecture</td>
<td>Standard</td>
<td>3</td>
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**Description:**
- **ENGL 336**: A multi-genre course that explores the array of creative works that examines the Victorian period through poetry, non-fiction prose, fiction, art and material culture.
- **ENGL 338**: A multi-genre course on the Romantic period. This course will explore the excesses, extremes, and diversities of British Romanticism across a variety of media: plays, tales, confessions, novels, and satires (including illustrations, paintings, and visual spectacles).
- **ENGL 339**: The incomplete ruins - fragments - fascinate us. The course examines how this concern forms in the Romantic Period and how it remains relevant today. It focuses on texts (novels, poems, philosophy, history) and visual art; most sources will be Romantic, some contemporary (e.g. Wordsworth, Volney, Schlegel, Piranesi, Shelley, Burke, Sebald).
- **ENGL 341**: A multi-genre course that explores the array of creative works that examines the Victorian period through poetry, non-fiction prose, fiction, art and material culture.
- **ENGL 342**: A survey of the many genres of the nineteenth-century novel, this course will try to come to terms with some of the insistent questions posed by and through the fiction of the period. Cross-list: SWGS 372.
- **ENGL 343**: An exploration of Jane Austen as Regency writer and contemporary icon. The course will focus both on Austen's writing her novels, her juvenilia and her letters and on visual and textual adaptations of her work. Cross-list: SWGS 343.
- **ENGL 346**: A survey of major works in British Literature of the period, in all genres, and including Commonwealth literatures, with varying emphasis.
- **ENGL 350**: A survey of political and formal developments in French, German, Russian, and Eastern European novels by writers such as Proust, Hacek, Pasternak, Hrabal, and Boll.
ENGL 351 - THE CITY IN LITERATURE
Short Title: THE CITY IN LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Since 1700, literature's most important work has been to explain the city's effect on consciousness and modern individuality - in British, European, and American societies; in historical, cultural, and political terms; in poetry, drama, and fiction. The Unreal City can only be imagined.
Course URL: english.rice.edu

ENGL 353 - MODERN DRAMA
Short Title: MODERN DRAMA
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of plays from traditions of 20th century and contemporary theatre and performance, including work by O'Neill, Williams, Beckett, Pinter, Stoppard, Albee, Shepard, Mamet, Parks, and Kane. Course will include writing critical papers and some performance.
Course URL: www.english.rice.edu

ENGL 354 - QUEER LITERARY CULTURES
Short Title: QUEER LITERARY CULTURES
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to queer literary theory by reading works in several genres, from Sappho to the present day, including Shakespeare, Dickinson, Tennyson, Whitman, Proust, Stein and Woolf. Cross-list: SWGS 364.
Course URL: www.english.rice.edu

ENGL 355 - MODERN SHORT STORY: TOWARDS AN ETHICS OF FICTION
Short Title: MODERN SHORT STORY
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of great modern short fiction with emphasis on reading as an ethical enterprise. Selected critical essays complement works from Melville to Maupassant, Flaubert to Kafka to O'Connor as we talk about alienation and solitude, death and violence and the vicissitudes of family. Does not count toward French major. Cross-list: FREN 355. Recommended Prerequisite(s): Any 200-level course or above in English or French Studies, or HUMA 101 or 102.
Course URL: www.english.rice.edu

ENGL 356 - MODERNISMS
Short Title: MODERNISMS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An exploration of modernist work from the late 19th century to World War II. Course includes fiction, poetry, film, painting, theatre, music and theories of art.
Course URL: www.english.rice.edu

ENGL 357 - ORIGINS OF THE POSTMODERN
Short Title: ORIGINS OF THE POSTMODERN
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of diverse cultural manifestations of the "postmodern" through the last half of the twentieth century. Popular music, novels, plays, film, art, and fairy tales may be discussed.
Course URL: www.english.rice.edu

ENGL 358 - CONSUMPTION & CONSUMERISM
Short Title: CONSUMPTION & CONSUMERISM
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An exploration of the history, philosophy and culture of eating, drinking, shopping and other forms of consuming. Featuring detailed analysis of literatures in English, visual art, music, film and food.
Course URL: www.english.rice.edu

ENGL 359 - WRITING ON/OFF NEW ORLEANS
Short Title: WRITING ON/OFF NEW ORLEANS
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of the relation between New Orleans and the writing in and about it. Works by Kate Chopin, William Faulkner, Tennessee Williams, Walker Percy, Eudora Welty, John Kennedy Toole, Michael Ondaatje, and others will be studied. Students will create their own New Orleans text in a final paper.
Course URL: english.rice.edu
ENGL 360 - AMERICAN LITERATURE BEFORE THE CIVIL WAR  
Short Title: AMER LIT BEFORE THE CIVIL WAR  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: A course that focuses careful attention on complete reading on a number of the most significant traditionally valued texts of the "American Renaissance."  
Course URL: www.english.rice.edu

ENGL 361 - US LITERATURE FROM THE CIVIL WAR TO WWI  
Short Title: US LITERATURE CIVIL WAR TO WWI  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: A survey of the literature of the major authors of the period, that might include Mark Twain, Emily Dickinson, Stephen Crane, Henry James, and others.  
Course URL: www.english.rice.edu

ENGL 362 - MODERN AMERICAN FICTION  
Short Title: MODERN AMERICAN FICTION  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: A survey of the fiction of the first half of the 20th century, one of the great periods of social turmoil and intense artistic experimentation. Authors may include Chopin, Hemingway, Fitzgerald, Toomer, Faulkner, Hurston, Barnes.  
Course URL: www.english.rice.edu

ENGL 363 - THE US NOVEL POST-WORLD WAR II  
Short Title: US NOVEL POST-WORLD WAR II  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: An examination of the narrative experiments and trends of the period, from 1950 to the present.  
Course URL: www.english.rice.edu

ENGL 364 - MODERN AMERICAN POETRY  
Short Title: MODERN AMERICAN POETRY  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: A survey of representative American poets of the period. These may include Gertrude Stein, Amy Lowell, Robert Frost, Wallace Stevens, William Carlos Williams, Ezra Pound, Marianne Moore, T.S. Eliot.  
Course URL: www.english.rice.edu

ENGL 365 - AMERICAN POETRY 1960-PRESENT  
Short Title: AMERICAN POETRY 1960-PRESENT  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: A survey of contemporary U.S. poetry: poets studied may include Elizabeth Bishop, Robert Hayden, Randall Jarell, John Berryman, Robert Lowell, Gwendolyn Brooks, Denise Levertov, James Merrill, John Ashbury, Philip Levine, Anne Sexton, and others.  
Course URL: www.english.rice.edu

ENGL 366 - TOPICS IN AMERICAN LITERATURE  
Short Title: TOPICS IN AMERICAN LITERATURE  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: A variable topics course focusing on themes, movements or genres across several periods of American literature. Topics may include immigration, modernism, and post-nationalism. Repeatable for Credit.  
Course URL: www.english.rice.edu

ENGL 367 - LITERATURE AND CULTURE OF THE US-MEXICO BORDERLANDS  
Short Title: LIT & CULT, US-MEX BORDERLANDS  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: The course focuses on the cross-national cultures of the US-Mexico borderlands with attention to key issues in the history of the region: haunted modernities, organized resistance, migration, labor, and the traffic in bodies, drugs, and other goods. Readings include novels, short stories, critical essays, histories, film, and video. Cross-list: SWGS 367.  
Course URL: www.english.rice.edu
ENGL 368 - LITERATURE AND THE ENVIRONMENT
Short Title: LITERATURE & THE ENVIRONMENT
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course that asks the question: How does literature express or shape environmental values? In this class we will read American fiction and nonfiction exploring the relationship between human and nonhuman nature. Cross-list: ENST 368.
Course URL: www.english.rice.edu

ENGL 369 - THE AMERICAN WEST AND ITS OTHERS
Short Title: THE AMERICAN WEST & ITS OTHERS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Survey of a body of literature, film, and critical theory about the American West and the concept of regionalism. Explores region in relation to the nation and its borders, global media, coloniality, indigeneity and race, gender, and an ethics of place. Cross-list: SWGS 329.
Course URL: www.english.rice.edu

ENGL 370 - AFRICAN AMERICAN LITERATURE
Short Title: AFRICAN AMERICAN LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course that traces, through various genres and themes, African American literary history from the late eighteenth century to the present. Attention is given to theories and critiques of African American literature and culture. Cross-list: SWGS 370.
Course URL: www.english.rice.edu

ENGL 371 - CHICANO/A LITERATURE
Short Title: CHICANO/A LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A mixed-genre course focusing on the Chicano movement, the Chicano renaissance, and alternative literary and mythic traditions associated with them. Cross-list: SPPO 354, SWGS 354.
Course URL: www.english.rice.edu

ENGL 372 - THE AMERICAN WEST/AMERICAS
Short Title: THE AMERICAN WEST/AMERICAS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An investigation of U.S. Western concerns as they encounter the cultures, literatures, economies, ecologies, languages, and peoples of the Americas. Comparative study of notions of frontier, borders, the state, the Other. Attention to knowledges traveling south to north via immigration, narco-culture, and Latin Americanist scholarship.
Course URL: www.english.rice.edu

ENGL 373 - SURVEY OF AMERICAN FILM AND CULTURE
Short Title: SURVEY OF AMER FILM & CULTURE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course that explores the history of cinema in the U.S. from its origins to the present day. Cross-list: FILM 373, HART 380.
Course URL: www.english.rice.edu

ENGL 374 - CINEMA STUDIES
Short Title: CINEMA STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course central to the study of cinema theory, criticism, and history. Repeatable for Credit.

ENGL 375 - FILM AND LITERATURE
Short Title: FILM AND LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An exploration of twelve masterpieces of world cinema, with special attention to the texts (when applicable) on which they are based. Some of the filmmakers covered: Akira Kurosawa, Jean Renoir, Bernardo Bertolucci, Jean-Luc Godard, Roberts Bresson, Ingmar Bergman, Howard Hawks, and Kar Wai Wong.
Course URL: www.english.rice.edu
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 377</td>
<td>ART AND LITERATURE</td>
<td>ART AND LITERATURE</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
</tr>
<tr>
<td>ENGL 378</td>
<td>LITERATURE OF THE AMERICAS</td>
<td>LITERATURE OF THE AMERICAS</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
</tr>
<tr>
<td>ENGL 379</td>
<td>INTRODUCTION TO THIRD WORLD LITERATURE</td>
<td>INTRO THIRD WORLD LITERATURE</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
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<tr>
<td>ENGL 380</td>
<td>CONTEMPORARY ANGLOPHONE LITERATURES</td>
<td>CONTEMPORARY ANGLOPHONE LIT</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
</tr>
<tr>
<td>ENGL 381</td>
<td>TOPICS IN WOMEN WRITERS</td>
<td>TOPICS IN WOMEN WRITERS</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
</tr>
<tr>
<td>ENGL 382</td>
<td>FEMINIST THEORY</td>
<td>FEMINIST THEORY</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
</tr>
<tr>
<td>ENGL 383</td>
<td>GLOBAL FICTIONS</td>
<td>GLOBAL FICTIONS</td>
<td>English</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
</tr>
<tr>
<td>ENGL 384</td>
<td>AMERICAN INDEPENDENT CINEMA</td>
<td>AMERICAN INDEPENDENT CINEMA</td>
<td>English</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>4</td>
<td>Graduate level students may not enroll.</td>
</tr>
<tr>
<td>ENGL 385</td>
<td>COMMUNITY ENGAGEMENT/BRAND INNOVATION</td>
<td>COMMUNITY ENGAGEMENT/BRAND INNOVATION</td>
<td>English</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>4</td>
<td>Graduate level students may not enroll.</td>
</tr>
</tbody>
</table>

*Course URLs:*

- www.english.rice.edu

*Course Descriptions:*

ENGL 377 - ART AND LITERATURE

Course focuses on literatures in English that emerge in various geographical regions or national literatures studied in the context of regional and national cultures. Cross-list: SWGS 377.

ENGL 378 - LITERATURE OF THE AMERICAS

Course primarily surveys fiction, poetry, drama, film, and the interdependence of alternative and mainstream media cultures. Cross-list: SWGS 378.

ENGL 379 - INTRODUCTION TO THIRD WORLD LITERATURE

Course focuses on literatures in English that emerge in the Caribbean, and the Indian subcontinent. Authors discussed may include Rushdie, Narayan, Roy, Wolcott, Ngugi, Coetzee, and Achebe.

ENGL 380 - CONTEMPORARY ANGLOPHONE LITERATURES

Course focuses on literatures in English that emerge in the wake of European colonialism, except those from the United States. Writers might include those from Africa, Australia, Canada, India, or the Caribbean. Repeatable for Credit.

ENGL 381 - TOPICS IN WOMEN WRITERS

Course focuses on women writers from various traditions. Cross-list: SWGS 327. Repeatable for Credit.

ENGL 382 - FEMINIST THEORY

Course focuses on concepts that drive and divide social movements centered on gender equality, women's issues, and sexual identity in the two-thirds and one-third world, among them feminism; the body; race; labor; rights, needs, and desires. Cross-list: SWGS 380.

ENGL 383 - GLOBAL FICTIONS

Course has two components: one, it looks at recent fiction in English by U.S., British, and international writers that deal with global and transnational issues; and two, it studies the work of recent cultural critics who provide new understandings of an increasingly networked world as well as the imaginative and narrative tools–fictional, artistic, cinematic, electronic and visual–that we use to process the fast-paced realities of contemporary globalization.

ENGL 384 - AMERICAN INDEPENDENT CINEMA

Course focuses on the history of filmmaking outside of Hollywood in the United States throughout the 20th century, emphasizing the period from 1959 to the present. Special attention to the contributions of marginalized communities and the art world, innovative film styles, and the interdependence of alternative and mainstream media cultures. Cross-list: FILM 384.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Department</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Distribution Group</th>
<th>Course URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 385</td>
<td>FILM STUDIES</td>
<td>English</td>
<td>Lecture</td>
<td>3</td>
<td>Distribution Group I</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
</tr>
<tr>
<td>ENGL 386</td>
<td>MEDICAL MEDIA ARTS LAB</td>
<td>English</td>
<td>Lecture/Laboratory</td>
<td>4</td>
<td>Distribution Group I</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
</tr>
<tr>
<td>ENGL 387</td>
<td>CULTURAL STUDIES</td>
<td>English</td>
<td>Lecture</td>
<td>3,4</td>
<td>Distribution Group I</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
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<tr>
<td>ENGL 388</td>
<td>MEDIA STUDIES</td>
<td>English</td>
<td>Lecture</td>
<td>3-4</td>
<td>Distribution Group I</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
</tr>
<tr>
<td>ENGL 389</td>
<td>YOUTH STUDIES</td>
<td>English</td>
<td>Lecture</td>
<td>3</td>
<td>Distribution Group I</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
</tr>
<tr>
<td>ENGL 390</td>
<td>INTRODUCTION TO THEATRE</td>
<td>English</td>
<td>Lecture</td>
<td>3</td>
<td>Distribution Group I</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
</tr>
<tr>
<td>ENGL 392</td>
<td>CONTEMPORARY POETRY</td>
<td>English</td>
<td>Lecture</td>
<td>3</td>
<td>Distribution Group I</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
</tr>
<tr>
<td>ENGL 393</td>
<td>BLACK MANHATTAN: 1915-1940</td>
<td>English</td>
<td>Lecture</td>
<td>3</td>
<td>Distribution Group I</td>
<td><a href="http://www.english.rice.edu">www.english.rice.edu</a></td>
</tr>
</tbody>
</table>

**Description:**
- **ENGL 385 - FILM STUDIES:** A variable topics course that addresses interdisciplinary approaches to studying the relationships between film, photography, television, and digital technologies such as the internet and computer-generated imaging. Cross-list: FILM 386. Repeatable for Credit.
- **ENGL 386 - MEDICAL MEDIA ARTS LAB:** Students will collaborate with health professionals to create solutions to real-world medical communication, visualization and design problems. Working individually and in teams, students will apply critical thinking and theory to hands-on design. Projects may include production of short videos, infographics, app development, 3-D virtual models, creative writing, and other media arts. Cross-list: FILM 381.
- **ENGL 387 - CULTURAL STUDIES:** A variable topics course that may focus on one or more theorist, on a genre or theme, or on debates within the field of cultural studies. Recent topics have included film, mass culture, Marx, and contemporary ethnic studies. Not limited in period, scope, or geography. Repeatable for Credit.
- **ENGL 388 - MEDIA STUDIES:** A variable topics course that may focus on such areas as film genres, national cinemas, world cinema, directors or other thematically organized topics. Cross-list: FILM 385. Graduate/Undergraduate Equivalency: ENGL 589. Mutually Exclusive: Credit cannot be earned for ENGL 385 and ENGL 589. Repeatable for Credit.
- **ENGL 389 - YOUTH STUDIES:** A variable topics course exploring the cultural productions of youth, their social geographies, and youth as a critical field important to the theorization of activism, technology, law and incarceration, medicine, consumerism, citizenship, immigration, labor, posthumanism. Previous topics: Generation X, Third Wave Feminism, Obama and the Youth Vote, Twilight culture, Harry Potter & Gen Y. Cross-list: SWGS 389.
ENGL 396 - LITERARY GENRES
Short Title: LITERARY GENRES
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course that offers an in-depth look at a particular literary genre or subgenre over a range of historical periods. Topics may include detective fiction, romance, the novel, magical realism, the lyric, or melodrama. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 397 - TOPICS IN LITERATURE AND CULTURE
Short Title: TOPICS IN LITERATURE & CULTURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Course URL: www.english.rice.edu

ENGL 398 - SLAVERY IN 20TH C. FILM & FICTION
Short Title: SLAVERY IN 20TH CENTURY FILM AND FICTION
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course studies how twentieth century reconstructions of slavery in American literature and film engage contemporary anxieties regarding race, gender, sexuality, and national identity. These neo-slave narratives often critique modernity; challenge how we think about history, evidence, memory, and trauma; and trouble narrative conventions.
Course URL: www.english.rice.edu

ENGL 399 - THE BLACK IMAGINARY: 1775-PRESENT
Short Title: THE BLACK IMAGINARY
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course addresses some of the leading questions that shaped black writings and expressive culture in the United States from the late 18th century forward. Our readings will include Wheatley, Walker, Delany, Douglass, Du Bois, Ellison, Baldwin, King, Malcolm X, Morrison, Percival Everett, and early and contemporary films and music.
Course URL: www.english.rice.edu

ENGL 400 - SEMINAR FOR MAJORS
Short Title: SEMINAR FOR MAJORS
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A special seminar that focuses on the development of advanced research, presentation, and writing skills for intermediate to advanced level students. Topics will vary. Not offered every semester. Contact English department for further information. Recommended Prerequisite(s): ENGL 200 and ENGL 300. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 401 - ADVANCED FICTION WRITING
Short Title: ADVANCED FICTION WRITING
Department: English
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 301
Description: A course conducted mostly as a workshop. It will also include some assigned writing exercises and weekly reading of published short stories to deepen students' understanding of narrative technique. Additional time will be spent on special film viewings, reviews, and critiques and readings as directed. Procedures for entrance into this course may vary by semester and/or instructor. Consult English department website for more information. Instructor Permission Required. Repeatable for Credit.

ENGL 402 - WRITING LONGER FICTION: NARRATIVE DESIGN
Short Title: WRITING LONGER FICTION
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course for advanced fiction writers who wish to expand their knowledge of narrative design and work in longer forms. Students will write a proposal for a longer project at the start of the semester and complete no fewer than sixty pages (a novel excerpt, a complete novella, 2-3 linked stories) by the end.
Course URL: www.english.rice.edu
ENGL 404 - ADVANCED POETRY WRITING  
Short Title: ADV POETRY WRITING  
Department: English  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ENGL 304  
Description: An in-depth study of contemporary poetry, this course emphasizes the careful analysis of books by six to eight contemporary poets, the reading of selected essays on poetic technique, and the writing of poems with a view toward finding a personal voice. Repeatable for Credit.  
Course URL: www.english.rice.edu

ENGL 418 - RENAISSANCE DRAMA  
Short Title: RENAISSANCE DRAMA  
Department: English  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment limited to students with a class of Junior or Senior. Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ENGL 200 and ENGL 300  
Description: A variable topics course designed to build on student knowledge gained earlier in the curriculum. Repeatable for Credit.  
Course URL: www.english.rice.edu

ENGL 419 - TOPICS IN SHAKESPEARE  
Short Title: TOPICS IN SHAKESPEARE  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: A variable topics course that provides an opportunity to explore some dimension of Shakespeare's work with specialized focus. Please consult English department for specific details. Repeatable for Credit.  
Course URL: www.english.rice.edu

ENGL 422 - 18TH CENTURY BRITISH STUDIES  
Short Title: 18TH CENTURY BRITISH STUDIES  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: A variable topics course designed to build on student knowledge of eighteenth-century literature and/or culture gained earlier in the curriculum. Repeatable for Credit.  
Course URL: www.english.rice.edu

ENGL 424 - 20TH CENTURY BRITISH STUDIES  
Short Title: 20TH CENTURY BRITISH STUDIES  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: A variable topics course designed to build on student knowledge of twentieth-century literature and/or culture gained earlier in the curriculum. Repeatable for Credit.  
Course URL: www.english.rice.edu
ENGL 430 - EMPIRE AND BRITISH LITERATURE 1700-1950
Short Title: EMPIRE & BRITISH LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 200 and ENGL 300
Description: This course provides detailed knowledge of a diverse range of eighteenth and nineteenth-century texts that engaged the realities, possibilities, fantasies and pitfalls of the British Empire. Course also includes historical and archival material as well as recent critical and historical approaches to the study of empire and its relationship to cultural identity. Repeatable for Credit.
Course URL: english.rice.edu

ENGL 432 - TOPICS IN RICHARDSON'S CLARISSA
Short Title: RICHARDSON'S CLARISSA
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of Victorian literature and/or culture gained earlier in the curriculum. Recent topics have included the family, "The Pre-Raphaelites", "Around 1900" the "Long Victorian Novel", and "Victorian Legacies". Repeatable for Credit.
Course URL: english.rice.edu

ENGL 438 - THE GROTESQUE
Short Title: THE GROTESQUE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the grotesque in literature and art. It covers a variety of textual and visual sources across periods; theoretical materials will include works from literary studies, visual culture, art history, critical theory and aesthetics. Cross-list: SWGS 472. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 441 - VICTORIAN STUDIES
Short Title: VICTORIAN STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 200 and ENGL 300
Description: A variable topics course designed to build on student knowledge of Victorian literature and/or culture gained earlier in the curriculum. Recent topics have included the family, "The Pre-Raphaelites", "Around 1900" the "Long Victorian Novel", and "Victorian Legacies". Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 449 - TOPICS IN LITERATURE AND ECOLOGY
Short Title: LITERATURE AND ECOLOGY
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A special topics course that addresses literature and culture from 1750 to the present, with a view to understanding the new geological era that humans have created, and its ecological implications. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 459 - TOPICS IN ANGLO-AMERICAN/TRANSATLANTIC LITERATURE AND CULTURE
Short Title: TRANSATLANTIC LIT AND CULTURE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of twentieth and twenty-first century U.S. literature and/or culture gained earlier in the curriculum. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 460 - TOPICS IN LITERATURE AND ECOLOGY
Short Title: LITERATURE AND ECOLOGY
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A special topics course that addresses literature and culture from 1750 to the present, with a view to understanding the new geological era that humans have created, and its ecological implications. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 461 - 19TH-CENTURY AMERICAN STUDIES
Short Title: 19TH-CENTURY AMER STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of 19th-century American literature and/or culture gained earlier in the curriculum. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 462 - 20TH-21ST CENTURY AMERICAN STUDIES
Short Title: 20TH-21ST CENTURY AMER STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of twentieth and twenty-first century U.S. literature and/or culture gained earlier in the curriculum. Recent topics have included social justice and contemporary fiction. Cross-list: SWGS 462. Repeatable for Credit.
Course URL: www.english.rice.edu
ENGL 466 - STUDIES IN AMERICAN LITERATURE AND CULTURE
Short Title: AMERICAN LITERATURE & CULTURE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 200 and ENGL 300
Description: A special topics course in American literature and culture that transcends historical periods. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 470 - STUDIES IN AFRICAN AMERICAN LITERATURE
Short Title: AFRICAN AMERICAN STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on knowledge of African American literature gained earlier in the curriculum. Recent topics include black women writers. Cross-list: SWGS 453. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 471 - STUDIES IN CHICANO/A LITERATURE
Short Title: CHICANA/O LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of chicano/a literature and culture gained earlier in the curriculum. Past topics have included the Chicano/a novel, and Transitions and Translations Chicano/a Autobiography. Cross-list: SPPO 456. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 480 - ADVANCED YOUTH STUDIES
Short Title: ADVANCED YOUTH STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Variable topics course designed to build on knowledge students gained earlier in the curriculum. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 481 - STUDIES IN FEMINIST LITERARY THEORY
Short Title: STUDIES IN FEMINIST LIT THEORY
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of feminist theory gained earlier in the curriculum. Past topics have included sexualities, Marriage and Its Others, and Third Wave Feminism. Cross-list: SWGS 407. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 484 - STUDIES IN LITERARY GENRES
Short Title: STUDIES IN LITERARY GENRES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge gained earlier in the curriculum. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 485 - STUDIES IN MODERN LITERATURE
Short Title: STUDIES IN MODERN LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of modern literature gained earlier in the curriculum. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 486 - STUDIES IN CRITICAL REGIONALISM
Short Title: STUDIES IN CRITICAL REGIONALISM
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on knowledge students gained earlier in the curriculum. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 489 - STUDIES IN FILM
Short Title: STUDIES IN FILM
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3,4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of film studies gained earlier in the curriculum. Repeatable for Credit.
Course URL: www.english.rice.edu
ENGL 493 - INDEPENDENT STUDY/DIRECTED READING  
**Short Title:** INDEPENDENT STUDY/DIR READING  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hours:** 1-6  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A variable-credit course designed for students who want to pursue intensive semester-long study of a particular topic not included in the curriculum. Students must identify and receive the approval of an English department faculty member. Instructor and Department approval must be granted prior to registration. Instructor Permission Required. Repeatable for Credit.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

ENGL 494 - SENIOR THESIS PREPARATION  
**Short Title:** SENIOR THESIS PREPARATION  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Research  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ENGL 200 and ENGL 300  
**Description:** Special work, research and preliminary preparation of a substantive research project for advanced English majors under the supervision of a member of the English department. Prerequisites: ENGL 200 and ENGL 300. Consult English department website for procedures and application. Instructor and department approval must be granted prior to registration. Instructor Permission Required. Repeatable for Credit.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

ENGL 495 - SENIOR THESIS  
**Short Title:** SENIOR THESIS  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Research  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ENGL 200 and ENGL 300 and (ENGL 493 or ENGL 494)  
**Description:** Writing and completion of a substantive research project under the supervision of a member of the English department. Prior approval of instructor and department approval must be granted prior to registration. Consult English department website for procedures and application. Instructor and department approval must be granted prior to registration. Prerequisites: ENGL 200; ENGL 300; ENGL 493 or 494. Instructor Permission Required. Repeatable for Credit.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

ENGL 497 - STUDIES IN LITERATURE AND CULTURE  
**Short Title:** VARIOUS TOPICS IN LIT & CULT  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ENGL 200 and ENGL 300  
**Description:** A variable topics course in a variety of fields and genres, such as City in Literature. Repeatable for Credit.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

ENGL 498 - QUEER THEORY  
**Short Title:** QUEER THEORY  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** An examination of key issues in queer theory that links those issues to other major literary and cultural theories of the past quarter century. As such the course will also serve as an introduction to psychoanalytic theory, postculturalism, deconstruction, postcolonial theory, film studies and recent work on the relationship between science and literature. Cross-list: SWGS 430. Repeatable for Credit.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

ENGL 509 - MASTER'S THESIS  
**Short Title:** MASTER'S THESIS  
**Department:** English  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

ENGL 510 - PEDAGOGY SEMINAR  
**Short Title:** PEDAGOGY SEMINAR  
**Department:** English  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

ENGL 510 - PEDAGOGY SEMINAR  
**Short Title:** PEDAGOGY SEMINAR  
**Department:** English  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** For third-year graduate students preparing to teach their own classes in their fourth year. This course will help students put together syllabi and other teaching materials, address various pedagogical issues and problems, formulate their teaching philosophies.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)
ENGL 512 - OLD ENGLISH LANGUAGE  
Short Title: OLD ENGLISH LANGUAGE  
Department: English  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A graduate level introduction to the language, prose and shorter poems. Graduate/Undergraduate Equivalency: ENGL 412. Mutually Exclusive: Credit cannot be earned for ENGL 512 and ENGL 412.  
Course URL: www.english.rice.edu

ENGL 513 - THEORY AND MEDIEVAL LITERATURE  
Short Title: THEORY AND MEDIEVAL LITERATURE  
Department: English  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A course in Literary and/or Critical Theory's engagement with Medieval Literature. Topics may include, "Gender Theory and Chaucer," "The Neighbor in Medieval Romance," "Medieval Ecologies," "Postcolonial Medieval," "Imagining Medieval Geographies/Cartographies." Repeatable for Credit.

ENGL 514 - MIDDLE ENGLISH LITERATURE AND SUBJECTIVITY  
Short Title: MIDDLE ENGL LIT & SUBJECTIVITY  
Department: English  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A survey of middle English lyrics, romances, dream visions, debate poems, mystery and morality plays, and other philosophical and biographical treatises from 1250-1500.  
Course URL: www.english.rice.edu

ENGL 516 - CHAUCER AND THE SUBVERSIVE OTHER  
Short Title: CHAUCER & THE SUBVERSIVE OTHER  
Department: English  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: An exploration of exemplary treatments of alterity and difference in Chaucer. See course webpage for additional information.  
Course URL: www.english.rice.edu

ENGL 517 - MEDIEVAL WOMEN WRITERS  
Short Title: MEDIEVAL WOMEN WRITERS  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: An examination of the most significant medieval European women authors from the tenth through the seventeenth centuries, from the Byzantine Empire to France, Germany, Italy, England, Austria, Belgium, Bohemia, and Spain. See course web page for additional information. Cross-list: SWGS 517.  
Course URL: www.english.rice.edu

ENGL 520 - SHAKESPEARE AND DIFFERENCE  
Short Title: SHAKESPEARE AND DIFFERENCE  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Please consult the English department website for additional information. Cross-list: SWGS 520.  
Course URL: www.english.rice.edu

ENGL 521 - SHAKESPEARE  
Short Title: SHAKESPEARE  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A variable topics course. Please consult the English department website for additional information. Repeatable for Credit.  
Course URL: www.english.rice.edu

ENGL 522 - SHAKESPEARE AND THEORY  
Short Title: SHAKESPEARE AND THEORY  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A variable topics course. Please consult the English department website for additional information. Repeatable for Credit.  
Course URL: www.english.rice.edu
ENGL 525 - LITERATURE AND VISUAL ART
Short Title: LITERATURE AND VISUAL ART
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the relationship between literature and visual art. It covers a variety of textual and visual sources; theoretical materials will include works from literary studies, visual culture, art history, critical theory and aesthetics. Cross-list: HART 518. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 527 - STUDIES IN RENAISSANCE LITERATURE
Short Title: RENAISSANCE
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 528 - MILTON
Short Title: MILTON
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: ENGL 328. Mutually Exclusive: Credit cannot be earned for ENGL 528 and ENGL 328.
Course URL: www.english.rice.edu

ENGL 532 - 18TH CENTURY BRITISH STUDIES
Short Title: 18TH CENTURY BRITISH STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional information. Recent topics include Enlightenment Institutions, Origins of British Novel, Eighteenth-century Emergences, and Libertinism. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 537 - 19TH CENTURY STUDIES
Short Title: 19TH CENTURY STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional information. Recent topics have included "The Serialization of the Novel," Victorian Nonhumans," and "Genealogy of Geopolitics." Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 538 - ROMANTICISM IN CONTEXTS
Short Title: ROMANTICISM IN CONTEXTS
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Topics might include: Wordsworth; Blake; Keats & Shelley; Romanticism and Visual Cultures: Romantic Poetics; Aesthetics. For additional information consult the English department website. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 541 - VICTORIAN STUDIES
Short Title: VICTORIAN STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional information. Recent topics have included "Material Constructions, or What Things Have to Do With Us", and "On or About 1860". Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 542 - VICTORIAN FICTION
Short Title: VICTORIAN FICTION
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional information. Recent topics have included "The Victorian Marriage Plot", "The History of the Novel, Part II"; and "Victorian and Modern Sexualities". Cross-list: SWGS 542. Repeatable for Credit.
Course URL: www.english.rice.edu
ENGL 546 - SPECIAL TOPICS: 20TH CENTURY BRITISH LITERATURE

Short Title: SP 20TH CENTURY BRITISH LIT
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Cross-list: SWGS 546. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 550 - 19TH CENTURY AMERICAN/US LITERATURE

Short Title: 19TH C. AMERICAN/US LITERATURE
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Recent topics have included Dickinson and Crane; Hawthorne and Stowe; Male Subjectivities; Howells and Wharton; 19th-century Women Writers; Slavery and the Sentiment Novel; Liberalism; and Agency, Class and Anxiety in 19th-century American Literature and Criticism. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 564 - FAULKNER AND CONTEMPORARY THEORY

Short Title: FAULKNER & CONTEMP THEORY
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An intensive examination of four or five of Faulkner’s major novels in the context of a broad range of twentieth-century interpretive strategies. The class will consider issues of narrative form, social context, gender, race, and modern and postmodern aesthetics. Consult the English department website for additional information.
Course URL: www.english.rice.edu

ENGL 569 - TRANSNATIONAL AMERICAN STUDIES

Short Title: TRANSNATIONAL AMERICAN STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course introduces the major critical voices in the transnational turn that has been underway in American literary studies for the last decade. Further, it focuses on a series of literary texts and case studies that have occasioned reanalysis of the critical tools and assumptions governing American studies.
Course URL: www.english.rice.edu

ENGL 570 - AFRICAN AMERICAN STUDIES

Short Title: AFRICAN AMERICAN STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 572 - CHICANO/A STUDIES

Short Title: CHICANO/A STUDIES
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Recent topics have included Narrative Theory and Chicano/a Ethnography. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 577 - EMERGENT MEDIA: TECHNOLOGIES, NETWORKS, CULTURE

Short Title: EMERGENT MEDIA: TECH, NET, CULT
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will delve deeply into media theory, examining the complex interplay between the emergence of new media technologies in different historical periods (past, present and future), the networks of commerce and creativity that fuel and arise from these innovations, and the cultural productions that result.
Course URL: www.english.rice.edu

ENGL 581 - CULTURAL STUDIES: CONTEMPORARY LITERATURE, CULTURE AND POLITICS

Short Title: CONTEMP LIT., CULTURE & POLI
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Recent topics have included Contemporary Issues in U.S. Culture and Studies in Sexuality: Thinking Sex Under Neo-Liberalism. Cross-list: SWGS 581. Repeatable for Credit.
Course URL: www.english.rice.edu
ENGL 582 - FEMINIST LITERARY THEORY  
Short Title: FEMINIST LITERARY THEORY  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A variable topics course. Please consult the English department website for additional course information. Recent topics have included Sexualities. Repeatable for Credit.  
Course URL: www.english.rice.edu

ENGL 583 - READING MATERIAL  
Short Title: READING MATERIAL  
Department: English  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course considers the contesting claims made on the term "material" and their implications for how we read critically, with particular attention to the question of class; the material status of nature and the body; gender, race, and sexual identities. Cross-list: SWGS 583.  
Course URL: www.english.rice.edu

ENGL 584 - THINKING SEX UNDER NEO-LIBERALISM  
Short Title: THINKING SEX UNDER NEO-LIB  
Department: English  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Taking as its historical period the social crises defining the emergence of neo-liberal capitalism in the late twentieth century, this course focuses on new formations of gender and sexuality in US and transnational culture and inquiries into critical concepts being forwarded to address it. Cross-listed with SWGS 584. Cross-list: SWGS 584.  
Course URL: www.english.rice.edu

ENGL 585 - POSTCOLONIALISM AND BEYOND  
Short Title: POSTCOLONIALISM AND BEYOND  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A course that serves both as an introduction to postcolonial theory and as a reevaluation of its political and ethical ends vis-a-vis recent debates around globalization and cosmopolitanism. For additional course information please consult the English department website. Cross-list: SWGS 585.  
Course URL: www.english.rice.edu

ENGL 589 - FILM STUDIES  
Short Title: FILM STUDIES  
Department: English  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A variable topics course. Please consult the English department website for additional course information. Graduate/Undergraduate Equivalency: ENGL 385. Mutually Exclusive: Credit cannot be earned for ENGL 589 and ENGL 385. Repeatable for Credit.  
Course URL: www.english.rice.edu

ENGL 591 - STUDIES IN LITERATURE AND OTHER DISCIPLINES  
Short Title: STUDIES IN LIT & OTHER DISCIPL  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A variable topics course. Please consult the English department website for additional course information. Recent topics have included Visual Cultures 1550-1800 and Problems of Close Reading in Literature and Film. Repeatable for Credit.  
Course URL: www.english.rice.edu

ENGL 592 - STUDIES IN MODERNISM  
Short Title: STUDIES IN MODERNISM  
Department: English  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A variable topics course. Please consult the English department website for additional course information. Recent topics have included What Was Modernism; and Joyce and Modernism. Repeatable for Credit.  
Course URL: www.english.rice.edu

ENGL 594 - STUDIES IN CONTEMPORARY LITERATURE AND CULTURE  
Short Title: CONTEMP. LIT AND CULTURE  
Department: English  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A variable topics course. Please consult the English department website for additional course information. Recent topics have included Global English; Globalization and its Discontents; and Critical Regionalisms. Cross-list: HART 594. Repeatable for Credit.  
Course URL: www.english.rice.edu
ENGL 596 - STUDIES IN MAJOR AMERICAN AUTHORS
Short Title: STUDIES IN MAJ AMER AUTHORS
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Recent topics have included Emerson and Posthumanism. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 599 - STUDIES IN LITERARY THEORY: READING MATERIALS
Short Title: STUDIES IN LITERARY THEORY
Department: English
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English dept website for additional course information. Recent topics have included Pragmatism and Postmodernity; Systems Theory; Post-Structuralism and Postmodernity; and Where We've Been: Reflecting on the Academy. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 600 - TOPICS IN LITERARY STUDIES
Short Title: TOPICS IN LITERARY STUDIES
Department: English
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Open only to those graduate students teaching independent courses in the English department in the fall semester. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 601 - FALL TEACHING PRACTICUM
Short Title: FALL TEACHING PRACTICUM
Department: English
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Open only to those graduate students serving as teaching assistants for courses in English. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 602 - SPRING TEACHING PRACTICUM
Short Title: SPRING TEACHING PRACTICUM
Department: English
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Open only to those graduate students serving as teaching assistants for courses in English. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 603 - FALL TEACHING OF LITERATURE AND COMPOSITION
Short Title: FALL TEACHING OF LIT & COMP
Department: English
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Open only to graduate students teaching independent courses in the English department in the fall semester. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 604 - SPRING TEACHING OF LITERATURE AND COMPOSITION
Short Title: SPRING TEACHING OF LIT & COMP
Department: English
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Open only to graduate students teaching independent courses in the English department in the spring semester. Repeatable for Credit.
Course URL: www.english.rice.edu

ENGL 605 - THIRD-YEAR WRITING WORKSHOP
Short Title: THIRD-YEAR WRITING WORKSHOP
Department: English
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A workshop required of third-year students designed to help transform seminar papers into works of publishable quality.
Course URL: www.english.rice.edu

ENGL 610 - TOPICS IN LITERARY STUDIES PART 2
Short Title: TOPICS IN LITERARY STUDIES 2
Department: English
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The second in a two-semester sequence of courses designed to introduce first-year graduate students to different methods and theoretical approaches, to the history and culture of the university as an institution, and to professional genres.
Course URL: english@rice.edu
Environmental Studies (ENST)

ENST 100 - ENVIRONMENT, CULTURE AND SOCIETY
Short Title: ENVIRONMENT, CULTURE & SOCIETY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This introductory course in environmental studies helps students to better understand the complex interrelationship between human cultures and their social and physical environments. Lectures and assignments draw upon the methods and expertise of architecture, the humanities and the social sciences. This is a core course of Rice’s Environmental Studies minor. Cross-list: ARCH 105.

ENST 101 - THE EARTH
Short Title: THE EARTH
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Freshman, Junior, Sophomore or Senior. Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
ENST 102 - HISTORY OF THE EARTH AND LIFE  
Short Title: HISTORY OF THE EARTH & LIFE  
Department: Environmental Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Study of earth’s systems over the past 4.6 billion years. Topics include evolution of life, continents, ocean basins and climate. Cross-list: ESCI 102.

ENST 113 - ENVIRONMENTAL CRISIS SEMINAR  
Short Title: ENVIRONMENTAL CRISIS SEMINAR  
Department: Environmental Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group III  
Credit Hour: 1  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Discussion of environmental crises. Topics vary annually. Cross-list: EBIO 113, ESCI 113. Repeatable for Credit.

ENST 114 - NATURAL DISASTER SEMINAR  
Short Title: NATURAL DISASTER SEMINAR  
Department: Environmental Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group III  
Credit Hour: 1  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Seminar topics vary by term. Cross-list: ESCI 114. Repeatable for Credit.

ENST 117 - FRESHMAN SEMINAR IN LOCAL ENVIRONMENTAL SCIENCE RESEARCH  
Short Title: FRESHMAN ENVIRONMENTAL SEMINAR  
Department: Environmental Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group III  
Credit Hour: 1  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: A 7-week seminar course to introduce freshmen perspective environmental science researches to the excitement of research at Rice and in the broader Houston area, and to provide context with which to think about facts presented in textbooks. Small groups will meet weekly with a graduate student or postdoctoral researcher to explore a published research article by a local team of researchers, gaining background information about the subject and exposure to the research techniques. In the final session, the group will tour the lab that produced the feature article. Additional tours and activities TBA. All first year non-transfer students are eligible to enroll in ENST 117 regardless of AP credit. This course meets in the second half of the semester and features research in the Environmental Science Major.

ENST 201 - THE SCIENCE BEHIND EARTH GLOBAL WARMING AND CLIMATE CHANGE  
Short Title: SCIENCE BEHIND GLOBAL WARMING  
Department: Environmental Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: The course will introduce the students to the science behind last century Earth global warming in the context of the past records of global Earth climate variability and forecast of Earth climate in the next century. Cross-list: ESCI 201.

ENST 202 - CULTURE, ENERGY, AND THE ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES  
Short Title: CULTURE ENERGY & ENVIRONMENT  
Department: Environmental Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Humanity faces extraordinary challenges in an era of climate change and energy transition. These challenges are not only technological but also questions of value, power, behavior, and understanding. This course draws upon new research across the arts, humanities and social sciences to help students better understand the cultural and social dimensions of our current patterns of energy use, their environmental impacts, and the possibility of new energy futures. Intended for both STEM majors and humanities and social science students. Cross-list: HUMA 202.

ENST 204 - ENVIRONMENTAL SUSTAINABILITY: THE DESIGN & PRACTICE OF COMMUNITY AGRICULTURE  
Short Title: COMMUNITY GARDEN  
Department: Environmental Studies  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Distribution Group: Distribution Group III  
Credit Hour: 1  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: The course introduces the fundamentals of community garden design and practice. Responsibilities will center on developing and improving the Rice Community Garden. A strong emphasis will be on learning and applying ecological principles to the practice of community agriculture. Class has required meetings outside of regular class time. Cross-list: EBIO 204. Repeatable for Credit.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENST 265</td>
<td>GREEN WORLDS: SCIENCE FICTION AND THE ENVIRONMENT</td>
<td>SCI FI AND THE ENVIRONMENT</td>
<td>Environmental Studies</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>1-3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Lower-Level</td>
<td>Examines the ways that science fiction has expressed and challenged ideas about nature, culture, society and politics and imagined alternative 'green' worlds. Will focus on authors such as Margaret Atwood, Octavia Butler and Paolo Bacigalupi: films such as &quot;Wall-E&quot; and &quot;Avatar&quot;: and accessible secondary criticism. Cross-list: ENGL 269.</td>
</tr>
<tr>
<td>ENST 281</td>
<td>ENGINEERING SOLUTIONS FOR SUSTAINABLE COMMUNITIES</td>
<td>ENGRG SUSTAINABLE COMMUNITIES</td>
<td>Environmental Studies</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Lower-Level</td>
<td>Students will work in teams to develop sustainable solutions for energy or environmental problems affecting our Houston and Rice communities. Emphasis will be placed on the integration of engineering fundamentals with societal issues, environmental and safety considerations, sustainability and professional communications. Prerequisites: introductory engineering courses, or permission of instructor. Cross-list: CHBE 281.</td>
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<tr>
<td>ENST 302</td>
<td>ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE</td>
<td>ENVIRON ISSUES: RICE IN FUTURE</td>
<td>Environmental Studies</td>
<td>Standard Letter</td>
<td>Laboratory</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Examines the physical principles of energy use and its impacts on Earth's environment and climate. Topics will include energy mechanics, climate change, and the environmental impacts and future prospects of various fossil fuel and alternative energy sources. Cross-list: CEVE 307, ESCI 307. Recommended Prerequisite(s): MATH 101 and PHYS 101 or PHYS 111.</td>
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<tr>
<td>ENST 307</td>
<td>ENERGY AND THE ENVIRONMENT</td>
<td>ENERGY AND THE ENVIRONMENT</td>
<td>Environmental Studies</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Students use the campus as a laboratory for learning about sustainability through group projects to reduce Rice's environmental impact or resolve environmental issues. Cross-list: SOCI 304.</td>
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<tr>
<td>ENST 313</td>
<td>SUSTAINABLE DESIGN</td>
<td>CASE STUDIES IN SUSTAIN DESIGN</td>
<td>Environmental Studies</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>This course will explore sustainable design from initial sustainable facility concepts and team organizations, to enlisting community support and process assessment. The course will develop into details about sustainable design, lessons learned, processes and outcomes. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Cross-list: ARCH 313. Graduate/Undergraduate Equivalency: ENST 613. Mutually Exclusive: Credit cannot be earned for ENST 313 and ENST 613.</td>
</tr>
<tr>
<td>ENST 315</td>
<td>ENVIRONMENTAL HEALTH</td>
<td>ENVIRONMENTAL HEALTH</td>
<td>Environmental Studies</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>An overview of environmental health issues including discussion of epidemiologic methods, illnesses caused or exacerbated by environmental exposures, and the role of research in driving effective policies to protect and promote public health. The class includes numerous guest lectures by area experts (physicians, researchers, community activists, policymakers and others); a bus tour featuring disproportionately affected neighborhoods as well as cutting-edge &quot;green&quot; initiatives; original student research projects; and an opportunity to address the Houston City Council. The dynamic between research and action, i.e., &quot;making a difference,&quot; is stressed. FORMERLY ENST 314.</td>
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<tr>
<td>ENST 316</td>
<td>ENVIRONMENTAL FILM</td>
<td>ENVIRONMENTAL FILM</td>
<td>Environmental Studies</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Explores the ways film represents the environment and environmental issues (food, water, energy, waste, environmental justice, sustainability), and both expresses and shapes environmental values. We will view and analyze a variety of genres, as well as reading supplementary material. Cross-list: SOCI 316.</td>
</tr>
</tbody>
</table>
ENST 321 - CASE STUDIES IN SUSTAINABILITY: THE HIGH PERFORMANCE BUILDING
Short Title: SUSTAINABILITY CASE STUDIES
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The project-based seminar will provide a means by which all those with an interest in the building science entailed in the design of commercial, institutional, and residential structures can investigate common issues, obtain information, discuss local strategies, and otherwise address subjects relating to building or campus performance over its lifecycle. To develop an approach of taking an existing Rice University building an optimizing its use via "repositioning" or redesign the class will create an interdisciplinary forum where students of architecture, engineering (structural, mechanical, etc.), and human sciences will potentially collaborate with professional building consultants, materials manufactures, contractors, developers, owners, and Rice campus facility managers Cross-list: ARCH 321. Graduate/Undergraduate Equivalency: ENST 621. Mutually Exclusive: Credit cannot be earned for ENST 321 and ENST 621.

ENST 322 - CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISTING RICE CAMPUS BUILDINGS
Short Title: CASE STUDIES IN SUSTAINABILITY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will explore application of high performance, sustainable design to specific Rice University campus and facility targets. In partnership with Rice University leadership, the team effort will develop "regenerative redesign" approaches based on investigation of other campuses' case study. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day of class by the individual instructor. Cross-list: ARCH 322. Graduate/Undergraduate Equivalency: ENST 622. Mutually Exclusive: Credit cannot be earned for ENST 322 and ENST 622.

ENST 331 - CONSERVATION BIOLOGY
Short Title: CONSERVATION BIOLOGY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOL 201 and EBIOL 202
Description: The course is designed to give students a broad overview of conservation biology. Lecture and discussions will focus on conservation issues such as biodiversity, extinction, management, sustained yield, invasive species and preserve design. Cross-list: EBIOL 323.

ENST 331 - ENVIRONMENTAL POLITICS AND POLICY
Short Title: ENVIRONMENT POLITICS & POLICY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course considers the major issues in the increasingly important public policy area of the environment. It emphasizes the American experience, but also considers certain international aspects of these issues. Cross-list: POLI 331.

ENST 332 - THE SOCIAL LIFE OF CLEAN ENERGY
Short Title: SOCIAL LIFE OF CLEAN ENERGY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course considers the phenomenon of renewable energy, using a social scientific approach to analyze the various forces and interests involved in the development of renewable energy projects (such as hydropower, solar and wind) in both the global North and South. No prerequisites required. Cross-list: ANTH 332.

ENST 340 - GLOBAL BIOGEOCHEMICAL CYCLES
Short Title: GLOBAL BIOGEOCHEMICAL CYCLES
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to the coupled nature of the biosphere, atmosphere and hydrosphere using as focal points elemental cycles such as those of carbon and nitrogen. This is a writing-intensive class, and will include 3 required Saturday field trips. Cross-list: EBIOL 340, ESCI 340.

ENST 350 - ENVIRONMENTAL INTERNSHIP
Short Title: ENVIRONMENTAL INTERNSHIP
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Provides enrollment credit for approved internships with environmental organizations or agencies. Students must seek approval prior to beginning the internship. Weekly progress reports and a final paper are required. Instructor Permission Required.
ENST 367 - ENVIRONMENTAL SOCIOLOGY  
**Short Title:** ENVIRONMENTAL SOCIOLOGY  
**Department:** Environmental Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group II  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course focuses on the foundations of environmental sociology and takes a social and historical approach to examine how humans affect the environment and the environment affects humans. Topics include: agricultural sustainability, resource extraction and climate changes; environmental racism/sexism; globalization and development; population, and consumption, and environmental movements. Cross-list: SOCI 367.

ENST 368 - LITERATURE AND THE ENVIRONMENT  
**Short Title:** LITERATURE & THE ENVIRONMENT  
**Department:** Environmental Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A course that asks the question: How does literature express or shape environmental values? In this class we will read American fiction and nonfiction exploring the relationship between human and nonhuman nature. Cross-list: ENGL 368.

ENST 369 - LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA  
**Short Title:** LAB MOD AQU ECOLOGY WITH SCUBA  
**Department:** Environmental Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Students will learn some fundamentals of aquatic ecosystems and conduct lab exercises that involve SCUBA-based fieldwork in a nationally recognized freshwater dive site. Course has required meetings outside of regular class time. Prerequisites: LPAP 194 or proof of Open Water Scuba certification from a professional organization (e.g., PADI, NAUI). A course fee ranging from $300 to $535 is associated with the class. Please send all enrollment requests to Mariah McClarty, mam22@rice.edu and include the following information: major, year, scuba certification level and issuing professional organization, and a brief statement about why you want to take the course. You will be notified of enrollment decisions by December 5th. Department Permission Required. Cross-list: EBIO 379. Recommended Prerequisite(s): EBIO 213 and LPAP 194.

ENST 391 - SPECULATIVE FUTURES  
**Short Title:** SPECULATIVE FUTURES  
**Department:** Environmental Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Drawing from “CiFi,” “Speculative Fiction,” and global anthropological case studies, this course analyzes a series of potential futures as earthly conditions continue to be altered by human activity. Students will develop speculative future models through assessing climate conditions, population displacement, ethics, ecological transformations and human practices and values. Cross-list: ANTH 391.

ENST 400 - INDEPENDENT STUDY  
**Short Title:** INDEPENDENT STUDY  
**Department:** Environmental Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hours:** 1-6  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  

ENST 406 - INTRODUCTION TO ENVIRONMENTAL LAW  
**Short Title:** INTRO TO ENVIRONMENTAL LAW  
**Department:** Environmental Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Introduction to Environmental Law is intended to introduce the student to the methods used by the United States and the international community to regulate and/or allocate air, water and land resources. A key focus of this course will be the emerging area of the law of sustainable development, including the implementation of full price costing, life cycle analysis, carbon cycle analysis, allocation of assimilative capacity and other similar issues. Cross-list: CEVE 406.

ENST 415 - THE ENVIRONMENTAL MOVEMENT  
**Short Title:** THE ENVIRONMENTAL MOVEMENT  
**Department:** Environmental Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Examines the environmental movement in the U.S. and globally. After a historical overview, we will use a social movement perspective to examine mobilization, organizations and tactics, ideologies and identities, as well as exploring aspects of contemporary environmentalism (e.g. green building and slow food, wildlife management/biodiversity, sustainable development, environmental justice). Cross-list: SOCI 415.
ENST 425 - ORGANIC GEOCHEMISTRY
Short Title: ORGANIC GEOCHEMISTRY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course covers the organic geochemistry of the natural environment. Topics include: production, transport, decomposition, and storage of organic matter in the marine and terrestrial environments, use of isotopes to track biogeochemical processes and natural and perturbed carbon cycle issues, including past and recent climate shifts. Cross-list: CHEM 425, ESCI 425.

ENST 437 - ENERGY ECONOMICS
Short Title: ENERGY ECONOMICS
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 301 or ECON 370
Description: Discussion of key aspects in the supply and demand of energy. Topics include optimal extraction of depletable resources, transportation, storage, end-use and efficiency, and the relationship between economic activity, energy, and the environment. Cross-list: ECON 437.

ENST 441 - GOVERNING THE ENVIRONMENTAL COMMONS
Short Title: GOVERNING ENVIRONMENTAL COMMONS
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Common Property Resources (CPRs), such as fisheries, aquifers, and the Internet, appear in many guises and pose a fundamental problem for governing. Exploration of theoretical underpinnings for CPRs, their growing literature, and the political and economic institutions mediating CPR dilemmas. Included is an original research project in conjunction with the instructor. Cross-list: POLI 441.

ENST 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact Department for current semester’s topic. Repeatable for Credit.

ENST 480 - ENVIRONMENTAL AND ENERGY ECONOMICS
Short Title: ENVIRONMENTAL ECONOMICS
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 or ECON 301 or ECON 370
Description: Uses economic theories of externalities and common property resources to analyze how markets, legal institutions, regulations, taxes and subsidies, and voluntary activity can affect the supply of environmental amenities, such as clean air, clean water, and wilderness areas. Also discusses methods for determining the demand for environmental amenities. Cross-list: ECON 480.

ENST 513 - SEMINAR: TOPICS RELATED TO THE EARTH'S DEEP INTERIOR
Short Title: SEM: EARTH’S DEEP INTERIOR
Department: Environmental Studies
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar topics may vary. Readings and discussions about current topics related to the processes governing the Earth’s deep interior. General themes include mantle convection, thermal evolution, and volatiles. Repeatable for Credit.

ENST 613 - CASE STUDIES IN SUSTAINABLE DESIGN
Short Title: SUSTAINABLE DESIGN
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Cross-list: ARCH 613. Graduate/Undergraduate Equivalency: ENST 313. Mutually Exclusive: Credit cannot be earned for ENST 613 and ENST 313.
ENST 621 - CASE STUDIES IN SUSTAINABILITY: THE HIGH PERFORMANCE BUILDING
Short Title: SUSTAINABILITY CASE STUDIES
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The project-based seminar will provide a means by which all those with an interest in the building science entailed in the design of commercial, institutional, and residential structures can investigate common issues, obtain information, discuss local strategies, and otherwise address subjects relating to building or campus performance over its lifecycle. To develop an approach of taking an existing Rice University building an optimizing its use via "repositioning" or redesign the class will create an interdisciplinary forum where students of architecture, engineering (structural, mechanical, etc.), and human sciences will potentially collaborate with professional building consultants, materials manufacturers, contractors, developers, owners, and Rice campus facility managers Cross-list: ARCH 621. Graduate/Undergraduate Equivalency: ENST 321. Mutually Exclusive: Credit cannot be earned for ENST 621 and ENST 321.

ENST 622 - CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISING RICE CAMPUS BU
Short Title: CASE STUDIES IN SUSTAINABILITY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore application of high performance, sustainable design to specific Rice University campus and facility targets. In partnership with Rice University leadership, the team effort will develop "regenerative redesign" approaches based on investigation of other campuses’ case study. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day of class by the individual instructor. Cross-list: ARCH 622. Graduate/Undergraduate Equivalency: ENST 322. Mutually Exclusive: Credit cannot be earned for ENST 622 and ENST 322.

ENST 646 - ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY
Short Title: ADV BIOMEDICAL ANTHROPOLOGY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on contemporary research on the biomedical aspects of human health and disease. Includes topics from medical ecology and epidemiology. Cross-list: ANTH 646. Recommended Prerequisite(s): ANTH 381 or ANTH 581.

Executive Management (EMBA)

EMBA 911 - EXECUTIVE SEMINAR I
Short Title: EXECUTIVE SEMINAR I
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.

EMBA 912 - EXECUTIVE SEMINAR II
Short Title: EXECUTIVE SEMINAR II
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

EMBA 913 - EXECUTIVE SEMINAR III
Short Title: EXECUTIVE SEMINAR III
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.

EMBA 914 - EXECUTIVE SEMINAR IV
Short Title: EXECUTIVE SEMINAR IV
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

EMBA 920 - MANAGING THE GLOBAL FIRM: MICRO FOUNDATIONS
Short Title: MNG GLOBAL FIRM: FOUNDATIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.

EMBA 921 - GLOBAL MARKETS AND INSTITUTIONS
Short Title: GLOBAL MARKETS & INSTITUTIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.

EMBA 922 - MANAGING THE GLOBAL FIRM: STRATEGY
Short Title: MANAGING GLOBAL FIRM: STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.

EMBA 991 - EXECUTIVE FORUM I: STRATEGY AND LEADERSHIP FOUNDATIONS
Short Title: EXEC FORUM I: STRAT & LEADERSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
EMBA 992 - EXECUTIVE FORUM II: CRITICAL DECISION MAKING
Short Title: EXECUTIVE FORUM II
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3

EMBA 993 - EXECUTIVE FORUM III: ENTERPRISE STRATEGY AND LEADERSHIP
Short Title: EXECUTIVE FORUM III
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

EMBA 994 - EXECUTIVE FORUM IV
Short Title: EXECUTIVE FORUM IV
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Film (FILM)

FILM 180 - 14 FILMS YOU SHOULD SEE BEFORE YOU GRADUATE FROM RICE UNIVERSITY
Short Title: 14 FILMS BEFORE YOU GRADUATE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Featuring the important, but less familiar works of American and European directors from the 1930s - 1960s. This class represents an ideal mixture of modernist auteur cinema and shameless viewing pleasure. Cross-list: HART 180.

FILM 215 - MYSTIC CINEMA: KABBALAH IN FILM
Short Title: MYSTIC CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course explores uses by the film industry of ideas drawn from Jewish mysticism. We will examine themes such as monsters, spirits, numerology and the paranormal, as portrayed in classic film and through to contemporary Hollywood. Emphasis will be placed on the medieval textual and folkloric traditions behind such portrayals. Cross-list: RELI 215. Mutually Exclusive: Credit cannot be earned for FILM 215 and FILM 114/FSEM 141/RELI 114.

FILM 218 - HISTORY THROUGH FILM IN EAST AND NORTHEAST ASIA
Short Title: EAST/NORTHEAST ASIA FILM HIST
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level

FILM 225 - INTRODUCTION TO FILMMAKING AND EDITING
Short Title: INTRO TO FILMMAKING & EDITING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course introduces the student to filmmaking in general through specific techniques of digital video production. The emphasis in this class will be the medium as a means of effective storytelling through the craft of filmmaking. All aspects of production will be discussed, including preproduction and postproduction. Core topics will include the basic principles and operation of digital video cameras, lighting instruments, and audio recording gear; concepts and practical use of nonlinear digital editing gear; planning and scripting using applications of various filmmaking techniques; and delivery of a finished project.

FILM 250 - CONTEMPORARY EUROPEAN CINEMA
Short Title: CONTEMPORARY EUROPEAN CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class examines trends in European cinema of the last fifteen years. Particular attention will be given to the issues of history, memory and national identity in Europe’s shifting geopolitical climate, and to the formal and aesthetic concerns with which filmmakers responded to these shifts. The discussion will include films by Michael Haneke, Fatih Akin, Christian Mingiu and others. Cross-list: HART 250.

FILM 273 - FILM CRITICISM
Short Title: FILM CRITICISM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course focuses on the concepts and techniques necessary to write film criticism and interpretation. Each two-week section will concentrate on a film, sample critical essays on that film and writing about the film to develop their skills, analytic techniques, and strategies for effective critical contribution. This course will draw on films in Hollywood, avant-garde, contemporary and international cinema. Cross-list: ENGL 275, HART 285.
FILM 275 - COMICS AND SEQUENTIAL ART
Short Title: COMICS AND SEQUENTIAL ART
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to the art of combining words and pictures: diverse applications such as storyboarding for stage and screen, comic books and graphic novels, and serial or multiples in a variety of media all fall under the umbrella of Sequential Art. Through instruction, demos, readings and practice, students will learn the history and implementation of linear visual narratives utilizing the Comics Art Teaching and Study Workshop as a resource. Students in this class will also participate in the construction and establishment of a permanent research center for the study of Comic Book Art within the Department of Visual and Dramatic Arts. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster. Cross-list: ARTS 230.

FILM 280 - HISTORY & AESTHETICS OF FILM
Short Title: HISTORY & AESTHETICS OF FILM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the art and aesthetics of film as an artifact produced within certain social contexts. Includes style, narrative, mise-en-scene, editing, sound, and ideology in classical Hollywood cinema, as well as in independent, alternative, nonfiction, and Third World cinemas. Cross-list: ARTS 280, HART 280.

FILM 281 - THE BEGINNINGS OF CINEMA
Short Title: THE BEGINNINGS OF CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class studies the emergence of cinema in the context of cultural developments at the turn of the 20th century. Early films will be examined together with such contemporaneous issues as technologies of vision, modern mass culture, urban expansion and consumerism. Cross-list: HART 281.

FILM 284 - NONFICTION FILM
Short Title: NONFICTION FILM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the history and aesthetics of nonfiction film as both a social artifact and as a work of art. Includes discussions of actualities, the city film, the social documentary, surrealist cinema, propaganda, ethnography, the essay film, and the contemporary nonfiction film from around the world. Cross-list: HART 284.

FILM 285 - AUTEUR FILM: CASE STUDIES OF THREE AUTEURS
Short Title: AUTEUR FILM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will explore the tradition of auteur filmmaking, with an emphasis on how this particular artistic mode situates itself within the evolving system of Hollywood institutional film. The auteur, in contrast to other filmmakers, exhibits unparalleled control over the production and post-production processes and is uniquely identifiable through the notable conventions of aesthetics, style, theme, content, atmosphere, etc. FILM 485/HART 481 (4 Credit Hours) will require completion of additional coursework for the additional credit than the FILM 285/HART 283 (3 Credit Hours). Credit may not be received for more than one of FILM 285 or FILM 485 or Hart 283 or HART 481. Cross-list: HART 283. Equivalency: FILM 485. Mutually Exclusive: Credit cannot be earned for FILM 285 and FILM 485.

FILM 287 - INTRODUCTION TO EXPERIMENTAL VIDEO AND INSTALLATION ART
Short Title: INTRO TO VIDEO AND INSTALL ART
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Learn to create unique experiences by sculpting time and space. With an emphasis on production and practice, this course introduces students to installation art and non-traditional, experimental uses of video. Students will learn the basic tools and techniques of digital video production using Adobe Premiere and After Effects. Course URL: www.arts.rice.edu/
FILM 308 - IMPROVISATION FOR STAGE AND SCREEN
Short Title: IMPROV FOR STAGE AND SCREEN
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Upper-Level
Description: This course is a class in the practical training of comedic, long-form, improvisation. Students will learn how to craft scenes spontaneously using tools like character dynamic, status, comedic pattern, beat structuring, and agreement. Classic forms of scenic improv will be taught and the course will also examine the role of improvisation in comedy films, video, and the creation of sketch comedy. Students will get to practice their skills by crafting videos in the class’ culmination run of improv shows. Cross-list: THEA 308.

FILM 321 - LIFE IN REAL-TIME
Short Title: LIFE IN REAL-TIME
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Upper-Level
Description: This course explores digital video as a contemporary art medium rich with possibilities of cultural critique. We will examine how artists deploy the speed of time-based media to underscore the urgency of specific environmental issues and offer observations on serious issues through the use of metaphor, irony, and humor. We will compare and contrast these ways through reading, films, and presentations.

FILM 323 - EXPERIMENTAL SOUND AND VIDEO
Short Title: EXPERIMENTAL SOUND AND VIDEO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Upper-Level
Description: The purpose of this course is to create experimental, collaborative digital media artworks. Students will learn the basic tools and techniques of digital video and audio production. Students will engage in experiment with sound and moving images by working to complete a number of short projects. Pre-registration of this course is limited to 8 students. 4 additional places will be reserved for VADA and Shepherd School of Music majors. Cross-list: MUSI 316. Repeatable for Credit.

FILM 327 - DOCUMENTARY PRODUCTION
Short Title: DOCUMENTARY PRODUCTION
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Upper-Level
Description: Study of the expressive possibilities of documentary production using digital systems. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: ANTH 324, ARTS 327.

FILM 328 - FILMMAKING I
Short Title: FILMMAKING I
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Upper-Level
Description: Dramatic film production class that requires the making of one digital video and one 16mm film. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: ARTS 328.

FILM 329 - FILM FORM
Short Title: FILM FORM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Upper-Level
Description: Viewing, analysis, and discussion of modern and classic films. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: ARTS 329.

FILM 332 - CRITICAL STUDIES OF MULTIMEDIA ARTS
Short Title: CRITICAL STU OF MULTIMEDIA ART
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Upper-Level
Description: Critical Studies for Multimedia Arts is a course designed to familiarize art and non-art majors with key theories and core concepts in modern and contemporary multimedia art. Students will examine a broad spectrum of specific topics in contemporary artwork related conceptually to: space/time; bodies and performance; “sculptural” studies in an expanded field and video & film space. This is a multi-dimensional class consisting of guest lectures, artist-speakers, and field trips to local museums, galleries and alternative art spaces. This course will include discussions on readings, writings and special projects. This promises to be a fun and thought-provoking class and is designed to enhance studio practice and encourage interest in the visual arts. Cross-list: ARTS 332, PHOTO 332, THEA 332.

FILM 334 - FILM LITERATURE
Short Title: FILMING LITERATURE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Upper-Level
Description: This course engages a wide range of filmic adaptations of literary texts, with close attention to the specificity of the medium, genre and sub-genre, narrative and point of view.
FILM 336 - CINEMA AND THE CITY
Short Title: CINEMA AND THE CITY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class explores representations of the city in 20th and 21st century world cinema. Central concerns will include the city as a cinematic protagonist, parallels between urban and cinematic space and the intertwined histories of both film and urban design over the last century. Cross-list: ASIA 355, HART 336.

FILM 339 - A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE
Short Title: TRENDS IN CUBAN CULTURE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This research seminar will explore contemporary trends in Cuban culture through literary texts, films, music and works of art. We will examine the ways in which politics and the practices of artistic representation intersect in post-revolutionary Cuba. A research trip to Cuba has been organized as part of this seminar. Course taught in Spanish. Instructor Permission Required. Cross-list: HART 304, SPPO 375.

FILM 351 - HOLOCAUST REPRESENTATION IN LITERATURE, ART, AND FILM
Short Title: HOLOCAUST REPRESENTATION
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will address the representation of the Holocaust in literature, art, and film. Is the Holocaust representable? What literary and artistic techniques and devices have been employed to represent the unrepresentable? Through Holocaust narrative, poetry, fiction, art, memorials, documentary and narrative film, we will explore these questions. Cross-list: JWST 351. Mutually Exclusive: Credit cannot be earned for FILM 351 and FILM 349/RELI 349.

FILM 359 - CINEMAS OF URBAN ALIENATION
Short Title: CINEMAS OF URBAN ALIENATION
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class explores representations of the city in 20th and 21st century world cinema. Central concerns will include the city as a cinematic protagonist, parallels between urban and cinematic space and the intertwined histories of both film and urban design over the last century. Cross-list: ASIA 355, HART 336.

FILM 361 - WHAT IS CINEMA? CLASSIC READINGS OF CLASSIC FILMS
Short Title: WHAT IS CINEMA?
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Using a variety of readings now considered classics as our guide, this class will look closely at a broad range of films and film movements discussed by critics and theorists such as Rudolf Amheim, Jean Epstein, Sergei Fisenstein, Walter Benjamin and Andre Bazin. Cross-list: HART 361.

FILM 373 - SURVEY OF AMERICAN FILM AND CULTURE
Short Title: SURVEY OF AMER FILM & CULTURE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course that explores the history of cinema in the U.S. from its origins to the present day. Cross-list: ENGL 373, HART 380.
Course URL: www.english.rice.edu

FILM 378 - PLACE AND MEMORY IN MIDDLE EASTERN AND EUROPEAN CINEMA
Short Title: MEMORY AND PLACE IN CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Focuses on cinematic explorations of and preoccupations with the notion of place. Screenings include iconic and lesser - known films from Europe and the Middle East that offer diverse lenses and contexts (love, family, landscapes, borders, trauma, exile) through which we will examine questions of real and imagined place and the politics of memory. Cross-list: ANTH 378, HART 391.
FILM 380 - RIPPED, RECYCLED AND REMADE CINEMA
Short Title: RECYCLED CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This hybrid seminar/production class investigates the practice of cinematic quoting in media works. We will look at how the appropriation process critiques political and cultural concerns between the source and reworked material, new conversations it introduces, and these works in relation to fair-using, hijacking, open sourcing, and stealing.

FILM 381 - MEDICAL MEDIA ARTS LAB
Short Title: MEDICAL MEDIA ARTS LAB
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students will collaborate with health professionals to create solutions to real-world medical communication, visualization and design problems. Working individually and in teams, students will apply critical thinking and theory to hands-on design. Projects may include production of short videos, infographics, app development, 3-D virtual models, creative writing, and other media arts. Cross-list: ENGL 386.
Course URL: www.english.rice.edu

FILM 382 - MODALITIES OF CINEMA
Short Title: MODALITIES OF CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this course we will survey the range of organizing principles of cinema-the differing and combative ways cinema arranges its images and sounds. We will look at classicism, modernism, postmodernism and many other modes. The films will range from early silent pictures, to experimental shorts, to commercial blockbusters. Cross-list: HART 382.

FILM 383 - GLOBAL CINEMA
Short Title: GLOBAL CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to cinema as a global enterprise. It explores the relationship between nations, identities, races, concepts, and genres. It inquires into the question of globalization as it relates to the motion picture audience, corporations, and the commerce of ideas. Cross-list: HART 383.

FILM 384 - AMERICAN INDEPENDENT CINEMA
Short Title: AMERICAN INDEPENDENT CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explores the history of filmmaking outside of Hollywood in the United States throughout the 20th century, emphasizing the period from 1959 to the present. Special attention to the contributions of marginalized communities and the art world, innovative film styles, and the interdependence of alternative and mainstream media cultures. Cross-list: ENGL 384.
Course URL: www.english.rice.edu

FILM 385 - FILM STUDIES
Short Title: FILM STUDIES
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course that may focus on such areas as film genres, national cinemas, world cinema, directors or other thematically organized topics. Cross-list: ENGL 385. Repeatable for Credit.
Course URL: www.english.rice.edu

FILM 386 - MEDICAL MEDIA ARTS LAB
Short Title: MEDIA STUDIES
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course that addresses interdisciplinary approaches to studying the relationships between film, photography, television, and digital technologies such as the internet and computer-generated imaging. Cross-list: ENGL 388. Repeatable for Credit.
Course URL: www.english.rice.edu

FILM 388 - POST WAR EUROPEAN CINEMA
Short Title: POST WAR EUROPEAN CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class surveys major developments in European cinema from the late 1940s to the late 1960s. Our study will include such movements as Italian Neo-realism, German Rubble Films, French New Wave, and Soviet cinema in the Thaw. Particular attention will be paid to such issues as cinema and post-war reconstruction, memory and nation, and body and space. Cross-list: HART 388.
FILM 395 - FILM INTERNSHIP
Short Title: FILM INTERNSHIP
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Internship/PRACTICUM
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is a field-based, supervised, professional learning experience designed to enhance classroom learning. Students will be responsible for identifying and securing internship positions and must obtain permission from the department chairman and have a department faculty sponsor. All interns are required to keep an internship journal recording duties and activities; the journal will be used as the basis of a five-page paper summarizing the internship experience. Documentation of the work produced during the internship is required portfolio, CD, DVD, etc. Instructor Permission Required. Repeatable for Credit.

FILM 396 - SPECIAL PROBLEMS IN FILM & VIDEOTAPE MAKING
Short Title: SPEC. PROB: FILM & VIDEO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of problems in film and film production. Topics may vary. Please consult with the department for additional information. May be used in awarding transfer credit. Prerequisite: permission of instructor. Instructor Permission Required. Repeatable for Credit.

FILM 420 - FILM STUDIO
Short Title: FILM STUDIO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): FILM 327 and FILM 328
Description: A class for advanced filmmaking students working independently, but meeting as a group to participate in discussions about a variety of filmmaking topics. Instructor Permission Required. Repeatable for Credit.

FILM 427 - ADVANCED FILMMAKING
Short Title: ADVANCED FILMMAKING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): FILM 225 and (FILM 327 or ARTS 327) and (FILM 328 or ARTS 328)
Description: Advanced documentary production using digital camera and editing systems. Continuation of FILM 327. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: ARTS 427.

FILM 428 - FILMMAKING II
Short Title: FILMMAKING II
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: 16mm film production course utilizing handmade cinema techniques. Space in class is limited. Registration does not guarantee a place in class. The class roster is formulated the first day of class by the individual instructor. Cross-list: ARTS 428.

FILM 430 - ADVANCED METHODS IN SOUND, CINEMATOGRAPHY, AND EDITING
Short Title: ADVANCED CINEMATOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): FILM 327
Description: This class will prepare students for more rigorous work in professional media. Building on the basic understanding of sound, image, and editing, students will focus on the controlled and strategic use of techniques and equipment. We will explore visual representation theory, psychoacoustics and narrative sound design, and the use of editing as a storytelling mechanism. Students will gain valuable and realistic crew experience and learn to anticipate and understand many aspects of film production.

FILM 432 - FILM GENRE: THE WESTERN
Short Title: FILM GENRE: THE WESTERN
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Survey of the essential American film experience spanning all the years of U.S. cinema, with emphasis on the western and its mythic function in society. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: ARTS 432.

FILM 433 - FILM GENRE: SCIENCE FICTION CINEMA
Short Title: FILM GENRE: SCIENCE FICTION
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this course we will trace the history and elements of the popular film genre of science fiction, from early silents to recent configurations. We will look at the links between the genre cinema itself. Topics for the Film Genre courses will vary and will include the uncanny, transhumanism, utopia and dystopia, and technology.
FILM 435 - SEMINAR ON FILM AUTHORSHIP: THE NEW HOLLYWOOD
Short Title: SEMINAR ON FILM AUTHORSHIP
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level

FILM 444 - HANDMADE FILM
Short Title: HANDMADE FILM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: 16mm film production course utilizing handmade cinema techniques, 4 required 16mm films made using surface treatments, shooting with a 16mm film camera, hand developing, classic animation, crating soundtracks and digital editing. Space in class is limited. Registration does not guarantee a place in class. Cross-list: ARTS 444.

FILM 455 - VIDEO AND EXPANDED CINEMA
Short Title: VIDEO AND EXPANDED CINEMA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the emergence of video and "expanded cinema" as a primary field of artistic practice over the course of the 1960s and 1970s. We will examine seminal works by artists including Andy Warhol, Dan Graham, and Robert Whitman as well as the shifting aesthetic, political, and media landscapes in which this work emerged. Cross-list: HART 457.

FILM 456 - SPECIAL PROBLEMS IN FILMMAKING
Short Title: SPECIAL PROBLEM: FILMMAKING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of advanced problems in film and film production. Topics may vary. Please consult with the department for additional information. May be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.

FILM 483 - DOCUMENTARY AND ETHNOGRAPHIC FILM
Short Title: DOCUMENTARY & ETHNOGRAPH FILM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Overview of the history of documentary and ethnographic cinema from a worldwide perspective. Includes both canonical and alternative films and film movements with emphasis on the shifting and overlapping boundaries of fiction and nonfiction genres.

FILM 485 - AUTEUR FILM: CASE STUDIES OF THREE AUTEURS
Short Title: AUTEUR FILM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will explore the tradition of auteur filmmaking, with an emphasis on how this particular artistic mode situates itself within the evolving system of Hollywood institutional film. The auteur, in contrast to other filmmakers, exhibits unparalleled control over the production and post-production processes and is uniquely identifiable through the notable conventions of aesthetics, style, theme, content, atmosphere, etc. FILM 485/HART 481 (4 Credit Hours) will require completion of additional coursework for the additional credit than the FILM 285/HART 283 (3 Credit Hours). Credit may not be received for more than one of FILM 285 or FILM 485 or Hart 283 or HART 481. Cross-list: HART 481. Equivalency: FILM 285. Mutually Exclusive: Credit cannot be earned for FILM 485 and FILM 285.

First-Yr Writing Intensive Sem (FWIS)

FWIS 100 - FUNDAMENTALS OF ACADEMIC COMMUNICATION
Short Title: FUNDAMENTALS OF ACADEMIC COMM
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Designed to prepare students who need more time and practice in reading and writing to meet the more advanced communication demands of an FWIS, this course will provide an introduction to the expectations of academic readers as well as practice with the rhetorical and linguistic structures common to academic writing. Students will also review grammatical points relevant to the course material and assignments and learn to self-edit their own work. This course does not fulfill the Composition Requirement.
Course URL: pwc.rice.edu/
FWIS 101 - THE BIBLE IN POPULAR CULTURE  
Short Title: THE BIBLE IN POPULAR CULTURE  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: We will introduce various ways in which the Bible plays a significant role in contemporary popular culture. By analyzing biblical references found in music, film, art, and the medial, students will discover that even in today's seemingly secular culture, the Bible continues to influence our artistic, social, and political landscapes.  
Course URL: pwc.rice.edu/

FWIS 102 - READING AND WRITING CHILDREN'S LITERATURE  
Short Title: CHILDREN'S LITERATURE  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: In this course we will read and write about children's literature. Students will begin with the oral tradition of fairy tales and proceed to picture books and junior novels. Students will analyze children's literature as a genre and will create and write their own story books.  
Course URL: pwc.rice.edu/

FWIS 103 - HISTORICAL DEBATES OVER THE CONFEDERATE FLAG  
Short Title: DEBATES OVER CONFEDERATE FLAG  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: The Confederate Flag is one of America's most contentious symbols. This course will study points in time when the flag's meaning has come up for debate. We will read and discuss primary and secondary readings covering certain points in history when the flag became a flashpoint.  
Course URL: pwc.rice.edu/

FWIS 104 - GLOBAL TEXTS AS INTERCULTURAL COMMUNICATION  
Short Title: TEXTS AS INTERCULTURAL COMM  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: When aesthetic texts cross cultural boundaries, they bring with them complex histories, codes, and experiences from their place of origin. This course introduces fiction, non-fiction, and multimedia works from a wide array of global perspectives, as students analyze how authors present the foreign and the unfamiliar.  
Course URL: pwc.rice.edu/

FWIS 105 - GREEK MYTH IN WORDS: HESIOD AND THE HOMERIC HYMNS  
Short Title: GREEK MYTH IN WORDS  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Presents texts fundamental to understanding Greek myth through the regular practice of reading, writing, and oral communication. Emphasizing textual interpretation and writing as process and practice, this course clarifies the purpose and conventions of the academic argumentative essay. Frequent brief writing assignments. Peer review plays an integral role. No exams.  
Course URL: pwc.rice.edu/

FWIS 106 - MARRIAGE, INC.  
Short Title: MARRIAGE, INC.  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course looks at literary and cultural representations of marriage in the Anglo-American tradition: from Renaissance marriage bed poetry, to marriage plot novels and films, to present-day debates about the status of marriage as an institution. We will also explore cross-cultural and historical conceptions of marriage. This course is eligible for credit toward the major in English.  
Course URL: pwc.rice.edu/

FWIS 107 - IN THE MATRIX: ON HUMAN BONDAGE AND LIBERATION  
Short Title: IN THE MATRIX  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Using the film "The Matrix" as the point of reference, this course presents celebrated explorations of servitude and emancipation - from religious mysticism to Marxism and artistic modernism. Texts by Lao Tzu, Farid ud-Din Attar, Plato, Freud, Marx, Baudelaire, J. S. Mill, Proust, de Beauvoir, Malcolm X, Marcuse, Baudrillard.  
Course URL: pwc.rice.edu/

FWIS 108 - GRAPHIC NOVELS AND THE ART OF COMMUNICATION  
Short Title: GRAPHIC NOVELS  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: From their inception, graphic novels have always showed a deep connection to the historical events, anxieties, and struggles that surrounded their creation. In this course, we will examine graphic novels from a variety of perspectives, including the historical, the political, the social, and the literary.  
Course URL: pwc.rice.edu/
**FWIS 109 - CONTEMPORARY ART AND ENVIRONMENT**  
Short Title: ART AND ENVIRONMENT  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course delves into questions of environment, ecology and sustainability through the lens of contemporary art. From earthworks, to performance, to land art, activist art, and community-based practices, participants engage critically and creatively with contemporary practices. This course is eligible for credit toward the Environmental Studies minor.

Course URL: [pwc.rice.edu/](pwc.rice.edu/)

Short Title: BIRTH OF GODS/JUSTICE ORIGINS  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Participants draft short papers weekly. Writing and class discussion are based on Hesiod’s Theogony (creation myth) and Works and Days (early Greek wisdom literature). Each participant also leads one class discussion of secondary literature. No exams or quizzes. Final paper is a revised and extended version of a previous draft. This course is eligible for credit toward the major in Classical Studies.

Course URL: [pwc.rice.edu/](pwc.rice.edu/)

**FWIS 111 - THE FIRST 200 YEARS OF CHRISTIANITY**  
Short Title: FIRST 200 YRS OF CHRISTIANITY  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course examines the growth of Christianity from Jesus to the end of the second century. The class will consider the theological, ecclesiological, and social debates of the competing Catholic and Non-Catholic churches and how these different movements connected themselves to Jesus and the disciples.

Course URL: [pwc.rice.edu/](pwc.rice.edu/)

**FWIS 112 - MODERN FAMILIES**  
Short Title: MODERN FAMILIES  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: What does “family” mean today when debates over gay marriage, blended families, and America’s declining birth rates seem to ring the death knell for the nuclear family? This course will examine the myth of the nuclear family by looking at representations of the family in novels, films, television shows, etc.

Course URL: [pwc.rice.edu/](pwc.rice.edu/)

**FWIS 113 - RACE, PUBLIC POLICY, AND RACIAL CHANGE IN AMERICA**  
Short Title: RACE, POLICY, & RACIAL CHANGE  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course examines conceptual and historical features of race and representation in the U.S., how race has shaped public policy development in the 20th century, and how American political institutions have affected outcomes for different racial groups. It also examines the causes and consequences of political mobilization for racial minorities.

Course URL: [pwc.rice.edu/](pwc.rice.edu/)

**FWIS 114 - LITERARY PROVOCATIONS**  
Short Title: LITERARY PROVOCATIONS  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: In section 001 of this course, we will examine representative works of drama, poetry and fiction, ranging from ancient Greece to modern times. Students will write - four essays - about some of these important works. They will also keep journals in which they will write for ten minutes about every reading assignment. Section 002 of this course is designed to introduce first-year students from a wide variety of academic backgrounds to the major literary genres of fiction, poetry, and drama. Students will learn and practice the skills of close reading, interpretation, and literary analysis through discussion and critical writing about language and culture. This course is eligible for credit toward the major in English.

Course URL: [pwc.rice.edu/](pwc.rice.edu/)

**FWIS 115 - WELLBEING**  
Short Title: WELLBEING  
Department: First-Year Writing Intensive  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: How to live a good life? This course critically evaluates different conceptions of wellbeing proposed by philosophers and encourages students to form their own conception of wellbeing with persuasive arguments.

Course URL: [pwc.rice.edu/](pwc.rice.edu/)
FWIS 116 - AMERICAN JOURNEYS
Short Title: AMERICAN JOURNEYS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will unpack the cultural legacy of the Star Wars films through traditional literary analysis and close reading, by situating the films historically, and by considering the ways that the films reflect attitudes towards a variety of social issues, such as spirituality/religion, philosophy, race, gender, class, nationality, and imperialism.
Course URL: pwc.rice.edu/

FWIS 117 - ART IN PLACE AND PLACES FOR ART
Short Title: ART IN PLACE & PLACES FOR ART
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Students will look closely at a curated selection of influential, Houston-based works of art, installations, and architecture from the past century to understand the context and ideas behind the emergence of modern and contemporary art and design. They will observe, analyze, and describe these primary sources using both words and images.
Course URL: pwc.rice.edu/

FWIS 118 - MUSIC, MYTH AND MADNESS: STUDIES IN MUSICAL BIOGRAPHY
Short Title: MUSIC, MYTH AND MADNESS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A study of biographical narratives about musicians, including Bach, Bob Dylan, Thelonius Monk, Mozart, and Schumann. Considers the nature of creativity and inspiration. Examines the extent to which biography borrows from mythology and literary fiction. Material includes memoirs, letters, novels and films.
Course URL: pwc.rice.edu/

FWIS 119 - BEYOND THE BURQINI: MUSLIM WOMEN, FEMINISM, AND GLOBAL POLITICS
Short Title: MUSLIM WOMEN & GLOBAL POLITICS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Traces history of Western interest in Muslim women, paying particular attention to how the figure of the Muslim women has been used by western feminist to make their own case for gender equality. Readings include writings by different English and American feminists and by Muslim authors from around the world.
Course URL: pwc.rice.edu

FWIS 120 - FICTION AND EMPATHY
Short Title: FICTION AND EMPATHY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This writing-intensive course explores the possible link between reading literary fiction and empathizing with others. We'll read short stories, novel excerpts, and literary criticism in an effort to scrutinize and more deeply understand the specific elements of fiction that might provoke empathy.
Course URL: pwc.rice.edu/

FWIS 121 - TIME TRAVEL NARRATIVES: FICTION, FILM, SCIENCE
Short Title: TIME TRAVEL NARRATIVES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: From an aesthetic perspective, time travel has existed as long as there have been stories. Narrative introduces alien temporalities, transporting listeners and readers into different temporal landscapes. This writing-intensive course investigates the historical, aesthetic, and scientific connections between the authorial and scientific co-creation of time travel.
Course URL: pwc.rice.edu/

FWIS 122 - LEADERS AND LEADERSHIP: WHAT WE KNOW, WHAT WE BELIEVE
Short Title: LEADERS AND LEADERSHIP
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: For over a hundred years social scientists have studied leaders and leadership. The popular press and media pundits continue to expound on the topic with conflicting views. Students will explore what they believe and what science informs us about leaders and leadership and share their analyses through discussions, writing, and oral presentations.
Course URL: pwc.rice.edu/

FWIS 123 - STAR WARS AND THE WRITING OF POPULAR CULTURE
Short Title: STAR WARS & WRITING CULTURE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will unpack the cultural legacy of the Star Wars films through traditional literary analysis and close reading, by situating the films historically, and by considering the ways that the films reflect attitudes towards a variety of social issues, such as spirituality/religion, philosophy, race, gender, class, nationality, and imperialism.
Course URL: pwc.rice.edu
FWIS 124 - WITNESSING THE HOLOCAUST
Short Title: WITNESSING THE HOLOCAUST
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will examine selected testimony given by Holocaust survivors. Their testimony varies according to time and the circumstance in which it was given and also according to the genre (film, memoir, drama) in which it is presented.
Course URL: pwc.rice.edu/

FWIS 125 - YOUR ARABIAN NIGHTS
Short Title: YOUR ARABIAN NIGHTS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The Arabian Nights is one of the best known yet poorly understood literary masterpieces. It has been passed down orally in wiring, performance and film; in multiple languages, and with different collections of stories. What is your Arabian Nights? We will consider stories of the Nights through both a literary and historical lens, and we will consider stories, films, and works of art that were inspired by the Nights in different cultures.
Course URL: pwc.rice.edu/

FWIS 126 - THE NOBEL PRIZE IN LITERATURE
Short Title: THE NOBEL PRIZE IN LITERATURE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will interrogate the five most recent winners of the Nobel Prize in Literature. We will see what patterns we notice in the Swedish Academy's selections while paying attention to both aesthetic merit and the roles that social justice and cultural diversity might play in the awards process.
Course URL: pwc.rice.edu/

FWIS 127 - HOW POEMS WORK
Short Title: HOW POEMS WORK
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Poems start from the meaning of the words and build up through the lines and sentences—and the tension between them—through the play of the vowels and consonants, and the differences between the images and metaphors. When these relationships are understood, a conversation about what the poem means can begin.
Course URL: pwc.rice.edu/

FWIS 128 - PERSONALITY TRAITS AND TYPES OF INTELLIGENCE THROUGH THEIR LINGUISTIC MANIFESTATION
Short Title: INNER DIMENSIONS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Exploring theories on personality traits and types of intelligence, students will learn more about themselves and others. We will discuss how our verbal behavior reflects our personality.
Course URL: pwc.rice.edu/

FWIS 129 - CHINGIS KHAN AND THE EMPIRE OF THE MONGOLS
Short Title: THE EMPIRE OF THE MONGOLS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In the thirteenth century, the Mongols conquered China, Eastern Europe and Middle East. This class explores empire building, warfare, government and steppe culture, through reading the letters and memoirs of Mongols, merchants, travelers and adventurers. The students will work closely with primary sources to develop analytical writing skills.
Course URL: pwc.rice.edu/

FWIS 130 - WRITING EVERYDAY LIFE
Short Title: WRITING EVERYDAY LIFE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course is dedicated to the poetics of everyday life. It draws from the forms and colors of what surrounds us day-to-day, from landscapes, to bodies and objects. Students develop research and writing skills through creative fieldwork assignments and workshops. This course is eligible for credit toward the major in Anthropology.
Course URL: pwc.rice.edu/

FWIS 131 - RUINS, LANDMARKS, AND MONUMENTS
Short Title: RUINS, LANDMARKS, MONUMENTS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This seminar investigates ruins, landmarks, and monuments across genres and periods from the nineteenth century to the present. It explores how cultures map identity onto physical objects and how these markers of identity endure or shift meaning over time. Through cultural analysis, this seminar cultivates effective written and oral communication.
Course URL: pwc.rice.edu/
FWIS 132 - WOMEN IN THE CIVIL RIGHTS MOVEMENT
Short Title: WOMEN IN THE CIVIL RIGHTS MVMT
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will examine women's contributions to the Civil Rights Movement. We'll examine how through formal and informal leadership roles, grassroots organizing, performative arts and theoretical contributions, women negotiated the complex terrain of place, race, gender and class within the Civil Rights Movement and American society.
Course URL: pwc.rice.edu/

FWIS 133 - WOMEN AND THE HOLOCAUST: VICTIMS AND PERPETRATORS
Short Title: WOMEN AND THE HOLOCAUST
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will examine the Third Reich and the Holocaust from the perspective of women as perpetrators and as victims.
Course URL: pwc.rice.edu/

FWIS 134 - COLLECTING ART: PERSPECTIVES OF ARTISTS, PATRONS, AND MUSEUMS
Short Title: ARTISTS, PATRONS, AND MUSEUMS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course explores the interconnected roles of artists, the individuals who buy artwork, and the institutions charged with preserving and displaying it. The history of art collecting and patronage will be discussed as students explore the function of museums, the art market, and public and private collections.
Course URL: pwc.rice.edu/

FWIS 135 - CHILDHOOD ON FILM
Short Title: CHILDHOOD ON FILM
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This seminar examines the filmic representation of childhood across diverse historical periods and places. Of concern will be issues including children's relations to nature, language and sexuality; modern systems of education; children's perception of race; and childhood as a cinematic metaphor. Meetings will be based in discussion of films and critical texts.
Course URL: pwc.rice.edu/

FWIS 136 - THE WORLD ACCORDING TO PIXAR
Short Title: THE WORLD ACCORDING TO PIXAR
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, we will be investigating films from the Pixar studio, which critics have hailed for their strong writing and powerful commentary, through a variety of writing assignments. We will pay attention both to the films' narratives and to their technical elements as we explore the meanings they create.
Course URL: pwc.rice.edu/

FWIS 137 - POP MUSIC AND AMERICAN CULTURE
Short Title: POP MUSIC & AMERICAN CULTURE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Recent cultural movements encourage a more serious exploration of popular music. This course will participate by taking a critical look at what songs mean, what songs/albums/genres express, what our interest in music expresses, and how writing about music can lead us to great insights.
Course URL: pwc.rice.edu/

FWIS 138 - FROM LEO TOLSTOY TO CORNEL WEST, ART CRITICISM IN CONTEXT
Short Title: ART CRITICISM IN CONTEXT
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: You will develop a rich understanding of art criticism as a genre and learn to write your own concise and insightful analysis of art. The class will think through challenges of visual interpretation through close looking at art in galleries, museums, artist studios, and on Rice campus.
Course URL: pwc.rice.edu/

FWIS 139 - BEYOND POCAHONTAS: NATIVES IN 19TH CENTURY AMERICA
Short Title: NATIVES IN 19TH C. AMERICA
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines the dramatic change and upheaval experienced by American Indian nations during the nineteenth century: the removal of Southeastern tribes to Indian Territory; the American Civil War, in which several Indian nations experienced their own civil wars as a result of their divided loyalties; and American expansion.
Course URL: pwc.rice.edu/
FWIS 140 - WRITING ARCHAEOLOGY: INTERPRETING THE PAST FOR THE ACADEMY AND THE PUBLIC
Short Title: WRITING ARCHAEOLOGY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course introduces academic and popular forms of archaeological writing and the evidence and arguments they use. It will focus on crucial skills to both analyze the quality of popular presentations of archaeology and explore the challenges that archaeologists face in making the research understandable to a broader audience.
Course URL: pwc.rice.edu/

FWIS 141 - WRITING ABOUT MUSIC
Short Title: WRITING ABOUT MUSIC
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The course studies how we write about music and the effects music has as a subject in art and on the page. Situated in the twentieth century, this course will look at poetry and fiction as well as essays, reviews, and historical sketches to build a repertoire of approaches.
Course URL: pwc.rice.edu/

FWIS 142 - CITIZENSHIP, PATRIOTISM, AND GLOBALISM: CITIZENS OF THE POLIS OR THE WORLD?
Short Title: CITIZENSHIP ETHICS & IDENTITY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will explore central ethical and identity challenges posed by our increasingly globalized world, including citizenship duties, the relationship between citizenship and identity, and the ethical implications for a variety of political issues, including trade agreements, international intervention, duties to the far-away poor, and immigration.
Course URL: pwc.rice.edu/

FWIS 143 - BRAZIL MODERN: ART AND ARCHITECTURE BETWEEN THE NATION AND THE METROPOLE
Short Title: BRAZIL MODERN
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This FWIS course introduces students to the artistic and architectural theories and practices of modernism in Brazil. This interdisciplinary course offers an exploration of the complex political, social and cultural histories that shaped the built environment of modern Brazil. This is a seminar on Brazilian modernism and its discontents.
Course URL: pwc.rice.edu/

FWIS 144 - WRITING ABOUT GREEK DRAMA
Short Title: WRITING ABOUT GREEK DRAMA
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course introduces texts that are integral to ancient Greek culture, and core texts in the Western literary tradition. Students receive frequent regular practice at close reading, writing, and oral communication. The assigned primary texts are Aristotle’s Poetics and tragedies by Aeschylus, Sophocles, and Euripides (all read in English translation).
Course URL: pwc.rice.edu/

FWIS 145 - SEX AT RICE: THE GOOD THE BAD AND THE AWKWARD
Short Title: SEXUAL ETHICS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will ask students to think critically about how they have conceptualized sexuality and the ethical norms governing their sexual practices. Readings will include sociological, historical, philosophical, and religious texts. Issues to be covered: The Rice Purity Test, NOD, Theme Parties, Hooking-Up, Pornography, Objectification, Gender, and Same-Sex Relationships.
Course URL: pwc.rice.edu/

FWIS 146 - TO EAT OR NOT TO EAT GMO'S? THAT IS THE QUESTION
Short Title: TO EAT OR NOT TO EAT GMO's?
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: How does genetically-modified (GM) food impact our world? Through written and oral assignments, we will explore the ethical controversies behind genetically-modified organisms (GMOs) and how they impact our health and society. Students will debate relevant case studies on G-EO research and perform a food-related research project.
Course URL: pwc.rice.edu/
FWIS 147 - AMERICA THROUGH FRENCH EYES
Short Title: AMERICA THROUGH FRENCH EYES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The United States has always been a source of fascination – both attraction and repulsion – for the French. This studies American culture and identity as revealed by transatlantic encounters with the French. We will study French intellectuals' observations (de Tocqueville, de Beauvoir) as well as images of America in French popular culture (comic strips, films).
Course URL: pwc.rice.edu/

FWIS 148 - PLAYS AND PLAYING
Short Title: PLAYS AND PLAYING
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The word “play” is complex, even contradictory. We play roles and enact roles, which are and are not our essential selves, but they are not deceitful or inauthentic either. We will explore this theme of acting or not acting, playing or lying, in Shakespeare’s Hamlet and other plays.
Course URL: pwc.rice.edu/

FWIS 149 - SOCRATES
Short Title: SOCRATES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The course will consider the life and though of Socrates and will be based strictly on primary sources. Course readings will be taken from Plato, Xenophon, and Aristophanes. We will examine Socrates in his Athenian context, especially in regard to his trial, conviction, and execution on a charge of impiety.
Course URL: pwc.rice.edu/

FWIS 150 - THE WORLD OF MEDIEVAL MEDICINE
Short Title: THE WORLD OF MEDIEVAL MEDICINE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: How did medieval Christians understand and treat mental and bodily illness? How did their experiences of pain, sex, childbirth, and death interact with larger concepts of God, nature, and the heavens? What role did angels and demons play? This seminar will explore these issues through close reading of medieval texts. Mutually Exclusive: Credit cannot be earned for FWIS 150 and FSEM 171/MDEM 171/RELI 171.
Course URL: pwc.rice.edu/

FWIS 151 - MODERN CASTAWAYS: ISOLATION, ALIENATION, SURVIVAL
Short Title: MODERN CASTAWAYS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course challenges us to think about isolation, alienation, and survival in a global age. What happens to those left behind, those cast out, and those seemingly misplaced? Topics such as colonialism, immigration, feminist history, and the anthropocene guide our discussion of the moral and political dimensions of “castaways.”
Course URL: pwc.rice.edu/

FWIS 152 - NUTRITIONAL SUPPLEMENTS: REAL REMEDIES OR SHADY SCIENCE?
Short Title: THE SCIENCE OF SUPPLEMENTS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This writing-intensive seminar examines evidence for the use of nutritional supplements in promoting health. Topics include the role of vitamins, herbs and food-based supplements in medicine; the biology of illnesses such as cancer and depression; and the molecular mechanisms of supplements in disease prevention and management.
Course URL: pwc.rice.edu/

FWIS 153 - THE LEWIS AND CLARK EXPEDITION
Short Title: THE LEWIS AND CLARK EXPEDITION
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The course will explore the reasons for this expedition in 1804-1806, examine the participants’ reaction to the plants, animals, geology, and Native Americans they encountered, and ponder how they survived the ordeal of going up the Missouri River and crossing the Rocky Mountains.
Course URL: pwc.rice.edu/

FWIS 154 - THE GOOD, THE BAD AND THE BORDER
Short Title: THE GOOD, THE BAD & THE BORDER
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will explore portrayals of morality in film, literature and music produced in the US-Mexico borderlands. As we examine conflicting and converging moral codes in these cultural texts, students will use writing as a tool for exploring ideas and refining understanding.
Course URL: pwc.rice.edu/
FWIS 155 - FAKES, FORGERIES, AND STOLEN ART
Short Title: FAKE, FORGERIES, & STOLEN ART
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In 1990, two men stole 13 paintings worth an estimated $300 million dollars from the Gardner Museum. The crime remains unsolved, and an estimated 40% of artwork on the market today is either faked or forged. This course will analyze these and other high-profile issues through essays, literature, and film.
Course URL: pwc.rice.edu/

FWIS 156 - EXTREME SPORTS: PUSHING THE LIMITS OF THE HUMAN
Short Title: EXTREME SPORTS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This FWIS explores humanity's fascination with pushing our bodies beyond their limits. We'll specifically explore how Western culture depicts high-risk athletic endeavors – like mountaineering and ultrarunning – and the individuals who perform the, historically and in the present, by examining concepts for articulating limitlessness: transcendence, endurance, freedom, and the sublime.
Course URL: pwc.rice.edu/

FWIS 157 - FOOD AND CULTURE
Short Title: FOOD AND CULTURE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Food and Culture asks students to investigate the cultural meaning of food practices as an important part of the human experience. This involves questions primarily aimed at archaeological cultures, but we will also consider relevant issues in our society and others in our world today. Through this topic, our primary goal is to identify ways to become better communicators and improve writing skills by building compelling and well-supported arguments appropriate for the social sciences.
Course URL: pwc.rice.edu/

FWIS 158 - PROPAGANDA, DECEPTION, AND FORGERY IN THE ROMAN EMPIRE
Short Title: PROPAGANDA IN THE ROMAN EMPIRE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines ancient Roman political propaganda as a form of historical "forgery." Drawing connections to modern debates about "fake news," it examines how three of Rome's emperors – Augustus, Septimius Severus, and Constantine – used the literature and art of their reigns to promote biased narratives concerning their rise to power.
Course URL: pwc.rice.edu/

FWIS 159 - THE IMMIGRANT EXPERIENCE IN 20TH AND 21ST CENTURY AMERICAN FICTION
Short Title: IMMIGRANT EXPERIENCE FICTION
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course considers 20th/21st century American literature on the experiences of immigrant populations. Limning this literary history from early narratives of alienation and assimilation to contemporary fiction's negotiations of identity within a global context, we will examine not only how these texts resemble and depart from one another, but how they have shaped the broader literary tradition.
Course URL: pwc.rice.edu/

FWIS 160 - LIFE NARRATIVE
Short Title: LIFE NARRATIVE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will explore the historical and contemporary significance of personal narrative, from its origins in the 16th century to the current popularity of digital programs such as This American Life and The Moth Podcast. Students will analyze the genre's evolution, as well as compose their own creative essays.
Course URL: pwc.rice.edu/

FWIS 161 - EXPLORING THE AMERICAN LEGAL SYSTEM
Short Title: THE AMERICAN LEGAL SYSTEM
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Course will survey the American legal system, discussing the structure of the courts and role of the judiciary in American politics. Major topics will include criminal and civil law, differentiating the states' and federal court systems, and comparing Texas's legal system to other states' courts.
Course URL: pwc.rice.edu/
FWIS 162 - CRITICAL THINKING IN DEMOCRACY
Short Title: CRITICAL THINKING IN DEMOCRACY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Critical thinking runs counter to inherent tendencies toward confirmation bias in decision making. In the political realm, this conflict is often exploited by governmental leaders and media to control specific outcomes. Students in this class will learn to develop their critical thinking and analytical skills in the context of a democratic society.
Course URL: pwc.rice.edu/

FWIS 163 - MEDICAL HUMANITIES: LITERATURE, MEDICINE, AND THE PRACTICE OF EMPATHY
Short Title: MEDICAL HUMANITIES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course provides an introduction to the medical humanities, focusing particularly on narrative medicine and the role narrative can play in illness and the clinical encounter. Readings will include formative theoretical texts in the field, as well as medical-themed short stories by writers such as Chekhov, Hemingway, and Garcia Marquez.
Course URL: pwc.rice.edu/

FWIS 164 - WAYS OF WALKING IN LITERATURE AND CULTURE
Short Title: WAYS OF WALKING
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course explores the act of walking, in theory and in practice. Through readings, discussions, writing assignments, and group and individual walks, it examines questions about the body and its movements; the construction and navigation of space; the tradition of travel writing; and the relationship between walking and thinking.
Course URL: pwc.rice.edu/

FWIS 165 - SCIENCE FICTION AND WILLIAM SHAKESPEARE
Short Title: SCIENCE FICTION & SHAKESPEARE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will explore the intersection between William Shakespeare's works and science fiction. By reading graphic novels and short stories and watching film and television adaptations, this course will examine what this fascination reveals about Shakespeare's plays and the pursuits of science fiction.
Course URL: pwc.rice.edu/

FWIS 166 - BEYOND THE MELTING POT: U.S. MIGRATION HISTORY
Short Title: U.S. MIGRATION HISTORY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, students will analyze the experience of different migrant groups in the United States over the past two centuries. The course traces the evolution of immigration policy alongside changing perceptions of citizenship, nationalism, race, and ethnicity.
Course URL: pwc.rice.edu/

FWIS 167 - THE FIVE GOSPELS: HOW WERE THEY WRITTEN?
Short Title: JESUS AND PAUL IN ANTIQUITY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines the growth of Christianity from its origins as a Jewish group to a religion in the mid-second century that distinguished itself from Judaism. The focus of the course is on the development of Jesus and Paul in Early Christianity as leaders and founders of religious movements. This class will be taught thematically to evaluate Jesus and Paul in their Jewish contexts and roles in the early church. The class will consider both canonical and non-canonical materials, as well as appropriate secondary literature.
Course URL: pwc.rice.edu/

FWIS 168 - CASE STUDIES OF BUILDING DESIGN PROBLEMS
Short Title: BUILDING DESIGN PROBLEMS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: We will analyze buildings that ended up in legal battles. Problems include structural failures, design blunders and near disasters. You will write about what went wrong and why, who saved that day and who should have acted differently. You will learn to write critically and present a convincing argument.
Course URL: pwc.rice.edu/

FWIS 169 - WHAT ARE HUMAN RIGHTS?
Short Title: WHAT ARE HUMAN RIGHTS?
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: We hear and talk about "human rights" frequently, but few of us have an easy time defining ideas so inherently contested and pitted against one another. This class will read, discuss, and write about the history and future of human rights in the United States and elsewhere in the world.
Course URL: pwc.rice.edu/
FWIS 170 - PHILOSOPHY AND SCIENCE FICTION
Short Title: PHILOSOPHY AND SCIENCE FICTION
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Read classic and contemporary philosophy texts alongside those science fiction novels and films that explore the same philosophical themes, such as the nature of consciousness, reality vs. virtual reality, the ethics of cyborg enhancement, and other questions involving what it means to be human in a technologically advanced future.
Course URL: pwc.rice.edu/

FWIS 171 - WORD MAGIC
Short Title: WORD MAGIC
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: People use language to create inner models of the world to represent their experience and guide their behavior. Students will be introduced to a sensitive interdependence of language, thought, emotion, and behavior in personal and social contexts.
Course URL: pwc.rice.edu/

FWIS 172 - HEALTH POLICY DEBATES
Short Title: HEALTH POLICY DEBATES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will interrogate current U.S. health and healthcare policy debates from a sociological perspective. These debates explore how social conditions and policies structure the patterning of health and illness across the nation.
Course URL: pwc.rice.edu/

FWIS 173 - LEGENDARY AMERICANS
Short Title: LEGENDARY AMERICANS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Exploration of popular myths surrounding larger-than-life figures like Davy Crockett and Harriet Tubman. Specific figures vary. Though scholarly readings and analysis of cultural artifacts like songs and films, we will consider why and how such figures become iconic and explore the relations between history, biography, and memory. This course is eligible for credit toward the major in History. Mutually Exclusive: Credit cannot be earned for FWIS 173 and FSEM 159/HIST 159.
Course URL: pwc.rice.edu/

FWIS 174 - SCIENCE/FICTION AND THE FUTURE OF MEDICINE
Short Title: THE FUTURE OF MEDICINE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The possibilities we imagine for the future of medicine tell us much about our present culture's priorities, as well as its pitfalls. Paying close attention to the rhetoric that masks - or does not - the social commentary embedded in contemporary science fiction novels and films, this course places a strong focus on close reading and purposeful writing.
Course URL: pwc.rice.edu/

FWIS 175 - ENTREPRENEURIAL LEADERSHIP
Short Title: ENTREPRENEURIAL LEADERSHIP
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This seminar provides a survey of leadership issues in an entrepreneurial business context, along with an understanding of fundamental business elements and economic concepts of importance to entrepreneurs and their organizations. Through discussions with leaders in the Houston community, group projects, and frequent writing and oral presentation assignments, students will experience and develop an understanding of the interplay between structure, operations, and leadership.
Course URL: pwc.rice.edu/

FWIS 176 - AUTOBIOGRAPHICAL DOCUMENTARY FILM
Short Title: AUTOBIOGRAPHICAL DOCUMENTARY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, we will explore how the intimate and subjective narratives of autobiographical documentary film creatively interpret broader historical, cultural, and social issues. We will view a variety of genres, including home movies, video diaries, poetic and performance pieces, and reflexive films that offer meta-commentaries on this art form. This FWIS focuses on building confidence in responding to visual media forms.
Course URL: pwc.rice.edu/
FWIS 177 - BIZARRE BIBLICAL STORIES
Short Title: BIZARRE BIBLICAL STORIES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will examine some of the more bizarre stories of the Hebrew Bible, which deal with such ideas as fratricide, incest, seduction and magic. We will see how such stories have been interpreted, and been afforded meaning, throughout the ages. All texts will be read in English translation.
Course URL: pwc.rice.edu/

FWIS 178 - GLOBALIZING MUSEUM HISTORY
Short Title: GLOBALIZING MUSEUM HISTORY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course traces a number of themes in world history through museums and collections from 1800s to the present. More specifically, the course examines how museums are shaped by local and global influences and participate in historical processes related to identity formation, colonialism, and resistance.
Course URL: pwc.rice.edu/

FWIS 179 - LOVE AND DEATH IN FILM AND FICTION: THE ART OF READING CLOSELY
Short Title: LOVE & DEATH IN FILM & FICTION
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will explore film and stories about marriage and affection, prejudice and obsession, alienation and loss. As students write and revise, share work and present ideas, we will create a field of writerly expression scholarly and personal, analytical and reflective - a source of confidence rather than trepidation.
Course URL: pwc.rice.edu/

FWIS 180 - THE LEGACIES, MYTHS, AND MEMORIES OF 1960s AMERICA
Short Title: LEGACIES OF 1960s AMERICA
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will examine some of the more bizarre stories of the Hebrew Bible, which deal with such ideas as fratricide, incest, seduction and magic. We will see how such stories have been interpreted, and been afforded meaning, throughout the ages. All texts will be read in English translation.
Course URL: pwc.rice.edu/

FWIS 181 - THE GOLDEN AGE OF CHILDREN'S LITERATURE
Short Title: GOLDEN AGE CHILDREN'S LIT
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The "Golden Age" of children's literature produced many of our most famous children's classics, including Alice's Adventures in Wonderland and Peter Pan. This course will discuss and write about why this period produced so many influential books and how those stories still shape our ideas about writing for children.
Course URL: pwc.rice.edu/

FWIS 182 - INTERSECTIONS IN ART AND SCIENCE
Short Title: INTERSECTIONS IN ART & SCIENCE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course explores frictions and affinities between Art and Science. It examines at how these different ways of engaging with the world have crossed paths - from World Fairs, to cinema, as well as current exhibits in Houston galleries. This course is eligible for credit toward the major in anthropology.
Course URL: pwc.rice.edu/

FWIS 183 - WRITING CULTURES
Short Title: WRITING CULTURES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The class will introduce the concept of culture, the theoretical approaches anthropologist use to study and represent groups of people, the field of ethnic research and the methods ethnographers use, and the ethical issues involved in studying and representing populations.
Course URL: pwc.rice.edu/

Short Title: RELIGION AND SPORTS IN AMERICA
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: From the origins of athletic competition in America through contemporary sport there has been a curious intersection between sport and religion. Using case studies from baseball, football and basketball this course will answer two questions: How do religion and sport work together coexist?; and Can sport be considered a religion?
Course URL: pwc.rice.edu/
FWIS 185 - CONTEMPORARY AMERICAN POETRY
Short Title: CONTEMPORARY AMERICAN POETRY
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class will delve into contemporary American poetry by exploring outstanding poetry books of the previous year. Students will study American poetry in literary and historical contexts, develop ability to analyze how poems "work," develop ability to create clear, effective prose, and build framework for exploring other types of poetry.
Course URL: pwc.rice.edu/

FWIS 186 - WRITING THE DRONE
Short Title: WRITING THE DRONE
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will offer an anthropological perspective on unmanned aircraft or drones, introducing students to a disciplinary tradition of studying technical objects and our investments in them. In the process, students will develop the communication skills to be successful in their coursework at Rice.
Course URL: pwc.rice.edu/

FWIS 187 - EXPLORING THE SCIENCE AND HISTORY OF HOUSTON'S BAYOUS
Short Title: SCIENCE/HIST HOUSTON'S BAYOUS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This discussion- and field-based class will explore Houston's watersheds from the perspective of biogeochemistry, working to understand the roles of our bayous in our 21st century community.
Course URL: pwc.rice.edu/

FWIS 188 - INTRODUCTION TO ENGINEERING DESIGN AND COMMUNICATION
Short Title: ENG DESIGN & COMMUNICATION
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Architecture Division, Architecture or Engineering Division. Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Students learn the engineering design process to solve real-world problems by evaluating design requirements and constructing innovative solutions in the OEDK. Several communication assignments will be completed by individuals rather than teams. Fall limited to ENGI and NSCI students; spring open for engineering and architecture students. Mutually Exclusive: Credit cannot be earned for FWIS 188 and ENGI 120.
Course URL: pwc.rice.edu/

FWIS 189 - POST-APOCALYPTIC LITERATURE AND FILM
Short Title: POST-APOCALYPTIC LIT AND FILM
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Our culture is fascinated with its own destruction. From zombies to nuclear war, ecological disasters, aliens, disease and killer machines, Armageddon takes many forms. Structured around ways in which we have imagined the world ending, this course charts the cultural consciousness of apocalypse.

FWIS 190 - YOUTH REBELLION: SIXTIES MUSIC AND THE MAKING OF A COUNTER-CULTURE
Short Title: YOUTH REBELLION
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In fundamental ways the sixties were about youth culture. Popular music, probably more than any other cultural form, served as this culture's mode of self-expression. Sixties popular music, both US and British, will be at the center of a multi-media course that also makes use of materials in television, visual art, fiction, and film.

FWIS 191 - LITERATURE AND PUBLIC HEALTH
Short Title: LITERATURE AND PUBLIC HEALTH
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: How do realities of public health correspond with popular conceptions of it? How do depictions of public health affect our understanding of it in our contemporary world? This course will explore the concept of public health and its gendered, racial, class, and global connotations through analyses of novels, films, etc.

FWIS 192 - THE ROARING TWENTIES
Short Title: THE ROARING TWENTIES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The 1920s were about new possibilities, aesthetic experimentation, and frenzied expression. We'll examine iconic '20s literature by Hemingway, Fitzgerald, Woolf, and others, as well as the linchpins of '20s culture: jazz, Prohibition, the Harlem Renaissance, and modern art. Highlights include lessons on the Charleston and a Roaring Twenties soiree.
FWIS 193 - BANNED BOOKS AND OTHER DANGERS
Short Title: BANNED BOOKS AND OTHER DANGERS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this class, we will read, discuss, and write about literary works made infamous by their appearance on the American banned books list. Central to our examination of these texts will be the overarching question of the role of censorship in public education, and American culture at large.
Course URL: pwc.rice.edu

FWIS 194 - EMPIRES
Short Title: EMPIRES
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Is the United States of America an empire? This course will examine civilizations from Ancient Rome and Han Dynasty China to the superpowers of the twentieth century in order to identify the nature and mechanisms of imperial power. It will investigate imperial literature, architecture art, dress, rituals and technology.
Course URL: pwc.rice.edu

FWIS 195 - WANDERLUST: TRAVEL AND MODERN CULTURE
Short Title: WANDERLUST
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this first-year writing-intensive seminar, students explore exploration, tracing the conventions of travel writing from the past into the contemporary world. We will ask why, how, and where people travel historically and in the present, and we will analyze how people write travel and how they write themselves as travelers.
Course URL: pwc.rice.edu/

FWIS 196 - GROWING PAINS: COMING OF AGE IN LITERATURE AND CULTURE
Short Title: GROWING PAINS
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will explore how the concept of "coming of age" allows writers to explore questions about identity, belonging, gender, sexuality, and race. By examining which life narratives are available for certain groups, we will consider how the historical developments of the wider world influence the personal development of individuals.
Course URL: pwc.rice.edu/

FWIS 197 - UNDERSTANDING HEALTH DISPARITIES: THE SOCIAL DETERMINANTS OF HEALTH AND MORALITY IN THE U.S.
Short Title: HEALTH DISPARITIES IN THE U.S.
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course explores patterns and explanations of unequal health outcomes in the U.S. across five characteristics: socioeconomic status, race/ethnicity, nativity, gender identity and sexual orientation.
Course URL: pwc.rice.edu

FWIS 198 - FAMILY IN FICTION AND FILM
Short Title: FAMILY IN FICTION AND FILM
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This writing-intensive course examines the ways that various writers and filmmakers explore the subject of family. Students will read fiction by Kafka, Baldwin, and Munro, among others, and view films such as Boyhood and Tokyo Story. Writing tasks will include analytical essays and arguments that join scholarly or cultural debates.

FWIS 199 - JEWS ON FILM: CINEMATIC REPRESENTATIONS OF JEWISH LIFE
Short Title: JEWS ON FILM
Department: First-Year Writing Intensive
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will explore the modern Jewish life around the world through the medium of film. Students will be exposed to diverse Jewish communities and their cinematic representations. The course will consider modern Jewish identity through the lens of various themes including race, gender, religion, nationalism, assimilation and secularization.

French Studies (FREN)

FREN 141 - FIRST YEAR FRENCH I
Short Title: FIRST YEAR FRENCH I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in French (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of French. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Mutually Exclusive: Credit cannot be earned for FREN 141 and FREN 101/FREN 222.
Course URL: clicfrench.blogs.rice.edu
FREN 142 - FIRST YEAR FRENCH II  
Short Title: FIRST YEAR FRENCH II  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Prerequisite(s): FREN 141  
Description: Continuation of FREN 141. Development of interactional competence in French (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of French. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for FREN 142 and FREN 262.  
Course URL: clicfrench.blogs.rice.edu  

FREN 222 - AP/OTH CREDIT FRENCH LANGUAGE  
Short Title: AP/OTH CREDIT FRENCH LANGUAGE  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Transfer  
Credit Hours: 3  
Course Level: Undergraduate Lower-Level  
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Credit cannot be earned for FREN 222 and FREN 101/FREN 141.  

FREN 263 - SECOND YEAR FRENCH I  
Short Title: SECOND YEAR FRENCH I  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): FREN 142  
Description: Continuation of FREN 142. Development of interactional competence in French (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of French. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for FREN 263 and FREN 201.  
Course URL: clicfrench.blogs.rice.edu  

FREN 264 - SECOND YEAR FRENCH II  
Short Title: SECOND YEAR FRENCH II  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): FREN 263  
Description: Continuation of FREN 263. Development of interactional competence in French (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of French. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for FREN 264 and FREN 202.  
Course URL: clicfrench.blogs.rice.edu  

FREN 301 - ADVANCED GRAMMAR AND ITS LITERARY AND CULTURAL APPLICATIONS  
Short Title: ADV GRAM & LIT & CULTURAL APP  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Offered every semester, this course is an integrated study of literary and cultural texts as a springboard for advanced level refinements of grammar. Recommended Prerequisite(s): FREN 202 or 264 or Placement Test.  

FREN 302 - WRITING WORKSHOP  
Short Title: WRITING WORKSHOP  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course, offered annually and required of all majors, builds naturally on FREN 301. It emphasizes composition and exposition through the practice of such genres as narration, description, portrait, essay, and commentaire compose. Formerly FREN 336. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test. Mutually Exclusive: Credit cannot be earned for FREN 302 and FREN 336.  

FREN 305 - LITERARY AND CULTURAL ANALYSIS: THE ART OF READING  
Short Title: LITERARY AND CULTURAL ANALYSIS  
Department: Classical and European Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Introduction to the unique critical skills necessary for reading and analysis across the arts and social sciences. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.
FREN 307 - THE MANY FACETS OF FRENCH CULTURAL IDENTITY
Short Title: FRENCH CULTURAL IDENTITY I
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: With the help of nine French films and selected readings, we will discuss what it means to be French today. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 311 - MAJOR LITERARY WORKS AND ARTIFACTS OF PRE-REVOLUTIONARY FRANCE
Short Title: PRE-REV FRENCH LIT
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of French culture, literature, and artifacts from the Middle Ages until the Revolution. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 312 - MAJOR LITERARY WORKS AND ARTIFACTS OF POST-REVOLUTIONARY FRANCE
Short Title: MAJ LIT WORKS POST-REV FRANCE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of 19th and 20th century poetry, fiction, and cinema through the major literary and artistic movements: romanticism, realism, symbolism, Dada, surrealism, and existentialism. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 313 - MAJOR LITERARY WORKS AND ARTIFACTS OF THE FRANCOPHONE WORLD
Short Title: MAJ LITERARY WORKS & ARTIFACTS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will explore the artistic, historical, and philosophical textures of French cultures outside Europe, focusing especially on Africa North and South of the Sahara, the Caribbean, North America, and on the evolution of the concept of "francophonie" since World War II. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 321 - INTRODUCTION TO FRENCH SOCIETY AND CULTURE
Short Title: INTRO FRENCH SOCIETY & CULTURE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course provides grounding in social, political, cultural, and economic aspects of contemporary France. The course will focus on themes such as youth culture, Europeanization, immigration, and gender debates. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 323 - FROM EXISTENTIALISM TO CYBERPUNK
Short Title: EXISTENTIALISM TO CYBERPUNK
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Films and novels. Investigations of human consciousness, subjectivity and identity -- from Sartre's existentialism of the "absurd", through Robbe-Grillet's "anti-humanism", to the cyberpunk science-fictional studies of "post-humanity", genetic manipulation, environmental collapse and post-religious mysticism, by contemporary figures like Dantec and Houellebecq. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 324 - FROM DECOLONIZATION TO GLOBALIZATION
Short Title: FROM DECOLONI TO GLOBALIZATION
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Taught in English. Novels, and films, from North and West Africa, and the immigrant population in France, from 1960 to 2010. Emphasis on the tensions between narratives of political emancipation, modernity, secularism, and religious fundamentalism and mysticism. Extra reading for graduate students in theories of colonialism, postcolonialism, globalization. Cross-list: POLI 324, RELI 476. Graduate/Undergraduate Equivalency: FREN 524. Recommended Prerequisite(s): Any 200 level course or above in English or French, or HUMA 101 or HUMA 102, or a FWIS course. Mutually Exclusive: Credit cannot be earned for FREN 324 and FREN 524/RELI 604.
FREN 332 - FRENCH PHONETICS
Short Title: FRENCH PHONETICS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Acquisition of French phonetic system through intensive class and laboratory practice. Contrast analysis of the French and English phonetic systems. Minimal use of technical terminology. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 350 - PARIS
Short Title: PARIS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3,4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Overview of the history of Paris as a cultural, intellectual, and economic center through texts, music and films. Students earn 3 credits for the course, or 4 credits if participating in a supplementary 10-day study trip to France at the end of the semester in May. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 351 - PROVINCES OF FRANCE
Short Title: PROVINCES OF FRANCE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3,4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Overview of the amazing diversity in the history, languages, economic bases, traditions, and cultures of the original provinces in order to arrive at a better understanding of France as it exists today. For an additional credit hour, students may participate in a two week on site visit to Anjou, and Poitou. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 355 - MODERN SHORT STORY: TOWARDS AN ETHICS OF FICTION
Short Title: MODERN SHORT STORY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of great modern short fiction with emphasis on reading as an ethical enterprise. Selected critical essays complement works from Melville to Maupassant, Flaubert to Kafka to O'Connor as we talk about alienation and solitude, death and violence and the vicissitudes of family. Does not count toward French major. Cross-list: ENGL 355. Recommended Prerequisite(s): Any 200-level course or above in English or French Studies, or HUMA 101 or 102.

FREN 356 - TRANSLATION AS INTERPRETATION: CLOSE ENCOUNTERS WITH POETS OF THE MODERN AGE
Short Title: TRANSLATION AS INTERPRETATION
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course dedicated, to reading closely some of the great poets of the modern period - from Hugo to Baudelaire to Prevert - and, to the art of translation as a tool for reflecting on the subtleties of the French language and the special shape of the poetic. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 360 - WOMEN, SEXUALITY, AND THE LITERARY
Short Title: WOMEN, SEXUALITY & LITERARY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to women writers and to women as objects of representation in fiction and in poetry since the Revolution. Special attention to the body and to sexuality as these impinge both on writer and represented. Cross-list: SWGS 412. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 370 - WOMEN IN TALES OF THE FANTASTIC
Short Title: WOMEN IN TALES OF FANTASTIC
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Taking up that rich 19th-century form we call "fantastic narrative" --and such writers as Gautier, Nodier, Maupassant, and Villiers de l'Isle-Adam -- this course will explore this genre's anxieties not just about madness, machines, and misbehaving objects but also about women (both dead and alive) and their bodies. Recommended Prerequisite(s): FREN 202 or FREN 264 or Placement Test.

FREN 380 - FLAUBERT AND THE ART OF TRANSLATION: EXPERIMENTS IN WRITING
Short Title: WRITING FLAUBERT
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Flaubert was both a romantic and a realist who achieved the acutely modern through legend and myth in prose that was poetic. This will be a course in which he anchors our study of short, innovative prose works of the 19th century, encountered, each one, through the imaginative art of translation.
FREN 401 - TRANSLATION
Short Title: TRANSLATION
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Exploration of the theory and practice of translation. Includes translation of modern texts from and into English. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor

FREN 403 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-5
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics may vary. Please consult with the department for additional information. Taught in French. Instructor Permission Required. Repeatable for Credit.

FREN 404 - BEGINNINGS OF THE LANGUAGE AND LITERATURE OF FRANCE
Short Title: THE LANG AND LIT OF FRANCE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course includes and external history of the French language, an examination of hagiographic literature and the chanson de geste in their cultural and artistic contexts, as well as bibliographic component to acquaint the students with library tools available for research emphasizing medieval resources but not excluding those for later periods. Student will acquire a reading knowledge of Old French. Course taught in French. Cross-list: MDEM 404. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor

FREN 407 - INTRODUCTION TO CINEMA IN FRENCH
Short Title: INTRODUCTION TO CINEMA IN FREN
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction To Cinema In French -- In France and the French-speaking world (especially Africa): both the canon of "auteurs" of "high culture" and commercial "mere entertainment" Discussion of this distinction, and introduction to critical and theoretical discourse in film studies. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor

FREN 409 - NOVELS AND FILMS
Short Title: NOVELS AND FILMS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Comparison between French novels from the 16th to the 20th centuries and movies that have been based on them, in some cases more than one movie based on a given novel. The class will read each novel in question and then examine how the director perceived it when making the film. For example, La Reine Margot, Tous les Matins du Monde, Liaisons Dangereuses, Madame Bovary, Cyrano de Bergerac, Hiroshima mon amour. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor

FREN 411 - THE LEGACY OF COURTLY LITERATURE
Short Title: LEGACY OF COURTLY LITERATURE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will address the various ways that courtly literature has evolved into modern times and stages through which the themes have passed. We will study courtly themes in literature (French, English, Spanish, German, Italian), film, art, and music from the Middle Ages to modern times. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

FREN 415 - COURTLY LOVE IN MEDIEVAL FRANCE
Short Title: COURTLY LOVE MEDIEVAL FRANCE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the Occitan and Old French poetry that served as the source of the kind of love that came to be called "Amour courtois" in the nineteenth century. Cross-list: MDEM 425. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor Mutually Exclusive: Credit cannot be earned for FREN 415 and FREN 515.
FREN 416 - LITERATURE AND CULTURE OF THE MIDDLE AGES: KING ARTHUR
Short Title: LIT & CULTURE OF MIDDLE AGES
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examination of the origins of the legend of King Arthur and reasons for its popularity, particularly in literature of the French Middle Ages but also in other medieval literatures of Western Europe. Includes discussion of the legend's influence in diverse areas even in modern times. Cross-list: MDEM 436. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

FREN 424 - WOMEN IN FRANCE
Short Title: WOMEN IN FRANCE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course studies women in education, the workplace, politics, and in social and cultural institutions in French society. The class explores the history of the French women's movement and analyzes French concepts of gender and feminism in comparison to American models. Cross-list: SWGS 424.

FREN 430 - 17TH CENTURY
Short Title: 17TH CENTURY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Thematic approach to examining the main political, religious, philosophical, and literary discourses of the golden age of absolutism. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

FREN 451 - FRANCE - AMERICA: IMAGE AND EXCHANGE
Short Title: FRANCE-AMER: IMAGE & EXCHANGE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This undergraduate course analyzes French and American culture and identity through transatlantic encounters. We study French intellectuals (Tocqueville, Beauvoir, Baudrillard) who traveled to the US, and images of America in French novels, comic strips, films. We also examine American gazes toward the French. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

FREN 453 - IMMIGRATION AND CITIZENSHIP IN CONTEMPORARY FRANCE
Short Title: IMMIGRATION AND CITIZENSHIP
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the impact of immigration on contemporary French society and analyzes debates over citizenship, integration, and multiculturalism. Taught in French. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

FREN 459 - THE BATTLES OF ALGIERS: FROM CHARLES X TO CHARLIE-HEBDO
Short Title: THE BATTLES OF ALGIERS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Historical, literary, and visual materials form the 19th century to the present will illustrate the global perception of a war that left an indelible inscription in contemporary debates on democracy and reform. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.
FREN 478 - THE CARIBBEAN IN FRENCH  
**Short Title:** THE CARIBBEAN IN FRENCH  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This is the undergraduate senior version of the graduate level seminar FREN/ARCR 578. Both the course's reading list and the length of the research are adjusted to accommodate undergraduate needs. The seminar examines the history, political writings, literature and the arts of the French Caribbean from the beginning of colonization to the present. It will include figures such as Saint-John Perse, Roumain, Cesaire, Fanon, Depeste, Schwarz-Bart, Warner-Vieyra, Glissant, Conde, Chamoiseau, Laferriere, as well as the Caribbean arts and film. Taught in English. Cross-list: ARCR 478. Mutually Exclusive: Credit cannot be earned for FREN 478 and FREN 578.

FREN 482 - DISCOURSES OF DISSIPATION  
**Short Title:** DISCOURSES OF DISSIPATION  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Course centers on the concept of dissension as a concept and a practice, both ideological and esthetic. Covers a selection of texts, reading, and movements of ”French” expression from Montaigne to present. Limited enrollment to 12. French Studies majors will read works and write papers in French. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor Mutually Exclusive: Credit cannot be earned for FREN 482 and FREN 582.

FREN 487 - LITERATURE, ART AND COLONIALITY  
**Short Title:** LITERATURE, ART & COLONIALITY  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This is the undergraduate senior version of the graduate level seminar FREN/HART 587. Both the course's reading list and the length of the research are adjusted to accommodate undergraduate needs. How do concepts like coloniality, exoticism, primitivism, the modern baroque apply to texts and artifacts produced at the crossroads of (post)colonial and transnational encounters? Focus on Orientalists, Matisse, Djebar, Simon, Boudjedra, Borduas, Atlant, Khadda, and Glissant. Taught in English. Choice of reading materials and assignments in either English or French. Cross-list: HART 487. Mutually Exclusive: Credit cannot be earned for FREN 487 and FREN 587.

FREN 495 - THE FRENCH AVANT-GARDE: SYMBOLISM, DADAISM, SURREALISM, CONTEMPORARY CINEMA  
**Short Title:** THE FRENCH AVANT-GARDE  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Short texts and films by Baudelaire, Verlaine, Rimbaud, Mallarme, Jarry, Apollinaire, Breton, Artaud, Robbe-Grillet, Catherine Breillat, Virginie Despentes. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor

### Freshman Seminar (FSEM)

**FSEM 100 - ROMANCING RELIGION: NARRATIVES OF THE SACRED**  
**Short Title:** ROMANCING RELIGION  
**Department:** Humanities Division  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course examines links between religious experience and romance narrative taking the grail as a focal point. We start with grail legends in the middle ages, explore historical associations of the grail with medieval Christianity, and end with quest narratives and grail motifs in modern occultism, fiction and film. This course is limited to first-year students only, any others will be removed from this course. Cross-list: MDEM 100, RELI 100.

**FSEM 101 - FRESHMAN SEMINAR: SOCRATES: THE MAN AND HIS PHILOSOPHY**  
**Short Title:** FRESHMAN SEMINAR: SOCRATES  
**Department:** Humanities Division  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This discussion-style seminar will consider how Socrates practiced philosophy, how Plato represented Socrates and Socratic philosophy in writing, and what effect Socrates had on Athens and his fellow Athenians. Readings will consist mainly of Plato’s dialogues, with emphasis on the “Apology” and “Gorgias.” In addition to each paper, each participant will make one presentation and lead one discussion. This course is limited to first-year students only; any others will be removed from this course. Cross-list: CLAS 101.
FSEM 102 - BUDDHISM MEDITATION, ART AND US
Short Title: BUDDHISM MEDITATION, ART & US
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: How do you learn about another tradition? Its texts, practices, or art? Its conversations with the modern West? We will focus on all these as we enter ancient Buddhist worlds of India and Tibet, by reading ancient texts and modern treatments, including films and scientific inquiry. This course is limited to first-year students only, any others will be removed from this course. Cross-list: RELI 102.

FSEM 108 - LANGUAGE IN THE MEDIA
Short Title: LANGUAGE IN THE MEDIA
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, we examine the effect language use in the media has on an American and global culture. Students will collect data to contribute to a class data set, which they will then use to complete their own original research projects. This course is limited to first-year students only. Cross-list: LING 107.

FSEM 109 - BIZARRE BIBLICAL STORIES
Short Title: BIZARRE BIBLICAL STORIES
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will examine some of the more bizarre stories of the Hebrew Bible, which deal with such ideas as fratricide, seduction and incest. We will see how such stories have been interpreted, and how they have been afforded meaning, throughout the ages. All texts will be read in English translation. This course is limited to first-year students only.

FSEM 113 - THE PARTHENON AND PERIKLEAN ATHENS
Short Title: THE PARTHENON
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, we will trace the history and mythology of the Parthenon. We begin with the dawn of sacred tradition on the Acropolis, then explore the classical recreation of the city, the conversion of the Parthenon into a church, its subsequent destruction and the current debate over restoration. This course is limited to first-year students only, any others will be removed from this course. Cross-list: ARCH 110, CLAS 103, HART 110.

FSEM 115 - FRESHMAN SEMINAR ON LOCAL BIOLOGY RESEARCH (BCB)
Short Title: FRESHMAN BIOLOGY SEMINAR (BCB)
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group III
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A 7-week seminar course to introduce freshmen prospective biologists to the excitement of research at Rice and the Medical Center and to provide context with which to think about facts presented in biosciences textbooks. Small groups will meet weekly with a graduate student or postdoctoral researcher to explore a published research article by a local lab, gaining background information about the subject and exposure to the research techniques. In the final session, the group will tour the lab that produced the featured article. Additional tours and activities TBA. All first-year non-transfer students are eligible to enroll in BIOC 115/FSEM 115 regardless of AP credit. This course meets in the second half of the semester and features research in the Program of Biochemistry and Cell Biology. Cross-list: BIOC 115.
Course URL: www.bioc.rice.edu/bioc115/

FSEM 116 - FRESHMAN SEMINAR ON LOCAL BIOLOGY RESEARCH (EEB)
Short Title: FRESHMAN BIOLOGY SEMINAR (EEB)
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group III
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A 5-week seminar course to introduce freshmen prospective biologists to the excitement of research at Rice and the Medical Center and to provide context with which to think about facts presented in biosciences textbooks. Small groups will meet weekly with a graduate student or postdoctoral researcher to explore a published research article by a local lab, gaining background information about the subject and exposure to the research techniques. In the final session, the group will tour the lab that produced the featured article. Additional tours and activities TBA. All first-year non-transfer students are eligible to enroll in BTX 115/FSEM 116 regardless of AP credit. This course meets in the first half of the semester and features research in the Program of Ecology and Environmental Biology. Cross-list: EIOC 115.

FSEM 117 - FROM FREUD TO LECORBUSIER: PSYCHOANALYSIS, ART AND ARCHITECTURE
Short Title: FROM FREUD TO LECORBUSIER
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This seminar presents a selected range of key psychoanalytic concepts, which have been used by artists and architects to develop their practices and by theoreticians and critics to explain the production or experience of art and architecture. A typical week pairs a theoretical text with a work of art or architecture. This course is limited to first-year students only, any others will be removed from this course. Cross-list: HART 117.
FSEM 121 - FROM KAFKA TO THE HOLOCAUST: DISCOURSE IN ALIENATION
Short Title: FROM KAFKA TO HOLOCAUST
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The beginnings of modernity have to be seen in the context of the sociopolitical and intellectual upheavals at the end of the 19th century. Whereas extreme reactionism eventually led to fascism, progressive literature advocated artistic experimentation as manifested in a discourse of alienation (expressionism, dada, Kafka). Holocaust literature reflects the ultimate clash between progressiveness and reactionism. The primary readings will be from Wedekind, Trakl, Kaiser, Kafka, Hesse, Remarque, Brecht, Celan, Werfel. Taught in English. This course is limited to first-year students only, any others will be removed from this course. Cross-list: GERM 121.

FSEM 122 - HISTORY THROUGH GERMAN CINEMA
Short Title: HIST THROUGH GERMAN CINEMA
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The course presents an overview of German history via contemporary German feature films from World War I, through the Weimar and Nazi periods, the postwar years as a Divided Germany into East and West and finally a look at the new generation in Post-unification Germany. Taught in English. All films are subtitled in English. This course is limited to first-year students only, any others will be removed from this course. Cross-list: GERM 122.

FSEM 123 - THROUGH TIME AND SPACE: EUROPEAN TRAVEL STORIES
Short Title: THROUGH TIME AND SPACE
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A travel story stands at the beginning of European Literature: Homer's Odyssey. Since ancient times, literary travel accounts of all sorts, to all destinations, by all means and undertaken with a wide range of different purposes have kept Europeans on the move. First attracted by the exotic and the unknown in the far distance, the interest moved ever closer to the self, and the exploration of the human mind became the most exotic and intriguing journey. Readings include Homer, Swift, Voltaire, Goethe, Heine, Twain, and Verne. Taught in English. This course is limited to first-year students only, any others will be removed from this course. Cross-list: GERM 123.

FSEM 124 - MORALITY AND POLITICS IN MODERN THOUGHT
Short Title: MORALITY & POLITICS
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An historic introduction to central themes of legal and political thought in the Western tradition. Taught in English. Course is limited to first-year students. Cross-list: GERM 124.

FSEM 128 - THE CULTURE OF WAR: VIOLENCE, CONFLICT AND REPRESENTATION
Short Title: THE CULTURE OF WAR
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Focusing on the experience and representation of war in German and European literature, theory, and visual arts. Covers the period from 17th-20th century. Special emphasis on the First World War. Not for the faint-hearted, topics included: destruction, ruins, refugees, massacres, terrorism, victims, spaces of battle, the logic of war. Taught in English. This course is limited to first-year students only, any others will be removed from this course. Cross-list: GERM 128.

FSEM 129 - LITERARY LOVE AFFAIRS: LOVE AND PASSION IN EUROPEAN LITERATURE
Short Title: LITERARY LOVE AFFAIRS
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: According to the German philosopher Hegel, love-stories are usually about a young man who seeks the ideal girl, finally gets her, and becomes as good a Philistine as others. Students examine this philosophical wisdom by reading stories and theoretical texts about love and passion by European authors from the time of Shakespeare to the present. Taught in English. This course is limited to first-year students only, any others will be removed from this course. Cross-list: GERM 129.
FSEM 130 - WOMEN AND NAZI GERMANY
Short Title: WOMEN AND NAZI GERMANY
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Through literature, art and filmmaking this course will explore how the Nazi dictatorship affected the lives of women. From "Aryan" women who participated in it, to how German women of Jewish descent were marginalized; analyzing women as victims and perpetrators of the Holocaust; and exploring the memory of Nazism. This course is limited to first-year students only, any others will be removed from this course. Cross-list: GERM 130, SWGS 130.

FSEM 132 - NATIONAL SOCIALISM AND FILM
Short Title: NATIONAL SOCIALISM AND FILM
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course explores films made in Nazi Germany as well as films about Nazi Germany and the corresponding crisis of justice in the mid-twentieth century. We will analyze cinematic responses to the rise of the fascist movement, World War II, the Holocaust, and the post-war years. Particular attention will be paid to the value of film as propagandistic tool, ways in which it can configure and contest our image of national identity, and the relation between mass manipulation and mass murder. Taught in English. This course is limited to first year students only, any others will be removed from this course. Cross-list: GERM 132. Mutually Exclusive: Credit cannot be earned for FSEM 132 and GERM 336.

FSEM 134 - MODERN MEDIA
Short Title: MODERN MEDIA
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Critical introduction to the history and theory of modern media--including photography, film, and radio--with a focus on problems of representation, cultural perception, and the simulation of reality. What are media? How are media linked to the experience of modernity and post modernity? How do media construct "reality?" Do modern media generate a crisis of perception? How has the emergency of modern visual culture shaped the social and political imaginary? This course is limited to first-year students only, any others will be removed from this course. Cross-list: GERM 134.

FSEM 136 - GERMAN FILM
Short Title: GERMAN FILM
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: "From Caligari to Hitler"-and beyond. In the vein of the title of a well-known study on German film during the Weimar Republic the course offers a cinematographic history of German and European politics and culture from the early Expressionist silent movies on the award winning "Life of Others." Taught in English. This course is limited to first-year students only, any others will be removed from this course. Cross-list: GERM 136.

FSEM 142 - CRITICAL APPROACHES TO THE ISRAELI-PALESTINIAN CONFLICT
Short Title: SHARED FATES: ISRAEL-PALESTINE
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course surveys the cultural and political dimensions of the Israeli-Palestinian conflict. In this class, we explore the origins of Zionism and Palestinian nationalism, the varieties of Zionism in relation to Colonialism and Orientalism, and the construction of racial, economic, and gender inequalities in the face of this contemporary dispute. This course is limited to first-year students only.

FSEM 144 - THE ARAB-ISRAELI CONFLICT
Short Title: ARAB-ISRAELI CONFLICT
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Seminar traces the history and politics of the Arab-Israeli conflict, delving into both Palestinian and Israeli understandings of the past and present using books, documentaries, and films. The course seeks to understand how and at what costs Israeli and Palestinian nationalisms have been constructed and analyzes U.S. involvement in the conflict. This course is limited to first-year students only, any others will be removed from this course. Cross-list: HIST 144.
FSEM 151 - THE HERO AND HIS COMPANION FROM GILGAMESH TO SAM SPADE
Short Title: THE HERO & HIS COMPANION
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: How does presentation of heroic action illustrate the basic values of society? Historical sources including ancient texts, modern mystery stories, and two "western" movies, show the development of a style of community service linking heroism with alienation. The extent to which women participate will be traced. This course is limited to first-year students only; any others will be removed from this course. Cross-list: HIST 151.

FSEM 171 - THE BODY AND THE COSMOS IN THE MIDDLE AGES
Short Title: BODY & COSMOS IN MIDDLE AGES
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: What shaped medieval Christian notions of the body? How did common experiences of pain, sexuality, childbirth, and death refract the grasp of larger concepts - God, time, and the cosmos? This seminar will explore the issues connecting body to cosmos through close reading of medieval literary, mystical, and autobiographical texts. This course is limited to first-year students only, any others will be removed from this course. Cross-list: MDEM 171, RELI 171. Mutually Exclusive: Credit cannot be earned for FSEM 171 and FWIS 150.

FSEM 178 - THE THIRD REICH IN LITERATURE
Short Title: THE THIRD REICH IN LITERATURE
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Freshman seminar introduces students to the interpretation of drama, poetry, prose, and film on German fascism and its consequences in and outside of Germany before, during, and after World War II. In addition, students will examine theoretical approaches to fascist culture and memory of the Holocaust. Limited to first year students only. Cross-list: GERM 178.

FSEM 179 - ROMAN VS GREEK: QUESTIONING THE DEFINITION OF ART IN THE ANCIENT MEDITERRANEAN WORLD
Short Title: ROMAN VS GREEK
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: What's in a name? Apparently a lot. For 500 years--since the Renaissance--scholars have cleaved Roman and Greek art from one another and this division has defined how we think about art in antiquity. In this freshman seminar, we will question this paradigm. Looking at art from around the Mediterranean and reading the very scholarship that has both created these definitions and questioned them, we will work toward a new way of conceiving the art of the Ancient Mediterranean world. This course is limited to first-year students only, any others will be removed from this course. Cross-list: CLAS 179, HART 179. Mutually Exclusive: Credit cannot be earned for FSEM 179 and FSEM 159.

FSEM 181 - CINEMA AND MODERNITY
Short Title: CINEMA AND MODERNITY
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class focuses on cinema as a primary cultural product of industrial capitalism, whose processes of mechanization and urbanization fundamentally changed everyday life. Classes will focus on films by Chaplin, Lang, Eisenstein, Hitchcock, and others, and encompass issues of technology and representation, shock and trauma, and crime and the city. This course is limited to first-year students only. Cross-list: HART 120.

FSEM 182 - TRIAL BY FIRE: AMERICAN JEWS AND THE CIVIL WAR
Short Title: AMERICAN JEWS & THE CIVIL WAR
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will offer new perspectives on the Civil War by examining the conflict from the viewpoint of the American Jewish community. Sermons, diaries, memoirs, and other primary sources will be used to examine Jews and the slave trade, Jewish traditions during wartime, Jewish women's experience and leadership roles during the war and other topics.
German (GERM)

GERM 106 - ACCELERATED FIRST YEAR GERMAN
Short Title: ACCEL 1ST YEAR GERMAN
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Alternate first-year German course for students with some background in German or related language. This is an intensive course covering the equivalents of GERM 141 and GERM 142. Students will be prepared for GERM 263 upon completion of the course. Mutually Exclusive: Credit cannot be earned for GERM 106 and GERM 141/GERM 142.

GERM 121 - FROM KAFKA TO THE HOLOCAUST: DISCOURSE IN ALIENATION
Short Title: FROM KAFKA TO HOLOCAUST
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The beginnings of modernity have to be seen in the context of the sociopolitical and intellectual upheavals at the end of the 19th century. Whereas extreme reactionism eventually led to fascism, progressive literature advocated artistic experimentation as manifested in a discourse of alienation (expressionism, dada, Kafka). Holocaust literature reflects the ultimate clash between progressiveness and reactionism. The primary readings will be from Wedekind, Trakl, Kaiser, Kafka, Hesse, Remarque, Brecht, Celan, Werfel. Taught in English. This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 121.

GERM 122 - HISTORY THROUGH GERMAN CINEMA
Short Title: HIST THROUGH GERMAN CINEMA
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The course presents an overview of German history via contemporary German feature films from World War I, through the Weimar and Nazi periods, the postwar years as a Divided Germany into East and West and finally a look at the new generation in Post-unification Germany. Taught in English. All films are subtitled in English. This course is limited to first year students only, any others will be removed from this course. Cross-list: FSEM 122.

GERM 123 - THROUGH TIME AND SPACE: EUROPEAN TRAVEL STORIES
Short Title: THROUGH TIME AND SPACE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A travel story stands at the beginning of European Literature: Homer’s Odyssey. Since ancient times, literary travel accounts of all sorts, to all destinations, by all means and undertaken with a wide range of different purposes have kept Europeans on the move. First attracted by the exotic and the unknown in the far distance, the interest moved ever closer to the self, and the exploration of the human mind became the most exotic and intriguing journey. Readings include Homer, Swift, Voltaire, Goethe, Heine, Twain, and Verne. Taught in English. This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 123.

GERM 124 - MORALITY AND POLITICS IN MODERN THOUGHT
Short Title: MORALITY & POLITICS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An historic introduction to central themes of legal and political thought in the Western tradition. Taught in English. Course is limited to first year students. Cross-list: FSEM 124.

GERM 128 - THE CULTURE OF WAR: VIOLENCE, CONFLICT AND REPRESENTATION
Short Title: THE CULTURE OF WAR
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Focusing on the experience and representation of war in German and European literature, theory, and visual arts. Covers the period from 17th-20th century. Special emphasis on the First World War. Not for the faint-hearted, topics included: destruction, ruins, refugees, massacres, terrorism, victims, spaces of battle, the logic of war. Taught in English. This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 128.
GERM 129 - LITERARY LOVE AFFAIRS: LOVE AND PASSION IN EUROPEAN LITERATURE

Short Title: LITERARY LOVE AFFAIRS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: According to the German philosopher Hegel, love-stories are usually about a young man who seeks the ideal girl, finally gets her, and becomes as good a Philistine as others. Students examine this philosophical wisdom by reading stories and theoretical texts about love and passion by European authors from the time of Shakespeare to the present. Taught in English. This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 129.

GERM 130 - WOMEN AND NAZI GERMANY

Short Title: WOMEN AND NAZI GERMANY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Through literature, art and filmmaking this course will explore how the Nazi dictatorship affected the lives of women. From "Aryan" women who participated in it, to how German women of Jewish descent were marginalized; analyzing women as victims and perpetrators of the Holocaust; and exploring the memory of Nazism. This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 130, SWGS 130.

GERM 132 - NATIONAL SOCIALISM AND FILM

Short Title: NATIONAL SOCIALISM AND FILM
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course explores films made in Nazi Germany as well as films about Nazi Germany and the corresponding crisis of justice in the mid-twentieth century. We will analyze cinematic responses to the rise of the fascist movement, World War II, the Holocaust, and the post-war years. Particular attention will be paid to the value of film as propagandistic tool, ways in which it can configure and contest our image of national identity, and the relation between mass manipulation and mass murder. Taught in English. This course is limited to first year students only, any others will be removed from this course. Cross-list: FSEM 132. Mutually Exclusive: Credit cannot be earned for GERM 132 and GERM 336.

GERM 134 - MODERN MEDIA

Short Title: MODERN MEDIA
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Critical introduction to the history and theory of modern media--including photography, film, and radio--with a focus on problems of representation, cultural perception, and the simulation of reality. What are media? How are media linked to the experience of modernity and post modernity? How do media construct "reality?" Do modern media generate a crisis of perception? How has the emergency of modern visual culture shaped the social and political imaginary? This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 134.

GERM 136 - GERMAN FILM

Short Title: GERMAN FILM
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: "From Caligari to Hitler"--and beyond. In the vein of the title of a well-known study on German film during the Weimar Republic the course offers a cinematographic history of German and European politics and culture from the early Expressionist silent movies to the award winning "Life of Others." Taught in English. This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 136.

GERM 141 - FIRST YEAR GERMAN I

Short Title: FIRST YEAR GERMAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in German (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of German. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Mutually Exclusive: Credit cannot be earned for GERM 141 and GERM 101/GERM 106/GERM 222.
Course URL: clicgerman.blogs.rice.edu
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Distribution Group</th>
<th>Restrictions</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>GERM 142</td>
<td>FIRST YEAR GERMAN II</td>
<td>FIRST YEAR GERMAN II</td>
<td>Cntr Lang &amp; Intercultural Comm</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td></td>
<td>Distribution Group I</td>
<td>Graduate level students may not enroll.</td>
<td>This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Credit cannot be earned for GERM 142 and GERM 106/GERM 262. Course URL: clicgerman.blogs.rice.edu</td>
</tr>
<tr>
<td>GERM 178</td>
<td>THE THIRD REICH IN LITERATURE</td>
<td>THE THIRD REICH IN LITERATURE</td>
<td>Classical and European Studies</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td></td>
<td>Distribution Group I</td>
<td>Graduate level students may not enroll.</td>
<td>Description: Freshman seminar introduces students to the interpretation of drama, poetry, prose, and film on German fascism and its consequences in and outside of Germany before, during, and after World War II. In addition, students will examine theoretical approaches to fascist culture and memory of the Holocaust. Limited to first year students only. Cross-list: FSEM 178.</td>
</tr>
<tr>
<td>GERM 222</td>
<td>AP/OTH CREDIT IN GERMAN LANGUAGE</td>
<td>AP/OTH CREDIT GERMAN LANGUAGE</td>
<td>Cntr Lang &amp; Intercultural Comm</td>
<td>Standard Letter</td>
<td>Transfer</td>
<td></td>
<td>Distribution Group I</td>
<td>Graduate level students may not enroll.</td>
<td>This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Credit cannot be earned for GERM 222 and GERM 141. Course URL: clicgerman.blogs.rice.edu</td>
</tr>
<tr>
<td>GERM 263</td>
<td>SECOND YEAR GERMAN I</td>
<td>SECOND YEAR GERMAN I</td>
<td>Cntr Lang &amp; Intercultural Comm</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td></td>
<td>Distribution Group I</td>
<td>Graduate level students may not enroll.</td>
<td>Description: Continuation of GERM 262. Development of interactional competence in German (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of German. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for GERM 263 and GERM 201. Course URL: clicgerman.blogs.rice.edu</td>
</tr>
<tr>
<td>GERM 264</td>
<td>SECOND YEAR GERMAN II</td>
<td>SECOND YEAR GERMAN II</td>
<td>Cntr Lang &amp; Intercultural Comm</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td></td>
<td>Distribution Group I</td>
<td>Graduate level students may not enroll.</td>
<td>Description: Continuation of GERM 263. Development of interactional competence in German (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of German. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for GERM 264 and GERM 202. Course URL: clicgerman.blogs.rice.edu</td>
</tr>
<tr>
<td>GERM 280</td>
<td>HISTORY OF CINEMA AND MEDIA I: INVENTION TO 1945</td>
<td>HISTORY OF CINEMA AND MEDIA I</td>
<td>Classical and European Studies</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td></td>
<td>Distribution Group I</td>
<td>Graduate level students may not enroll.</td>
<td>Description: This seminar will introduce students to the history of cinema from its inception to 1945 by considering individual cinematic artifacts in their technological, economic, aesthetic, political, and social contexts. Cross-list: CMST 201.</td>
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<tr>
<td>GERM 301</td>
<td>THIRD YEAR GERMAN I</td>
<td>THIRD YEAR GERMAN I</td>
<td>Classical and European Studies</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td></td>
<td>Distribution Group I</td>
<td>Graduate level students may not enroll.</td>
<td>Description: This course introduces students to contemporary German speaking cultures through the use of authentic materials (film, media, literature). Recommended Prerequisite(s): GERM 264 or Instructor Permission.</td>
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</tbody>
</table>
GERM 302 - THIRD YEAR GERMAN II
Short Title: THIRD YEAR GERMAN II
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course focuses on complex topics in contemporary German speaking cultures through the use of authentic materials (film, media, literature). Recommended Prerequisite(s): GERM 301 or Permission of Instructor.

GERM 305 - ENLIGHTENMENT AND ROMANTICISM (1750-1850)
Short Title: ENLIGHTENMENT (1750-1850)
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to the major social, political and cultural developments in the period between 1700-1850, which contributed to the emergence of modern German cultural identity within the European context. Covers wide range of theoretical and literary works by Kant, Lessing, Schiller, Goethe, Eichendorff, Hoffmann, Heine, and others. Taught in German.

GERM 306 - REALISM TO MODERNITY (1850-PRESENT)
Short Title: REALISM TO MODERNITY-1850-PRES
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: German history and culture during the late 19th and the 20th century have been rather turbulent: From Wilhelminian empire to Weimaraner democracy to Hitler fascism to socialist division to German reunification to entry into the European Union. All these political changes will be commented on by cultural reflections in textual and filmic forms. Literary texts will include Fontane, Mann, Kafka, Boll, Grass, Wolf and Maron. Taught in German.

GERM 307 - FOLK AND FAIRY TALE IN GERMAN: TRADITION, STRUCTURE, ARTISTRY
Short Title: FOLK & FAIRY TALE IN GERMAN
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The folk tales collected by the Brothers Grimm still exhibit all the principle characteristics and functions of oral literature, i.e. the reproduction of an audience's cultural identity and the securing of that identity. Nevertheless, these characteristics are still preserved in fairy tales written by specific authors for a reading audience. Examples of the latter are mainly from authors of Romanticism and Realism. Taught in German.

GERM 309 - GERMAN POETRY
Short Title: GERMAN POETRY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: "If the soul speaks out, alas! it is no longer the soul that speaks" - in Schiller's famous line one of the many fascinating paradoxes of lyric poetry is expressed. With the tradition of the "Lied," poems set to music, German poetry of the Classical-Romantic epoch was soon to become the epitome of lyric poetry as such. There were, however, poems of quite different kinds before and after Goethe, Eichendorff, and Heine. Without neglecting the Classical-Romantic period, the course will explore the history of lyric expression in German literature from the early modern period to the present in both poems and theoretical texts. Taught in German.

GERM 311 - BERLIN: PAST AND PRESENT
Short Title: BERLIN: PAST AND PRESENT
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course introduces students to German history and culture as mirrored in the history of the city that is "always in progress and never accomplished." With an emphasis on the period from the 1920's to the present, class discussions encompass literature and theory, politics and social life, as well as architecture, fine arts and film. Taught in German.
GERM 321 - EUROPEAN WOMEN FILMMAKERS
Short Title: EUROPEAN WOMEN FILMMAKERS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Filmmaking has celebrated its first hundred years. Women’s contributions were significant and deserve to widen the film canon for all filmgoers. This course will concentrate on films by European women directors, taking into account aesthetic particularities, gender commitment, and post-feminist attempts. Importance will also be given to the contexts and conditions of women’s film production. All films subtitled in English. Taught in English. Cross-list: HART 385, HUMA 321, SWGS 358.

GERM 322 - MARX, FREUD, EINSTEIN: FOREBEARERS OF MODERNITY
Short Title: MARX, FREUD, EINSTEIN
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Like no others, these three thinkers of the 19th and 20th centuries have influenced the intellectual, historical, social and cultural development not only of Germany, but of the entire world. The course examines the works of these authors in the context of their own time as well as their continued importance in the present. Works by Brecht, Christa Wolf, Schnitzler, Kafka will also be considered. Taught in English.
Cross-list: HUMA 322.

GERM 324 - BERLIN: RESIDENCE, METROPOLIS, CAPITAL
Short Title: BERLIN:RESIDENCE,METRO,CAPITAL
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course offers an introduction to German history, politics, and culture as mirrored in the history of the old and new German capital. Berlin has always been a city of contradictions: from imperial glamour to proletarian slums, from the Roaring Twenties to Hitler’s seizure of power. Emerging from the ruins of WWII Berlin became both the capital of Socialism and the display window of the Free World. After the fall of the wall, Berlin is still looking for its role in the center of a reshaped Europe. Readings and discussions encompass fine arts and literature from the 18th century to the present, including film. Taught in English.
Cross-list: HUMA 324.

GERM 325 - THE GERMAN FAIRY TALE: OLD AND NEW
Short Title: GERMAN FAIRY TALE: OLD & NEW
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Discussion of several prototypes from the fairy-tale collection of the Brothers Grimm and the subsequent development of the "literary" fairy tale from Goethe and the Romantics to the 20th century. Taught in English.
Cross-list: HUMA 372.

GERM 327 - GERMAN EXPRESSIONISM IN EUROPEAN CONTEXT:
HISTORY, LITERATURE AND FINE ARTS
Short Title: GERMAN EXPRESSIONISM
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The literature, fine arts and film of German Expressionism represent the most concentrated breakthrough of modernity. In addition to focusing on this accomplishment in its European context, the course will also discuss Nietzsche’s influence, the movement’s ambivalent reaction to WWI and its misappropriation by communism and nationalism. Taught in English.

GERM 328 - GERMAN ADAPTATIONS: TEXT TO FILM
Short Title: GERMAN ADAPTATIONS: TEXT-FILM
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Prominent novels of the 20th century will be studied for their possibilities or impossibilities of rendition from print medium to cinematic medium. From the myriad of adaptations we will concentrate on Thomas Mann: Tod in Venedig; Franz Kafka: Das Schloss; Klaus Mann: Mephisto; Gunter Grass: Die Blechtrommel; H. Boll: Katharina Blum; Jurek Becker: Jacob der Lugner. All films are subtitled in English. Taught in English.
Cross-list: HUMA 328.
GERM 329 - LITERATURE OF THE HOLOCAUST AND EXILE
Short Title: LIT OF HOLOCAUST & EXILE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Most of the authors from Germany and Austria, who were persecuted and fled into exile, used literature to search for meaning in life that apparently had been stripped of all meaning. Among these authors are the most distinguished writers of the time, i.e., Th. and H. Mann, Brecht, Benjamin, Werfel, Doblin, J. Roth, S. Zweig, N. Sachs, Celan, Auslander. Taught in English. Cross-list: HUMA 329.

GERM 330 - LITERATURE AND FILM IN EAST GERMANY: BEHIND THE IRON CURTAIN
Short Title: LIT AND FILM: EAST GERMANY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar will introduce students to the literature and filmic culture of East Germany, as well as to its social, political, and cultural context. It will also ask how literature and film not only reflect history but also respond to history by mobilizing their own political force.

GERM 333 - NIETZSCHE: PHILOSOPHY, POLITICS, HISTORY
Short Title: NIETZSCHE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Situates Nietzsche's thought on language, history, and the body within its historical context, and examines the validity of his arguments in a world increasingly challenged by scientific knowledge. Focuses on Nietzsche's views on truth, genealogy, nihilism, morality, and science, which continue to be relevant for current debates within the humanities. Taught in English.

GERM 334 - NATIONALISM AND CITIZENSHIP
Short Title: NATIONALISM AND CITIZENSHIP
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Critical review of modern concepts of nationalism and citizenship. Topics include: theories of nationalism and citizenship, space and territory, identity, monuments, the emergence of nation states, multicultural democracy, transnationalism, and political belonging. Course provides links between political theory, public policy, literature, visual culture, architecture, and historical anthropology.

GERM 336 - NATIONAL SOCIALISM AND FILM
Short Title: NATIONAL SOCIALISM AND FILM
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores films made in Nazi Germany as well as films about Nazi Germany and the corresponding crisis of justice in the mid-twentieth century. We will analyze cinematic responses to the rise of the fascist movement, World War II, the Holocaust, and the post-war years. Particular attention will be paid to the value of film as propagandistic tool, ways in which it can configure and contest our image of national identity, and the relation between mass manipulation and mass murder. Taught in English. Mutually Exclusive: Credit cannot be earned for GERM 336 and FSEM 132/GERM 132.

GERM 338 - NEW GERMAN FILM: HITLER'S CINEMATIC CHILDREN
Short Title: NEW GER FILM: HITLER'S CINEMA
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: From the 1960 to 2000, Germany has developed a very distinct auteur cinema with independent filmmakers such as Fassbinder, Herzog, Wenders, Adlon, Trotta, Sander, Brueckner, Doerrie, Garnier, Tykwer, and others. The first 20 years of German film were oriented on coming to terms with the fascist past; the second 20 years focused on more contemporary issues. Film, critical reading and class discussion in English. All films are subtitled in English and will be assessed with podium technology. Taught in English. Cross-list: HUMA 373, SWGS 361.

GERM 339 - FROM EXPRESSIONISM TO FASCISM: ART AND FILM IN GERMANY
Short Title: FROM EXPRESSIONISM TO FASCISM
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Focusing on the tumultuous years of the Weimar Republic, this class will examine art and film in Germany from the birth of Expressionism through the end of the Nazi dictatorship. Topics covered will include Expressionism, Dada, the Bauhaus, and Fascist aesthetics. Particular attention will be paid to the relations between aesthetics and politics and art and everyday life, all central concerns of the art and criticism of the period. Cross-list: HART 398.
GERM 340 - WALTER BENJAMIN: AESTHETICS, HISTORY AND POLITICS
Short Title: WALTER BENJAMIN
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Benjamin has been celebrated as a revolutionary Marxist, a theologian of Jewish Messianism, and as an essayist and literary critic. The course offers an introduction to his writings by way situating them in the historical background of the Weimar Republic and the crises of European society on the eve of WWII. Taught in English. Cross-list: HUMA 340.

GERM 341 - A SHORT HISTORY OF GERMAN THOUGHT ON HISTORY
Short Title: GERMAN THOUGHT ON HISTORY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: From early modern times onward history has played and still plays a crucial role in German thought. Why? An answer to this question is to be sought in history; in authors such as Lessing, Kant, Hegel, Marx, and Nietzsche who contributed to what in German is called "Philosophy of History.”

GERM 344 - GERMAN HISTORY, 1648-1890
Short Title: GERMAN HISTORY, 1648-1890
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Survey of “Germanies” from the rise of absolutist state following the Thirty Years’ War to the unification of Germany in 1871. Includes the development of the bureaucratic and military institutions of the modern state, changing conceptions of state and society, and the major social and economic changes of the period. Taught in English. Cross-list: HIST 354.

GERM 345 - FROM DEMOCRACY TO DICTATORSHIP: GERMAN HISTORY, 1890-1945
Short Title: GERMAN HISTORY, 1890-1945
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: From 1890-1945, Germans experienced dramatic changes in their political environment. This lecture class will examine these changes, taking into account not only political history, but also attempts to come to terms with the challenges posed by organized capitalism, the rise and fall of socialism, the development of an interventionist state, cultural critique, and political culture, the Nazi social revolution, and the Holocaust. Taught in English. Cross-list: HIST 355.

GERM 349 - GERMAN POLITICAL THOUGHT
Short Title: GERMAN POLITICAL THOUGHT
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced seminar in political thought. Traces the development and influence of one of the most important traditions of modern political thought from the Enlightenment to the present. Topics include: natural law, public sphere, intellectuals and the modern state, civil society, mass democracy. Reading intensive and research oriented. Taught in English.

GERM 351 - HOLOCAUST MEMORY IN MODERN GERMANY
Short Title: HOLOCAUST MEMORY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course traces and examines forms of Holocaust memory and memorialization in film, literature, art, architecture, city planning, museums, and memorials in Germany. For an additional credit hour, students will participate in a week-long trip to Berlin. Instructor Permission Required. Cross-list: HART 387.

GERM 352 - POLITICS OF THE FLESH IN GERMAN LITERATURE, THOUGHT AND FILM
Short Title: THE POLITICS OF THE FLESH
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will introduce students to the complex relation between the sphere of politics and the human body as negotiated in German literature, thought and film. We will examine the practices of power that states wield toward the maximization of “life” and discuss such pressing issues as biopower, eugenics, racism, sexism and genocide. Taught in English.
GERM 361 - THE AGE OF GOETHE: POETRY AND TRUTH
Short Title: AGE OF GOETHE: POETRY & TRUTH
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The "Age of Goethe" is generally referred to as the "classical" decade of German literature and culture. It was, however, by no means exclusively the age of Goethe and Schiller, but also of Kant and Herder, Holderlin and Kleist, and the beginning of the Romantic movement. While German intellectuals debated revolution in the lofty realm of letters, their French contemporaries took to the streets and staged a political revolution that culminated in the execution of their king. Germany as the "land of the poets and philosophers" is a myth indeed, and a rather ambivalent one, too. The course explores the age of Goethe, its "poetry" and its "truth," by way of reading key texts of that period in their intellectual, historical, and political contexts. Taught in German.

GERM 362 - NEW REALITIES: LITERATURE AND POLITICS IN THE 19TH CENTURY
Short Title: 19TH C. LITERATURE & POLITICS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In German arts and letters, the nineteenth century is usually referred to as the age of Realism. As a reaction to Neo-Classicism, Romanticism, and Idealism, intellectual life turned towards the new realities in the sciences as well as society and politics. Industrialization, urbanization, the social question, women's liberation and the founding of the "Reich" created a new sense of reality and gave way to new forms of expression in literature and the arts. While optimism regarding the process of mankind prevailed, pessimism spread amongst the more thoughtful. Readings include texts by Heine, Fontaine, Keller, Hauptmann, Marx, Schopenhauer and Nietzsche. Taught in German.

GERM 363 - THE WEIMAR REPUBLIC, 1919-1933
Short Title: THE WEIMAR REPUBLIC, 1919-1933
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar in Germany's first democracy and one of the most formative moments of modernity. Covers political culture, constitutional conflict, literary and intellectual movements and urban visual culture from the end of the First World War and the spectacular modernity of 1920s Berlin to the rise of the Nazis. Taught in German.

GERM 364 - THE EXPRESSIONIST VISION OF "NEW MAN"
Short Title: EXPRESSIONIST VISION
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Inspired by Nietzsche's concept of the "Superman," the Expressionist writers and artists (roughly between 1910 and 1920) strived towards a total renewal of society. They attached its patriarchal foundation, blamed the anonymity of the metropolitan mass society with the newly formed proletariat on hand and the materialistic life-style on the other for the general dissociation of individuals. The major literary forms were poetry and drama, which were either activist or experimenting with newly created metaphors. The prose employs the genre of the grotesque. The visual artists are influenced by van Gogh. As a totally new medium, the film incorporates all these aspects and elements. Taught in German.

GERM 399 - THE GERMAN STUDIES INTERNSHIP
Short Title: THE GERMAN STUDIES INTERNSHIP
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The Office of the Dean of humanities and relevant faculty from German Studies match students individually with one of a variety of projects in the areas of diplomacy, engineering, pedagogy, public culture. Students conduct research or related activities under the guidance of on-site supervisor and the section instructor on record. Instructor Permission Required.

GERM 401 - TOPICS IN GERMAN LITERATURE AND CULTURE
Short Title: TOPICS IN GERMAN
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will work with sophisticated texts to enable students to bring their proficiency in the various modalities of German to the advanced level. Taught in German. Repeatable for Credit.

GERM 402 - GERMAN TRANSLATION
Short Title: GERMAN TRANSLATION
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced seminar on German-English translations. With stylistic exercises covering a broad range of genres: poetry, novels, essays, historical documents, legal documents, journalism, etc. Taught in German.
GERM 405 - THE MAKING OF MODERN GERMANY
Short Title: MODERN GERMANY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Germany nowadays seems to have found her place in the center of Europe. In both Weimar Republic and Hitler's Reich, BRD and GDR, the experience of and struggle with modernity was essential for recent German history. Discussions encompass select texts both fictitious and theoretical, architecture, fine arts, and film. Taught in German.

GERM 411 - THE POETICS OF JUSTICE IN GERMAN LITERATURE, THOUGHT, AND FILM
Short Title: THE POETICS OF JUSTICE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar will introduce students to the ongoing concern with law and its relation to justice in German literature, thought, and film. We will examine works that stage actual and figurative trials, and will ask how these enactments serve as a catalyst for civilization's most pressing normative questions.

GERM 420 - GERMAN POLITICS/CULTURE AFTER 1945
Short Title: GER. POLI/CULTURE AFTER 1945
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced seminar on German culture and politics after the Second World War -- from the foundation of the Federal Republic, the separation of the two Germanys, and the student revolts of 1968 to 1970s terrorism, the fall of the Berlin Wall, and Germany's present role in the international community. Taught in German.

GERM 425 - VIENNA AND ITS PEOPLE
Short Title: VIENNA AND ITS PEOPLE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this course we will look at the people of Vienna from the turn of the century to the present. Our readings, film viewings and discussions will introduce us to the Viennese as people of all classes and ethnic and national groups. Taught in German. Recommended Prerequisite(s): Intermediate high proficiency (speaking & writing).

GERM 430 - GERMAN INTELLECTUAL HISTORY
Short Title: GERMAN INTELLECTUAL HISTORY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced Seminar on key topics in modern German intellectual history, including history of science and scholarship, from 1700 to the present. Ideal preparation for graduate school in the humanities. Taught in German.

GERM 435 - CONCEPTS OF HISTORY FROM G.E. LESSING TO W. BENJAMIN
Short Title: CONCEPTS OF HISTORY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The twentieth-century Italian philosopher Benedetto Croce called philosophy of history (Geschichtsphilosophie) a "German discipline." There is indeed a long and rich tradition of texts in German thought that focus on making sense of the seemingly senseless, on speculating about the origin, the course, the aim, or, quite generally, the "meaning" of history. Based on selected texts by Lessing, Kant, Heine, Hegel, Nietzsche, Ranke, Burckhardt, Benjamin, and others, the course discusses different concepts of history from the early eighteenth to the twentieth century. Taught in German.

GERM 491 - FALL - INDEPENDENT WORK IN GERMAN LITERATURE
Short Title: FALL-IND WRK GERM LITERATURE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Qualified students work on projects of their choice under the supervision of individual instructors with approval of the undergraduate advisor. Department Permission Required. Repeatable for Credit.

GERM 492 - SPRING - INDEPENDENT WORK IN GERMAN LITERATURE
Short Title: SPRING-IND WRK GERM LITERATURE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Qualified students work on projects of their choice under the supervision of individual instructors with approval of the undergraduate advisor. Department Permission Required. Repeatable for Credit.
GERM 493 - FALL HONOR THESIS
Short Title: FALL HONOR THESIS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent research projects by outstanding German majors leading to a substantial honors thesis, undertaken in close cooperation with a departmental faculty member. Department Permission Required.

GERM 494 - SPRING HONOR THESIS
Short Title: SPRING HONOR THESIS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent research projects by outstanding German majors leading to a substantial honors thesis, undertaken in close cooperation with a department faculty member. Department Permission Required.

GERM 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Global Affairs (GLBL)

GLBL 501 - GLOBAL SYSTEMS I
Short Title: GLOBAL SYSTEMS I
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course familiarizes students with basic concepts of research design and statistical methodology that used in policy analysis. It covers (1) fundamental concepts of scientific inference and barriers to inference in observational data, (2) the implementation and evaluation of experimental and observational research designs in policy analysis, (3) descriptive and graphical statistics, (4) statistical hypothesis testing, (5) elementary use and interpretation of the generalized linear model, and (6) using the R statistical software environment for data organization and analysis. It is strongly recommended that students complete this course in the fall semester of their first year; in all cases, it must be completed before the end of the first year. Master of Global Affairs students only.

GLBL 502 - INSTITUTIONS & DEVELOPMENT
Short Title: INSTITUTIONS & DEVELOPMENT
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore a broad, multidisciplinary range of methodologies and requisite analytical tools needed to identify, measure, and assess the determinants and effects of international development, the nature of change in the development process, and of the associated role of policy and institutional design. This will include the normative analysis of change (applying various concepts of well-being, efficiency, social justice and poverty), the application of economic concepts (to the interpretation of household and firm behavior, strategic interactions and economy-wide patterns), and the role of political, governmental and social behavior in shaping the possibilities for, drivers of and resistance to change. This will be undertaken through a mixture of discussion of overall patterns backed by a strong focus on case studies in particular country settings. Master of Global Affairs students only.

GLBL 503 - INTRODUCTION TO STATISTICS FOR MASTERS STUDENTS
Short Title: INTRODUCTION TO STATISTICS
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course familiarizes students with basic concepts of research design and statistical methodology that used in policy analysis. It covers (1) fundamental concepts of scientific inference and barriers to inference in observational data, (2) the implementation and evaluation of experimental and observational research designs in policy analysis, (3) descriptive and graphical statistics, (4) statistical hypothesis testing, (5) elementary use and interpretation of the generalized linear model, and (6) using the R statistical software environment for data organization and analysis. It is strongly recommended that students complete this course in the fall semester of their first year; in all cases, it must be completed before the end of the first year. Master of Global Affairs students only.

GLBL 504 - QUANTITATIVE APPLICATIONS IN GLOBAL POLITICS AND POLICY
Short Title: GLOBAL POLITICS AND POLICY
Department: Global Affairs
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course takes a problem-driven approach to practical applications of quantitative research methods in political and policy studies. Using a series of international and domestic policy topics, students will learn to apply and extend their knowledge of research design and statistics as part of developing a systematic approach to the study of global affairs. Student assignments will involve research related to the practice of global affairs, including comparative policy-making, political economy and security. Master of Global Affairs students only.
GLBL 505 - MACROECONOMICS AND THE GLOBAL ECONOMY  
**Short Title:** MACROECONOMICS&GLOBAL ECONOMY  
**Department:** Global Affairs  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This part develops our foundations on topics such as national product and income concepts, measurements, and relationships; interrelationships of the major segments of the national economy; forces affecting the general level of economic activity. Here we study how the major markets (those for labor, capital, and goods) operate. These markets are first studied in isolation. Why some countries have rapid economic development, and others low growth and pervasive poverty? We will explore the ways in which growing economic interdependence shifts global wealth. We will discuss the role of global energy supply and of ongoing technological progress as a force of change in the global economy. Masters of Global Affairs students only. Mutually Exclusive: Credit cannot be earned for GLBL 505 and GLBL 524.

GLBL 506 - MACROECONOMICS FOR THE GLOBAL ECONOMY  
**Short Title:** MACROECONOMICS FOR GLOBAL ECON  
**Department:** Global Affairs  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** The second part of the course puts the markets studied in the first part together and studies their interactions. The key issues here are: (a) how macroeconomic variables behave and (b) how can policy affect these outcomes both domestically and internationally. Students will engage in a short team project to explore the role of economic development in international settings, including topics such as energy supply, labor and employment, population, education, health and nutrition. International economics: balance of payments, foreign exchange markets, international trade theory, tariffs, quotas, and exchange controls. The course will focus on the relationship between international policy and economics. North-South relations, including the US-Mexico economic relation will be discussed. Master of Global Affairs students only. Mutually Exclusive: Credit cannot be earned for GLBL 506 and GLBL 524.

GLBL 507 - DECISION MAKING UNDER UNCERTAINTY  
**Short Title:** DECISION MAKING UNCERTAINTY  
**Department:** Global Affairs  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** The course examines how leaders on the world stage-those in governments, international organizations, and non-state actors-make decisions that alter the course of international affairs. These decisions are made under conditions of uncertainty with limited information, elements of surprise about what will happen next, and often carry high degrees of risk. The course considers key theoretical models of uncertainty in decision making and examines specific foreign policy decisions that managed the uncertainty toward a successful outcome and those that ended in failure or expensive mistakes. Master of Global Affairs students only.

GLBL 510 - CULTURAL DIRECTIONS IN INTERNATIONAL AFFAIRS  
**Short Title:** CULTURAL DIRECTIONS  
**Department:** Global Affairs  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Investigates the cultural and social dimensions of the development and implementation of international policy; emphasizes historical and ethnographic case studies to understand the variable impacts of policy implementation in different contexts. Master of Global Affairs students only.

GLBL 512 - INTERNATIONAL CONFLICT  
**Short Title:** INTERNATIONAL CONFLICT  
**Department:** Global Affairs  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Introduction to a broad range of areas related to the analysis and resolution of conflict, focusing on the interdisciplinary study of defining, understanding, and addressing conflict. International and community conflict, characteristics, negotiation, collaborative problem solving, process-advice. Students will research international conflict escalation, stalemate, de-escalation, settlement, resolution, or management; mediation skills to facilitate the resolution of disputes and differences, techniques of third party intervention with individuals and groups. Learning approach includes lectures, simulations, modeling and practice mediations. Master of Global Affairs students only.

GLBL 513 - INTERNATIONAL COOPERATION  
**Short Title:** INTERNATIONAL COOPERATION  
**Department:** Global Affairs  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Study of theories and best practices from academia and governments/NGO’s related to international cooperation, including international law and treaties, international coalitions and sanctions, international and transnational organizations, translocal city and NGO partnerships, government and business partnerships, transnational governance and publicly diplomacy, including soft power and collective action for global public goods. Master of Global Affairs students only.

GLBL 514 - THE MIDDLE EAST CAULDRON AND UNITED STATES POLICY  
**Short Title:** M. EAST CAULDRON & U.S. POLICY  
**Department:** Global Affairs  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course examines the expanding public dimension of diplomacy by investigating the growing global interests and trends in the 21st century’s diplomatic environment. This course also examines the underlying political, socio-economic, and cultural trends and surveys US national security interests, foreign policy, and public diplomacy around the world. For Master of Global Affairs Students Only.
GLBL 515 - INTERNATIONAL SECURITY IN A MULTIPOLAR WORLD  
Short Title: INTERNATIONAL SECURITY  
Department: Global Affairs  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The post-Cold War international order is moving from a unipolar system to one characterized by strong interstate competition. Concepts once associated with 19th century Europe, like “the balance of power”, are demonstrating their continued relevance. Interstate conflict has been in decline, but its likelihood might increase within this more unstable system of states. This course will review the main intellectual currents in the international security subfield, with particular emphasis on the work of Barry Buzan and the English school of international relations. Students will critically apply theory to case studies on contemporary wars, nuclear proliferation, and violent substate actors such as terrorist organizations, humanitarian intervention, and peacekeeping operations. Master of Global Affairs students only.

GLBL 519 - MASTER OF GLOBAL AFFAIRS INTERNSHIP  
Short Title: MASTER GLOBAL AFFAIRS INTRNSHP  
Department: Global Affairs  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 1-6  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The Master of Global Affairs internship is a graduate-level supervised field experience for students in the MGA program. All internships must be preapproved and must be conducted after the student has completed a minimum of 18 credit hours in the program. Master of Global Affairs students only. Repeatable for Credit.

GLBL 520 - MASTER OF GLOBAL AFFAIRS CAPSTONE  
Short Title: MASTER GLOBAL AFFAIRS CAPSTONE  
Department: Global Affairs  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The Master of Global Affairs capstone course is the culmination of all graduate coursework and internship experience in the program; it is a significant piece of work than what is normally expected of a term paper. The capstone project must reflect a scholarly and professional analysis informed by the application of analytical strategies that address a real-world problem or public policy issue. All MGA students must complete the capstone in their final semester.

GLBL 521 - DIRECTED READING IN GLOBAL AFFAIRS  
Short Title: DIR READING IN GLOBAL AFFAIRS  
Department: Global Affairs  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment limited to students in the MAGA program. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate level independent reading course. Topics vary. Master of Global Affairs students only. Repeatable for Credit.

GLBL 523 - QUANTITATIVE APPLICATIONS IN GLOBAL AFFAIRS  
Short Title: QUANTITATIVE APPLICATIONS  
Department: Global Affairs  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment limited to students in the MAGA program. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The course takes a problem-driven approach to practical applications of quantitative research methods in political and policy studies. Using a series of international domestic policy topics, students will learn to apply and extend their knowledge of research design and statistcs as part of developing a systematic approach to the study of global affairs. Student assignments will involve research related to the practice of global affairs, including comparative policy-making, political economy and security.

GLBL 524 - MACROECONOMICS IN A GLOBAL ECONOMY  
Short Title: MACROECONOMICS GLOBAL ECONOMY  
Department: Global Affairs  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment limited to students in the MAGA program. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course develops our foundations of aggregate economic analysis, use of the aggregate demand/aggregate supply model for the determination of output, employment, and prices. The focus will be on topics such as national product and income concepts, measurements, and relationships; interrelationships of the major segments of the national economy; forces affecting the general level of economic activity. Here we study how the major markets (those for labor, capital, and goods) operate. These fundamental concepts will be used to analyze international economic policy. Mutually Exclusive: Credit cannot be earned for GLBL 524 and GLBL 505/GLBL 506.

GLBL 525 - INTERNATIONAL SECURITY  
Short Title: INTERNATIONAL SECURITY  
Department: Global Affairs  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment limited to students in the MAGA program. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course covers two general areas in International Security: (1) traditional (i.e., “state-centered”) and (2) non-traditional security issues. The first half of the course is devoted to recent developments in the study of interstate security. We will contemplate unipolarity, American security policy, the rise of some peer competitors, and the changing nature of interstate relations in the 21st century. The second half of the course will explore the growing significance of a number of emerging non-traditional security concerns. In this portion, we will discuss counterinsurgency, civil war, terrorism, humanitarian intervention, among other developing issues.
GLBL 531 - WORLD POLITICS AND GLOBAL GOVERNANCE

**Short Title:** CHANGE IN WORLD POLITICS  
**Department:** Global Affairs  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course has three parts: First, it will engage cutting edge research on the causes and dynamics of interstate conflict and civil war. Second, it will discuss theories and practices of international organizations such as the UN, IMF, and WID. Finally, with the background knowledge from the first parts, the course will discuss how China’s rise may bring changes to both dimensions.

GLBL 532 - INTERNATIONAL BUSINESS ENVIRONMENT AND GLOBAL ECONOMIC GOVERNANCE

**Short Title:** INT'L BUSINESS DEVELOPMENT  
**Department:** Global Affairs  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students in the MAGA program.  
**Course Level:** Graduate  
**Description:** This is a comprehensive course in how governance of the global economy affects business and investment decisions. It is designed to provide students with an understanding of the main international economic institutions that have been developed to oversee the global economy, and how these institutions affect the international business and investment climate. Lectures and class discussions will focus on real world examples of the impact of the international trade and financial institutions (the G-8, G-20, WTO, IMF, and World Bank) on global and individual country economic environments, with particular emphasis on non-OECD countries.

GLBL 542 - INTERNATIONAL MACROECONOMIC POLICY FOR MASTER'S STUDENTS

**Short Title:** INTL MACROECONOMIC POLICY  
**Department:** Global Affairs  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** How does exchange rate policy fit into a country’s macroeconomic environment? How do international capital markets constrain policy space? Students will model the linkages between exchange rates, interest rates, capital flows, and prices. The course will emphasize emerging economies.

GLBL 543 - ENERGY POLICY

**Short Title:** ENERGY POLICY  
**Department:** Global Affairs  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students in the MAGA program.  
**Course Level:** Graduate  
**Description:** Energy is credited with many contradictory properties. It is a curse that enables dictatorship and war, undermines the work ethic, and taints our environment. It is also the world’s largest business and a chief ingredient of state power, stitching together disparate countries in webs of mutual dependence. Energy shapes our physical landscapes and personal habits, providing services that make us comfortable and secure, while producing waste that threatens this way of life. These are the areas where energy and politics intersect, the topics of concern to this course. Mutually Exclusive: Credit cannot be earned for GLBL 543 and GLBL 541/POST 401/POST 501.

GLBL 551 - CYBERPOLITIK: INTERNATIONAL AFFAIRS IN TECHNOLOGY AND INFORMATION

**Short Title:** CYBERPOLITIK  
**Department:** Global Affairs  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** How are the evolving cases of cyber-attack and breach as well as the actions of government and corporations shaping how cyberspace is governed? What object lessons are there in security cases such as those involving WikiLeaks and the Snowden affair? This course examines the widely pervasive and enormously effective nature of cyber threats today, explaining why cyber-attacks happen, how they matter, and how they may be managed.

GLBL 552 - INTERNATIONAL SECURITY: DE-RISKING NATIONAL THREATS AND BUSINESS THREATS

**Short Title:** INTERNATIONAL SECURITY  
**Department:** Global Affairs  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course seeks to define the risks and risk-mitigation strategies employed by both nation-states and multinational businesses. We will examine how businesses control their risks by following compliance laws around the world. We will also examine what a superpower is within the context of the geopolitical challenges America is facing (fracturing of national institutions/will/consensus, our potential relative decline, shifting alliances, China’s rise, the European Union stagnation and diminution, and Russian aggression) as we look to answer the following question: who would even want to be a superpower.
Consider a scenario in which 85% of the nation's critical infrastructure (water, electricity, food/agriculture, energy, finance, IT, communication, medical, transportation, chemical, etc.), and nearly all of the global banking system is owned and operated by private corporations. How do these corporations prepare for a crisis even that impacts national security, national economic issues, or public order/safety/health, and therefore requires an integrated joint partnership with the government or other organization(s) to plan for and manage the crisis incident?

**Global Health Technologies (GLHT)**

**GLHT 201 - INTRODUCTION TO GLOBAL HEALTH**
- **Short Title:** INTRO TO GLOBAL HEALTH
- **Department:** Global Health Technologies
- **Grade Mode:** Standard Letter
- **Course Type:** Lecture
- **Distribution Group:** Distribution Group III
- **Credit Hours:** 3
- **Restrictions:** Graduate level students may not enroll.
- **Course Level:** Undergraduate Lower-Level
- **Description:** This course provides an overview of contemporary challenges and advances to improve human health. The course opens with an introduction to the epidemiology and physiology of the major human health problems throughout the world. With this introduction, we examine medical technologies to prevent infection, detect cancer and treat heart disease. The course is designed for non-engineering / non-science majors.

**GLHT 314 - SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD**
- **Short Title:** SUST WTR PURIF FOR DEV WORLD
- **Department:** Global Health Technologies
- **Grade Mode:** Standard Letter
- **Course Type:** Lecture/Laboratory
- **Credit Hours:** 3
- **Restrictions:** Graduate level students may not enroll.
- **Course Level:** Undergraduate Upper-Level
- **Description:** This course is an overview of sustainable strategies for safe water supply in off-the-grid, low-income regions. Topics covered include water quality and treatment, sustainability and WASH (water, sanitation and hygiene). A major element of the course is a project to solve a water-related issue in a real-world context. Cross-list: BIOE 365, CEVE 314.

**GLHT 360 - APPROPRIATE DESIGN FOR GLOBAL HEALTH**
- **Short Title:** APPRO DESIGN FOR GLOBAL HEALTH
- **Department:** Global Health Technologies
- **Grade Mode:** Standard Letter
- **Course Type:** Seminar
- **Credit Hours:** 3
- **Restrictions:** Graduate level students may not enroll.
- **Course Level:** Undergraduate Upper-Level
- **Prerequisite(s):** GLHT 201 and (BIOE 362 or GLHT 362) and (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and MATH 102
- **Description:** Seminar-style introductory design course covering epidemiology, pathophysiology, health systems, health economics, medical ethics, humanitarian emergencies, scientific and engineering design methods, and appropriate health technology case studies. To register, you must be enrolled in the GLHT minor and submit a 250 statement to beyondtraditionalborders@rice.edu by Monday of preregistration. The minor and course prerequisite is waived for students majoring in Bioengineering. Instructor Permission Required. Cross-list: BIOE 360.

**GLHT 361 - METABOLIC ENGINEERING FOR GLOBAL HEALTH ENVIRONMENTS**
- **Short Title:** METAB ENG GLOBAL HEALTH ENVMT
- **Department:** Global Health Technologies
- **Grade Mode:** Standard Letter
- **Course Type:** Lecture
- **Credit Hours:** 3
- **Restrictions:** Graduate level students may not enroll.
- **Course Level:** Undergraduate Upper-Level
- **Prerequisite(s):** (BIOE 362 or GLHT 362) and (PHYS 126 or PHYS 102 or PHYS 112 or PHYS 142) and MATH 102
- **Description:** Importance of nutritional and pharmaceutical compounds, impact of cost of compounds on global health; Overview of biochemical pathways; metabolite analysis; Genetic engineering and molecular biology tools for ME; Pharmaceuticals and drug discovery approaches (antibiotics, antivirals; anti-parasite compounds); anti-diarrhea treatments; vaccines. Cross-list: BIOC 361, BIOE 361.
- **Course URL:** www.btb.rice.edu
GLHT 392 - NEEDS FINDING AND DEVELOPMENT IN BIOENGINEERING
Short Title: NEEDS FINDING & DEV IN BIOE
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students in this course will learn and develop the engineering skill of needs finding in the field of bioengineering focused on designing for disabilities. Students will work in groups with patients with disabilities to identify daily needs and develop design criteria to meet those needs including preliminary prototype development. Instructor Permission Required. Cross-list: BIOE 392.

GLHT 400 - GLOBAL HEALTH TECHNOLOGIES INDEPENDENT RESEARCH PROJECTS
Short Title: GLHT INDEPENDENT RESEARCH
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course enables undergraduates pursuing the Global Health Technologies Minor to perform independent research on a specific design challenge in global health technology and innovation. Students are advised by the faculty and often mentored by a graduate student/post-doc. Instructor Permission Required. Repeatable for Credit.
Course URL: www.btb.rice.edu

GLHT 401 - GLHT RESEARCH PAPER WRITING AND SUBMISSION
Short Title: GLHT RESEARCH REPORTING
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Research
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students in this course will work in the preparation of a paper reporting a previously completed design project. Instructor Permission Required. Repeatable for Credit.

GLHT 411 - INTERGRATED APPROACHES TO SUSTAINABLE DEVELOPMENT
Short Title: SUSTAINABLE DEVELOPMENT
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This is a multidisciplinary course in which students explore the origins, connections and consequence of social and political tensions arising from the expansion of commercial energy resources in unique and rapidly changing Arctic environments. The challenge for the class will be to understand that in matters of sustainable development systemic complexities often give rise to a disconnect between analysis and decision-making. Topics will include the impacts of commercial energy development and drilling in rapidly changing Arctic environments, as well as strategies that can promote sustainable development and improved conditions for indigenous populations in the context of environmental challenges associated with the Arctic meltdown and drilling activities for oil and gas. Methodologies for structuring the analysis to be applied to enhance systemic resilience of the Alaska environment will be presented. Students will learn explore the barriers to sustainable development and discuss cost-effective, culturally appropriate solutions to energy related issues by integrating technical, organizational, and personal perspectives. Each class will have formal lectures(s) by Rice faculty or guest lecturer. Registered students are eligible to apply for a summer internship in Alaska. Recommended Prerequisite(s): POST 401 Mutually Exclusive; Credit cannot be earned for GLHT 411 and POST 411. Repeatable for Credit.

GLHT 448 - TECHNOLOGY COMMERCIALIZATION IN DEVELOPING COUNTRIES FOR ENGINEERING
Short Title: TECH COMM IN DEV CTY FOR ENGS
Department: Global Health Technologies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This is a unique opportunity for engineering students to 1) collaborate with graduate business students to design and disseminate global health technologies; 2) learn about the sustainable distribution of health products in developing countries; 3) have a once-in-a-lifetime trip to Africa that tourism can never duplicate; and 4) help the poor. Working alongside advanced MBA students, engineering students will apply their skills to developing business plans for student-designed global health technologies that may influence dissemination and business plans. Interested students should email beyondtraditionalborders@rice.edu for an application. Instructor Permission Required.
GLHT 449 - TROUBLESHOOTING WORKSHOP FOR CLINICALLY-RELEVANT BIOMEDICAL EQUIPMENT

**Short Title:** MED BIOENGINEERING WORKSHOP  
**Department:** Global Health Technologies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ELEC 243  
**Description:** Bioengineering course in the troubleshooting, repair, and maintenance of standard biomedical equipment used in hospitals in the developed and developing worlds. Cross-list: BIOE 449. Repeatable for Credit.

GLHT 451 - GLOBAL HEALTH DESIGN CHALLENGES I

**Short Title:** GLOBAL HEALTH DESIGN I  
**Department:** Global Health Technologies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** GLHT 201 and (BIOE 360 or GLHT 360) and (GLHT 363 or BIOS 363 or PSYC 480 or SOCI 345)  
**Description:** Students in this course will work on design projects to address global health disparities. Students will work in teams and partner with bioengineering students to develop solutions to particular problems in delivering healthcare in the developing world. Students must take GLHT 452 in the spring semester to complete their projects. Instructor Permission Required.  
**Course URL:** [www.btb.rice.edu](http://www.btb.rice.edu)

GLHT 452 - GLOBAL HEALTH DESIGN CHALLENGES II

**Short Title:** GLOBAL HEALTH DESIGN II  
**Department:** Global Health Technologies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** GLHT 451  
**Description:** Students in this course will work on design projects to address global health disparities. Students will work in teams and partner with bioengineering students to develop solutions to particular problems in delivering healthcare in the developing world. Students must have taken GLHT 451 in the fall semester to initiate their projects.  
**Course URL:** [www.btb.rice.edu](http://www.btb.rice.edu)

GLHT 464 - SOCIAL ENTREPRENEURSHIP

**Short Title:** SOCIAL ENTREPRENEURSHIP  
**Department:** Global Health Technologies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course introduces students to contemporary concepts, debates, and contexts necessary for analyzing and engaging in the sphere of social entrepreneurship. The course has five distinct parts: 1. social entrepreneurship overview; 2. social context and stakeholders; 3. private sector roles and motivations; 4. organizational forms and collaborations; and 5. measurement and impacts (private and public). Students will be exposed to various forms of social entrepreneurship, such as base of the pyramid/microenterprises, private-public partnerships, private-governmental partnerships, voluntary social codes, corporate social responsibility, and ethical consumerism. From this introductory foundation, students will undertake a social entrepreneurship project about a contemporary social problem in Houston: the urban food desert ([https://apps.ams.usda.gov/fooddeserts/fooddeserts.aspx](https://apps.ams.usda.gov/fooddeserts/fooddeserts.aspx)). Students will learn a range of research methods (e.g. quantitative data analysis, ethnography, focus groups). With these research tools and building from perspectives offered by earlier by readings, guest speakers, and field visits, students will problematize, propose, develop, and present competing solutions to the social problem during the final course meetings. Cross-list: BUSI 464, SOSC 464.

GLHT 510 - SEMINAR IN TROPICAL MEDICINE

**Short Title:** SEMINAR IN TROPICAL MEDICINE  
**Department:** Global Health Technologies  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** 8 week lecture series on topics in global health. The theme for this offering is one health; integrating efforts to obtain optimal health for humans, animals, and the environment. Offered in conjunction with the new National School of Tropical Medicine, the course will feature lectures by various experts on the public health issues most pressing in poor populations in the world today. Course open to all undergraduates and graduate students. Cross-list: BIOE 510. Repeatable for Credit.

Greek (GREE)

GREE 101 - ELEMENTARY GREEK I

**Short Title:** ELEMENTARY GREEK I  
**Department:** Classical and European Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Reading-based introduction to ancient Greek. Readings include passages from classical and New Testament authors. Explanation and analysis of basic grammar, including comparison with English grammar. Besides translating Greek to English (and vice versa), we will consider the language and literature in their historical context, and practice reading ancient Greek aloud.
GREE 102 - ELEMENTARY GREEK II
Short Title: ELEMENTARY GREEK II
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Continuation of GREE 101.

GREE 201 - INTERMEDIATE GREEK I: PROSE
Short Title: INTERMEDIATE GREEK I: PROSE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Review of forms and syntax. Readings from Plato.

GREE 202 - INTERMEDIATE GREEK: EURIPIDES MEDEA/BIBLICAL KOINE
Short Title: INTERMEDIATE GREEK
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Section 1 reads Euripides or Sophocles. Section 2 reads excerpts from New Testament, Septuagint, and Early Christian writers. Includes review of forms and syntax.

GREE 302 - HOMER
Short Title: HOMER
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Open to third and fourth year undergraduates. An opportunity to read the Iliad/Odyssey in the original Greek. Includes review of forms and syntax as well as discussion of Homeric dialect, meter, poetics, and oral tradition. May be repeated (once) for credit.
Graduate/Undergraduate Equivalency: GREE 502. Mutually Exclusive: Credit cannot be earned for GREE 302 and GREE 502. Repeatable for Credit.

GREE 305 - PLATO, ARISTOTLE, OR NEW TESTAMENT GREEK
Short Title: PLATO,ARISTOTLE,NEW TSTMNT GRK
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Greek prose for third or fourth year undergraduates. Choice of texts flexible depending on the needs and interests of those enrolled. Includes review of forms and syntax. Continuation of GREE 301, with additional texts. May be repeated for credit. Graduate/Undergraduate Equivalency: GREE 505. Mutually Exclusive: Credit cannot be earned for GREE 305 and GREE 505. Repeatable for Credit.

GREE 306 - ADVANCED GREEK: POETRY
Short Title: ADVANCED GREEK: POETRY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is intended for students with at least two prior years of Greek. The course will focus on Greek poetic texts, with an emphasis on Attic tragedy. The course will emphasize poetic vocabulary and grammar, meter, and performance contexts. Texts change each semester. Repeatable for Credit.

GREE 307 - ADVANCED GREEK: PROSE
Short Title: ADVANCED GREEK: PROSE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is intended for students with at least two prior years of Greek. The course will focus on prose texts, with an emphasis on fifth- and fourth-century authors. The course will emphasize vocabulary, grammar, and historical contexts. Texts change each semester, repeatable for credit. Repeatable for Credit.

GREE 491 - DIRECTED READING
Short Title: DIRECTED READING
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent work for qualified juniors and seniors in genres or authors not presented in other courses. Instructor Permission Required. Repeatable for Credit.
GREE 492 - DIRECTED READING
Short Title: DIRECTED READING
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent work for qualified juniors and seniors in genres or authors not presented in other courses. Instructor Permission Required. Repeatable for Credit.

GREE 502 - HOMER
Short Title: HOMER
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Open to graduate students. Read the Iliad/Odyssey in the original Greek. Review of forms and syntax. Discussion of Homeric dialect, meter, poetics, and oral tradition. Requirement beyond GREE 302: oral presentation analyzing diction and poetic formulas in a specific passage. Repeatable (once) for credit. Graduate/Undergraduate Equivalency: GREE 302. Mutually Exclusive: Credit cannot be earned for GREE 502 and GREE 302. Repeatable for Credit.

GREE 503 - DIRECTED READING FOR GRADUATE STUDENTS
Short Title: DIRECTED READING GRAD STUDENTS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level, independent reading course. Topics vary. Repeatable for Credit.

GREE 504 - DIRECTED READING FOR GRADUATE STUDENTS
Short Title: GR STUDENTS DIRECTED READING
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level, independent reading course. Topics vary. Offered in the spring semester. Repeatable for Credit.

GREE 505 - PLATO, ARISTOTLE, OR NEW TESTAMENT GREEK
Short Title: PLATO,ARISTOTLE,NEW TSTMNT GRK
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Greek prose for graduate students in related disciplines. Choice of texts flexible depending on the needs and interests of those enrolled. Includes review of forms and syntax. Continuation of GREE 501, with additional texts. Additional work required beyond GREE 305, in the form of an oral presentation analyzing the language and style of one or more text in terms of its historical, social, and generic context. May be repeated for credit. Graduate/Undergraduate Equivalency: GREE 305. Mutually Exclusive: Credit cannot be earned for GREE 505 and GREE 305. Repeatable for Credit.

Health Sciences (HEAL)

HEAL 103 - NUTRITION
Short Title: NUTRITION
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Concepts underlying the science of nutrition: food composition, calories and needs for energy, special nutrients, and nutritional deficiencies.

HEAL 119 - INTRODUCTION TO HEALTH AND WELLNESS
Short Title: INTRO TO HEALTH & WELLNESS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Freshman. Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Designed to help students develop a greater understanding and appreciation of health and well being, as it relates to themselves and others around them, and for students to apply health and wellness knowledge in their personal life to improve their health.

HEAL 132 - MEDICAL TERMINOLOGY
Short Title: MEDICAL TERMINOLOGY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course introduces the student interested in medical and health professions to a large vocabulary of medical language which develops skills in understanding and remembering new words. It describes word origins, basic terms in anatomy and terms pertaining to each body system as well as pharmacology and medical equipment, and many frequently used medical terms, abbreviations and symbols.
HEAL 208 - CHEMICAL ALTERATIONS OF BEHAVIOR  
Short Title: CHEM ALTERATIONS OF BEHAVIOR  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Examination of social, cultural psychological, physiological causes and effects of drug use and abuse. Individual, family, and community factors related to prevention and treatment will be addressed.

HEAL 212 - CONSUMER HEALTH AND THE MEDIA  
Short Title: CONSUMER HEALTH AND THE MEDIA  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Study of factual information and guidelines that enable consumers to act intelligently in selecting health products and services, with emphasis on the economic aspects of health.

HEAL 222 - PRINCIPLES OF PUBLIC AND COMMUNITY HEALTH  
Short Title: PRIN PUBLIC&COMMHEALTH  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Principles of Public & Community Health examines aspects of the community that relate to health including health issues within community subgroups; identification and analysis of community health programs; organizational patterns and functions of voluntary and governmental health agencies and coordination of community health programs.

HEAL 306 - HUMAN SEXUALITY  
Short Title: HUMAN SEXUALITY  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Designed to explore the physiological, psychological, and sociological parameters of human sexuality, while providing accurate information and helping students develop healthy attitudes toward sexuality. Cross-list: SWGS 306.

HEAL 313 - FOUNDATIONS OF HEALTH PROMOTION AND EDUCATION  
Short Title: FOUNDATIONS HEALTH PROMO&EDUC  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Kinesiology. Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Foundations of Health Promotion/Health Education is designed to introduce students to the discipline of health education and the practice of health promotion. The course explores critical issues in the field of health promotion, accountability and professional preparation, professional ethics, credentialing and the changing technology in the field. Intended for Health Science majors only.

HEAL 350 - UNDERSTANDING CANCER  
Short Title: UNDERSTANDING CANCER  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Examination of cancer from a biological, psychological and sociological perspective with emphasis on cancer epidemiology, prevention, and early detection.

HEAL 360 - VIOLENCE IN AMERICA: A PUBLIC HEALTH PERSPECTIVE  
Short Title: VIOLENCE IN AMERICA  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course presents an overview of issues concerning violence using a public health perspective. Information will be presented and discussed concerning several domains pertinent to violence, including family violence, intimate partner violence, community violence, and workplace harassment.

HEAL 379 - INTERNSHIP IN HEALTH SCIENCES  
Short Title: INTERNSHIP IN HEALTH SCIENCES  
Department: Kinesiology  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 1-3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Internship experience for upper-level health sciences majors only. Department Permission Required. Repeatable for Credit.
HEAL 380 - DISPARITIES IN HEALTH IN AMERICA
Short Title: DISPARITIES IN HEALTH IN AMER
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores the aspects of race and ethnicity that influence health, public health policy, and the management and practice of healthcare, as well as, the trends which drive ethnic demographic transition including an aging white population, declining white birth rate, immigration of non-whites, and the higher birth rate of minority groups. Graduate/Undergraduate Equivalency: HEAL 580. Mutually Exclusive: Credit cannot be earned for HEAL 380 and HEAL 580.

HEAL 407 - EPIDEMIOLOGY
Short Title: EPIDEMIOLOGY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of communicable, noncommunicable, and behavioral diseases with emphasis on the disease process and basic epidemiologic methods. Graduate/Undergraduate Equivalency: HEAL 507. Mutually Exclusive: Credit cannot be earned for HEAL 407 and HEAL 507.

HEAL 422 - THEORIES AND MODELS OF HEALTH BEHAVIOR
Short Title: THEORY&MODELS HLTH BEHAVIOR
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): HEAL 222
Description: Theories & Models of Health Behavior is designed for the student interested in public and community health or health psychology. This course examines the current theories and models of health behavior and their application to the field of health promotion/health education. Graduate/Undergraduate Equivalency: HEAL 522. Mutually Exclusive: Credit cannot be earned for HEAL 422 and HEAL 522.

HEAL 460 - PLANNING AND EVALUATION OF HEALTH PROMOTION AND EDUCATION
Short Title: PLAN/EVAL: HEALTH PROGRAMS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): HEAL 222
Description: Planning & Evaluation of Health Promotion provides the student with the technical skills for planning and evaluation of health promotion, health education, and disease prevention programs including collection and analysis of both qualitative and quantitative data. Graduate/Undergraduate Equivalency: HEAL 560. Mutually Exclusive: Credit cannot be earned for HEAL 460 and HEAL 560.

HEAL 495 - INDEPENDENT STUDIES IN HEALTH SCIENCES
Short Title: INDEPENDENT STUDIES
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent study or directed reading on an approved project under faculty supervision. Department Permission Required. Repeatable for Credit.

HEAL 496 - INDEPENDENT STUDIES IN HEALTH SCIENCES
Short Title: INDEPENDENT STUDY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent study or directed reading on an approved project under faculty supervision. Instructor Permission Required. Repeatable for Credit.

HEAL 498 - SPECIAL TOPICS IN HEALTH SCIENCES
Short Title: SPECIAL TOPICS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics vary from semester to semester. Repeatable for Credit.

HEAL 499 - TEACHING PRACTICUM IN HEALTH SCIENCES
Short Title: TEACH PRACTICUM HEALTH SCIENCE
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced teaching experience for upper level students who have demonstrated particular aptitude and interest in one area of kinesiology. Students will assist in conducting a course in which they have previously excelled. The student will learn techniques in course management, instruction, and evaluation. Department Permission Required. Recommended prerequisite(s): Junior or Senior standing, declared major in Health Sciences, and at least an “A-” in the course serving as the practicum. Repeatable for Credit.
HEAL 507 - EPIDEMIOLOGY
Short Title: EPIDEMIOLOGY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of communicable, noncommunicable, and behavioral diseases with emphasis on the disease process and basic epidemiologic methods. Graduate level students only. Instructor Permission Required. Graduate/Undergraduate Equivalency: HEAL 407. Mutually Exclusive: Credit cannot be earned for HEAL 507 and HEAL 407.

HEAL 522 - THEORIES AND MODELS OF HEALTH BEHAVIOR
Short Title: THEORY&MODELS HLTH BEHAVIOR
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Theories & Models of Health Behavior is designed for the student interested in public and community health or health psychology. This course examines the current theories and models of health behavior and their application to the field of health promotion/health education. Graduate level students only. Instructor Permission Required. Graduate/Undergraduate Equivalency: HEAL 422. Mutually Exclusive: Credit cannot be earned for HEAL 522 and HEAL 422.

HEAL 560 - PLANNING AND EVALUATION OF HEALTH PROMOTION AND EDUCATION
Short Title: PLAN/EVAL: HEALTH PROGRAMS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Planning & Evaluation of Health Promotion provides the student with the technical skills for planning and evaluation of health promotion, health education, and disease prevention programs including collection and analysis of both qualitative and quantitative data. Graduate level students only. Instructor Permission Required. Graduate/Undergraduate Equivalency: HEAL 460. Mutually Exclusive: Credit cannot be earned for HEAL 560 and HEAL 460.

HEAL 580 - DISPARITIES IN HEALTH IN AMERICA
Short Title: DISPARITIES IN HEALTH IN AMER
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores the aspects of race and ethnicity that influence health, public health policy, and the management and practice of healthcare, as well as, the trends which drive ethnic demographic transition including an aging white population, declining white birth rate, immigration of non-whites, and the higher birth rate of minority groups. Graduate level students only. Instructor Permission Required. Graduate/Undergraduate Equivalency: HEAL 380. Mutually Exclusive: Credit cannot be earned for HEAL 580 and HEAL 380.

Hebrew (HEBR)

HEBR 125 - INTRODUCTION TO BIBLICAL HEBREW I
Short Title: INTRO TO BIBLICAL HEBREW I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to Biblical Hebrew with emphasis on grammar and vocabulary. Cross-list: RELI 125.

HEBR 126 - INTRODUCTION TO BIBLICAL HEBREW II
Short Title: INTRO TO BIBLICAL HEBREW II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Continuation of RELI 125. We will finish the grammar in the second half of this semester and then read selections from the Hebrew Bible. Cross-list: RELI 126.

HEBR 128 - INTERMEDIATE BIBLICAL HEBREW IV
Short Title: INTERM BIBLICAL HEBREW IV
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Continuation of RELI 127 (RELI 127 is not a prerequisite). Cross-list: RELI 128.

HEBR 141 - FIRST YEAR HEBREW I
Short Title: FIRST YEAR HEBREW I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Hebrew (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Hebrew. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Recommended Prerequisite(s): Placement Test. Mutually Exclusive: Credit cannot be earned for HEBR 141 and HEBR 161.
Hindi (HIND)

HIND 106 - ACCELERATED FIRST YEAR HINDI
Short Title: ACCEL FIRST YEAR HINDI
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Alternate first year Hindi for students who have some knowledge of spoken Hindi. This is an intensive course covering the equivalents of HIND 141 and 142. Students will be prepared for HIND 263 upon completion of the course. Placement Test is required.
Course URL: clichindi.blogs.rice.edu

HIND 141 - FIRST YEAR HINDI I
Short Title: FIRST YEAR HINDI I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Hindi (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Hindi. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Mutually Exclusive: Credit cannot be earned for HIND 141 and HIND 161.
Course URL: hindclic.blogs.rice.edu

HIND 142 - FIRST YEAR HINDI II
Short Title: FIRST YEAR HINDI II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): HIND 141
Description: Continuation of HIND 141. Development of interactional competence in Hindi (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Hindi. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for HIND 142 and HIND 262.
Course URL: hindclic.blogs.rice.edu
HIND 263 - SECOND YEAR HINDI I  
**Short Title:** SECOND YEAR HINDI I  
**Department:** Cntr Lang & Intercultural Comm  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Prerequisite(s):** HIND 142  
**Description:** Continuation of HIND 142. Development of interactional competence in Hindi (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Hindi. The course is based on a student-centered, critical-thinking approach to language analysis/ acquisition.  
**Course URL:** clichindi.blogs.rice.edu

HIND 264 - SECOND YEAR HINDI II  
**Short Title:** SECOND YEAR HINDI II  
**Department:** Cntr Lang & Intercultural Comm  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Prerequisite(s):** HIND 263  
**Description:** Continuation of HIND 263. Development of interactional competence in Hindi (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Hindi. The course is based on a student-centered, critical-thinking approach to language analysis/ acquisition.  
**Course URL:** clichindi.blogs.rice.edu

HIND 301 - THIRD YEAR HINDI I  
**Short Title:** THIRD YEAR HINDI I  
**Department:** Cntr Lang & Intercultural Comm  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** HIND 264  
**Description:** Continuation of HIND 264. Emphasis on developing reading and writing ability as more authentic materials and soci-cultural topics are introduced.  
**Course URL:** clichindi.blogs.rice.edu

HIND 302 - THIRD YEAR HINDI II  
**Short Title:** THIRD YEAR HINDI II  
**Department:** Cntr Lang & Intercultural Comm  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** HIND 301  
**Description:** Continuation of HIND 301. Emphasis on developing reading and writing ability as more authentic materials and soci-cultural topics are introduced.  
**Course URL:** clichindi.blogs.rice.edu

HIND 398 - HINDI TEACHING PRACTICUM  
**Short Title:** HINDI TEACHING PRACTICUM  
**Department:** Cntr Lang & Intercultural Comm  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum  
**Credit Hours:** 1-6  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Students will work with instructor closely to acquire teaching skills in tutoring in Hindi. Instructor Permission Required. Repeatable for Credit.  
**Course URL:** clichindi.blogs.rice.edu

HIND 399 - HINDI TEACHING PRACTICUM  
**Short Title:** HINDI TEACHING PRACTICUM  
**Department:** Cntr Lang & Intercultural Comm  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum  
**Credit Hours:** 1-6  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Students will work with instructor closely to acquire teaching skills in tutoring in Hindi. Instructor Permission Required. Repeatable for Credit.  
**Course URL:** clichindi.blogs.rice.edu

**History (HIST)**

HIST 101 - MODERN EUROPE, 1500-1789  
**Short Title:** MODERN EUROPE, 1500-1789  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Course provides an introduction to European history from 1500 to the French Revolution, tracing Europe's rise to world dominance via capitalism, the nation-state, science and technology, and a secular world view. It asks how conditions in the rest of the world allowed European imperialism and colonialism to triumph. Mutually Exclusive: Credit cannot be earned for HIST 101 and HIST 325.  
**Course URL:** clichindi.blogs.rice.edu

HIST 102 - MODERN EUROPE, 1789-PRESENT  
**Short Title:** MODERN EUROPE 1789-PRESENT  
**Department:** History  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Course provides an introduction to European history between the French Revolution and the collapse of the Soviet system in 1989-1990. The course examines industrialization, the development of the nation-state, World War One, fascism and communism, World War Two, European integration, decolonization and the Velvet Revolutions of 1989. Mutually Exclusive: Credit cannot be earned for HIST 102 and HIST 326.  
**Course URL:** clichindi.blogs.rice.edu
Course Description:

HIST 103 - AP/OTH CREDIT IN EUROPEAN HISTORY I
Short Title: AP/OTH CREDIT IN EUROPEAN HISTORY
Department: History
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

HIST 105 - AP/OTH CREDIT IN UNITED STATES HISTORY I
Short Title: AP/OTH CREDIT IN U.S. HISTORY
Department: History
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

HIST 107 - AP/OTH CREDIT IN WORLD HISTORY
Short Title: AP/OTH CREDIT IN WORLD HISTORY
Department: History
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

HIST 108 - WORLD HISTORY SINCE 1492
Short Title: WORLD HISTORY SINCE 1492
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Class will explore the last 500 years of world history. The focus will be on four long-term processes that have shaped the world today: struggles between Europeans and colonized peoples; forms of producing and exchanging goods; formation and spread of the modern state; and the development of 'bourgeois' ways of living.

HIST 111 - RED, WHITE AND BLACK IN EARLY AMERICA CREATING RACIAL IDENTIES IN THE ERA OF THE AMERICAN REVOLUTION
Short Title: RED, WHITE, & BLACK EARLY AMER
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class analyzes the way peoples of African, American and European descent in North America came to think of themselves as members of different racial groups from about 1750 to 1820. The class will include a mixture of lectures and discussion.

HIST 117 - EARLY AMERICA
Short Title: EARLY AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of North America from 1500 to the conclusion of the Mexican War.

HIST 118 - THE UNITED STATES, 1848 TO THE PRESENT
Short Title: UNITED STATES 1848-PRESENT
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A continuation of HIST 117 (though 117 is not a prerequisite) surveying the social, political, cultural, and economic history of the United States from the end of the Mexican War to the present.

HIST 120 - MEDIEVAL CIVILIZATIONS
Short Title: MEDIEVAL CIVILIZATIONS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Focusing on the period between 300-1500 CE, the course will survey political institutions, society, and culture in medieval European, Byzantine, and Islamic civilizations. Topics include Christianization of Europe, the rise of Islam, the Crusades, scholastic theology, persecution of heretics, bubonic plague, and the rise of centralized monarchies. Cross-list: MDEM 120.
**HIST 144 - THE ARAB-ISRAELI CONFLICT**
*Short Title: Arab-Israeli Conflict*
*Department: History*
*Grade Mode: Standard Letter*
*Course Type: Lecture*
*Distribution Group: Distribution Group I*
*Credit Hours: 3*
*Restrictions: Graduate level students may not enroll.*
*Course Level: Undergraduate Lower-Level*
*Description:* Seminar traces the history and politics of the Arab-Israeli conflict, delving into both Palestinian and Israeli understandings of the past and present using books, documentaries, and films. The course seeks to understand how and at what costs Israeli and Palestinian nationalisms have been constructed and analyzes U.S. involvement in the conflict. This course is limited to first-year students only; any others will be removed from this course. Cross-list: FSEM 144.

**HIST 151 - THE HERO AND HIS COMPANION FROM GILGAMESH TO SAM SPADE**
*Short Title: The Hero & His Companion*
*Department: History*
*Grade Mode: Standard Letter*
*Course Type: Seminar*
*Distribution Group: Distribution Group I*
*Credit Hours: 3*
*Restrictions: Graduate level students may not enroll.*
*Course Level: Undergraduate Lower-Level*
*Description:* How does presentation of heroic action illustrate the basic values of society? Historical sources including ancient texts, modern mystery stories, and two "western" movies, show the development of a style of community service linking heroism with alienation. The extent to which women participate will be traced. This course is limited to first-year students only; any others will be removed from this course. Cross-list: FSEM 151.

**HIST 186 - HISTORICAL SURVEY OF JEWISH CIVILIZATION FROM ITS ORIGINS TO THE PRESENT**
*Short Title: Historical Survey Jewish CIV.*
*Department: History*
*Grade Mode: Standard Letter*
*Course Type: Lecture*
*Credit Hours: 3*
*Restrictions: Graduate level students may not enroll.*
*Course Level: Undergraduate Lower-Level*
*Description:* Jewish civilization spans over 3,000 years and virtually the entire planet. Throughout their history as a minority amid majority cultures, Jews have adapted enough to preserve their heritage but not so much that they disappear. This course studies Jewish religion, ethnicity, politics and culture and impact on world history. Counts towards Jewish Studies Minor core requirement.

**HIST 188 - THE ATLANTIC WORLD: ORIGINS TO THE AGE OF REVOLUTION**
*Short Title: The Atlantic World*
*Department: History*
*Grade Mode: Standard Letter*
*Course Type: Lecture*
*Distribution Group: Distribution Group I*
*Credit Hours: 3*
*Restrictions: Graduate level students may not enroll.*
*Course Level: Undergraduate Lower-Level*
*Description:* Survey of social, political, economic, and intellectual ligatures that bound the particular histories of Africa, Europe, and the Americas one to the other, until by the late 18th century the Atlantic basin constituted a world unto itself. Mutually Exclusive: Credit cannot be earned for HIST 188 and HIST 388.

**HIST 190 - OCEANS IN WORLD HISTORY**
*Short Title: Oceans in World History*
*Department: History*
*Grade Mode: Standard Letter*
*Course Type: Lecture*
*Distribution Group: Distribution Group I*
*Credit Hours: 3*
*Restrictions: Graduate level students may not enroll.*
*Course Level: Undergraduate Lower-Level*
*Description:* Course presents maritime history through the social construction of the sea. It analyses the historical significance of islands and archipelagos. Also explores themes including technology, mapping, disease, communication and law. Maritime law includes an interrogation of piracy, not only historically, but in the present (and future).

**HIST 200 - ANCIENT EMPIRES: ORIGINS OF WESTERN CIVILIZATIONS**
*Short Title: Ancient Empires*
*Department: History*
*Grade Mode: Standard Letter*
*Course Type: Lecture*
*Distribution Group: Distribution Group I*
*Credit Hours: 3*
*Restrictions: Graduate level students may not enroll.*
*Course Level: Undergraduate Lower-Level*
*Description:* Course explores development of imperial systems from the Bronze Age to Roman Empire with attention to subject peoples’ participation in multi-ethnic states. Aspects of art, law, economics, religion, and literature of the Hittites, Assyrians, Hebrews, Persians, Greeks, and Romans examined with consideration given to strengths and weaknesses of contributions to the modern world.

**HIST 201 - JUDAISM OF JESUS AND HILLEL**
*Short Title: Judaism of Jesus and Hillel*
*Department: History*
*Grade Mode: Standard Letter*
*Course Type: Lecture*
*Distribution Group: Distribution Group I*
*Credit Hours: 3*
*Restrictions: Graduate level students may not enroll.*
*Course Level: Undergraduate Lower-Level*
*Description:* This course examines the history and culture of Judaism during the Second Temple period, which produced such great religious leaders as Jesus and Hillel. Topics include: canonization, colonization, diaspora, economic and political instability, eschatology, Hellenization, imperialism, messianism, Pharisees, priesthood, Sadducees, Scribes, scriptures, sectarianism, synagogue and temple worship. Cross-list: RELI 203.
HIST 203 - DEEP HISTORY FROM THE ORIGINS OF HUMANITY TO TODAY
Short Title: DEEP HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Key developments from the origins of humanity 6 million years ago to the modern world, explored through discussions and lectures. Open to all undergraduates.

HIST 204 - THE IDEA OF AFRICA
Short Title: THE IDEA OF AFRICA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A team-taught interdisciplinary course focusing on certain major philosophical, religious and artistic traditions of pre-modern Asia, with an emphasis on the historical processes by which ideas, people, products, technologies and skills circulated within and beyond state boundaries. Cross-list: ASIA 211, HART 211.

HIST 205 - MEDIEVAL MEDITERRANEAN WORLD
Short Title: MEDIEVAL MEDITERRANEAN WORLD
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Course examines the political, institutional, military, and cultural development of the societies that successively dominated the "Middle Sea" from AD 500-1500 in Europe and the Islamic World. It highlights the Mediterranean legacy of commercial, cultural, and religious exchange and coexistence, as well as its history of confrontation and warfare. Cross-list: MDEM 210.

HIST 206 - INTRODUCTION TO ASIAN CIVILIZATIONS
Short Title: INTRO TO ASIAN CIVILIZATIONS
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A team-taught interdisciplinary course focusing on certain major philosophical, religious and artistic traditions of pre-modern Asia, with an emphasis on the historical processes by which ideas, people, products, technologies and skills circulated within and beyond state boundaries. Cross-list: ASIA 211, HART 211.

HIST 207 - SPATIAL HISTORY AND HISTORICAL GIS
Short Title: SPATIAL HISTORY HISTORICAL GIS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course introduces students to the emerging methodologies that combine geographic information systems (GIS) with historical thinking. Students will study and evaluate the benefits and limitations of key works in historical GIS, become familiar with basic principles of cartographic design, and learn technical skills to create their own HGIS project.

HIST 209 - AMERICAN URBAN HISTORY, 1609 TO TODAY
Short Title: AMERICAN URBAN HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Discusss economic and social factors underlying the development of American urban communities from colonial times to the present day. Students will study the growth of American cities and their influence on the nation's cultural and political development.

HIST 211 - MEDIEVAL VIOLENCE
Short Title: MEDIEVAL VIOLENCE
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Discussion course looks at private and large-scale warfare during the European Middle Ages. It considers how violence was legitimized and carried out, and examines attitudes towards violence and its effects on society. Topics include theoretical approaches to violence, crusading, chivalry, Truce of God, rituals of violence, military technologies, and cinematic portrayals of medieval warfare. Cross-list: MDEM 210.

HIST 212 - CONTEMPORARY CHINA
Short Title: CONTEMPORARY CHINA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of 40 year period (post socialism) 1976-2016 known as "China's Rise." Focus on social, political, intellectual, economic change and China's globalization.
HIST 214 - CARIBBEAN NATION BUILDING
Short Title: CARIBBEAN NATION BUILDING
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Course will focus on the slow, steady process through which nation states emerged in the Caribbean from the 18th century to the present, as well as the difficulties they face amidst increasing globalization. Equivalency: HIST 314. Mutually Exclusive: Credit cannot be earned for HIST 214 and HIST 314.

HIST 215 - BLACKS IN THE AMERICAS
Short Title: BLACKS IN THE AMERICAS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Comparative survey of black people in the Americas from the late 15th century to the present examines the Atlantic slave trade, the movement toward slave emancipation in various countries, and 19th century black self-help efforts. Course also concentrates on economic and social conditions for blacks in the 20th and 21st centuries. Equivalency: HIST 315. Mutually Exclusive: Credit cannot be earned for HIST 215 and HIST 315.

HIST 216 - BLACK LIFE IN THE NINETEENTH-CENTURY UNITED STATES
Short Title: BLACK LIFE IN THE 19TH C. U.S.
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course traces the lives of people of African descent in America before and after the Civil War, an event which transformed enslaved people from property to citizens and forced the country to determine the place of these new citizens in American society.

HIST 217 - HISTORY: THE WORKSHOP
Short Title: HISTORY: THE WORKSHOP
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course introduces students to the craft of history; formulating a question for inquiry, finding and analyzing primary sources, critiquing secondary source, and constructing an argument in support of a thesis. Recommended for History Majors and open to all majors.

HIST 218 - HISTORY THROUGH FILM IN EAST AND NORTHEAST ASIA
Short Title: EAST/NORTHEAST ASIA FILM HIST
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level

HIST 225 - EUROPE SINCE 1945
Short Title: EUROPE SINCE 1945
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of the history of Europe from the end of World War II to 1989. The course focuses on the impact of the war on European societies as well as on decolonization, European unification, economic reconstruction, immigration, and the rise and fall of communism in Eastern Europe.

HIST 226 - COLONIAL SPANISH AMERICA
Short Title: COLONIAL SPANISH AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of Latin American History, from 1492 to the 1820's, including the European background and the major New World indigenous civilizations. The course will examine the pre-Columbian societies, the impact of conquest and colonization, colonial political economy, slave systems and indigenous peasants and the collapse of Iberian colonialism.

HIST 227 - LATIN AMERICAN CULTURAL TRADITIONS
Short Title: LATIN AM CULTURAL TRADITIONS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A synthetic overview of the emergence of Latin American culture and society beginning with the 16th century encounters and continuing through independence in the 19th century. Discovery, conquest, slavery, family life, religious beliefs, and urban and rural communities are explored through chronicles, visual images, music, and maps.
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| HIST 228    | MODERN LATIN AMERICA                                                         | MODERN LATIN AMERICA | History    | Standard Letter | Lecture     | Distribution Group I | 3              | Graduate level students may not enroll. | Undergraduate Lower-Level | Lecture | Standard Letter | 3            | Distribution Group I | Grade Mode: Standard Letter
Course Level: Undergraduate Lower-Level Description: Course introduces the student to the history of contemporary Latin America. For the most part political events will provide the period framework of the course, but we shall also consider major economic, social and cultural developments to understand the complex social formations that comprise contemporary Latin American societies. |
| HIST 229    | HISTORY OF SOUTH AFRICA                                                      | HISTORY OF SOUTH AFRICA | History    | Standard Letter | Lecture     | Distribution Group I | 3              | Graduate level students may not enroll. | Undergraduate Lower-Level | Lecture | Standard Letter | 3            | Distribution Group I | Grade Mode: Standard Letter
Course Level: Undergraduate Lower-Level Description: This course examines the history of the world since the 19th century through the lens of sports and athletics. It investigates who/why sport emerged as social activity and became entrenched in the modern world and what this historical development can tell us about political, social, economic and cultural change. |
| HIST 231    | INTRODUCTION TO AFRICAN HISTORY: NORTH, WEST, AND CENTRAL AFRICA: EARLY TIMES TO PRESENT | AFRICAN HIST.NORTH/WEST/CENT | History    | Standard Letter | Lecture     | Distribution Group I | 3              | Graduate level students may not enroll. | Undergraduate Lower-Level | Lecture | Standard Letter | 3            | Distribution Group I | Grade Mode: Standard Letter
Course Level: Undergraduate Lower-Level Description: History of societies of North, West, and West-Central Africa, earliest times to the present. Through primary sources like archaeological remains, royal epics, Arabic manuscripts, travelogues, and personal narratives, we explore the rise of kingdoms, spread of Islam, slave trade, colonialism, and independence, and themes like mobility, the environment, and corruption. |
| HIST 232    | INTRODUCTION TO AFRICAN HISTORY: EAST, CENTRAL, AND SOUTHERN AFRICA, EARLY TIMES TO PRESENT | AFRICAN HIST: EAST/CENT/SOUTH | History    | Standard Letter | Lecture     | Distribution Group I | 3              | Graduate level students may not enroll. | Undergraduate Lower-Level | Lecture | Standard Letter | 3            | Distribution Group I | Grade Mode: Standard Letter
Course Level: Undergraduate Lower-Level Description: History of societies of East, Central and Southern Africa, earliest times to the present. Through primary sources like vocabulary from dead languages, art, archaeological remains, photographs, oral traditions, and journalists' accounts, we explore Swahili origins, Great Zimbabwe, African slavery, colonialism, independence, Rwandan genocide, and themes like ethnicity, gender, and poverty. |
| HIST 233    | HISTORY OF MODERN SCIENCE                                                    | HISTORY OF MODERN SCIENCE | History    | Standard Letter | Lecture     | Distribution Group I | 3              | Graduate level students may not enroll. | Undergraduate Lower-Level | Lecture | Standard Letter | 3            | Distribution Group I | Grade Mode: Standard Letter
Course Level: Undergraduate Lower-Level Description: Main issues in the history of modern science from the Ancient Greeks to the present. Topics include: the Scientific Revolution, Newtonianism in the 18th century, Darwinism and evolution, the relativity and quantum revolutions in physics in the early 20th century, and recent developments in the life sciences like molecular biology. |
Course Level: Undergraduate Lower-Level Description: Arab societies are often studied through the lens of cultural, religious, tribal, or kinship relations, with little attention to the role of the state and the economy. This course will examine the intersection of politics, social movements, and economics in the building of nation-states from the collapse of the Ottoman Empire and up to the Arab uprisings. |
| HIST 239    | NATIVE AMERICAN HISTORY: FROM EUROPEAN CONTACT TO THE ERA OF REMOVAL       | NATIVE AMERICAN HISTORY | History    | Standard Letter | Lecture     | Distribution Group I | 3              | Graduate level students may not enroll. | Undergraduate Lower-Level | Lecture | Standard Letter | 3            | Distribution Group I | Grade Mode: Standard Letter
Course Level: Undergraduate Lower-Level Description: This course will cover the history of Native Americans from the time of European arrival in the Americas until the era of removal.
HIST 241 - U.S. WOMEN'S HISTORY I: COLONIAL BEGINNINGS TO THE CIVIL WAR
Short Title: U.S. WOMEN'S HISTORY, I
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of American women's history examines the lives of elite, working, black, Indian, and white women, and traces changes in women's legal, political, and economic status from the mid-17th century through the Civil War. Topics include slavery, suffrage, sexuality, and feminism. Cross-list: SWGS 234.

HIST 242 - U.S. WOMEN'S HISTORY II: CIVIL WAR TO THE PRESENT
Short Title: U.S. WOMEN'S HISTORY, II
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of American women's history examines the lives of black, Asian American, Chicana, native American, and white women, and traces changes in women's legal, political, and economic status from the Civil War to the present. Topics include suffrage, anti-lynching, welfare, birth control, and the modern civil rights and feminist movements. Cross-list: SWGS 235.

HIST 243 - COPERNICUS TO DARWIN
Short Title: COPERNICUS TO DARWIN
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Main issues in the history of science from 1543 to 1859. Topics include: the medieval Aristotelian legacy, the Scientific Revolution, Newtonianism in the 18th Century, and Darwinism and evolution.

HIST 244 - GLOBALIZING MUSEUM HISTORY
Short Title: GLOBALIZING MUSEUM HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Examining museums in global history gives critical insight into their present role in society. Museums were sites of identity at local, regional, national, imperial and global levels. The collection and display of objects allowed communities, states, and empires to use cultural heritage, history, and science to interpret the past.

HIST 246 - AMERICAN CIVIL WAR ERA
Short Title: AMERICAN CIVIL WAR ERA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of the Civil War era from 1848 to 1876. Topics include the causes of the war; the mobilization of Northern and Southern armies; race, slavery and emancipation; Reconstruction; the Civil War in contemporary popular culture and memory; and the global dimensions of the war and its aftermath.

HIST 251 - CONTINUITIES AND CHANGES IN BRAZILIAN HISTORY
Short Title: BRAZIL: CONTINUITY & CHANGE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An exploration of themes essential to understanding modern Brazil, such as the origins of a multi-racial society, the transition from monoculture to industry, authoritarian and democratic trends, the emergence of a uniquely Brazilian culture, and the conflicts - environmental, political, and economic - over the development of the Amazon. Cross-list: LASR 251.

HIST 256 - EUROPEAN POLITICS AND SOCIETY, 1890-1945
Short Title: EUR POLITICS&SOCIETY,1890-1945
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Examination of European history in the age of total war. Includes imperialism and the development of the welfare state, institutional responses to the demands of total warfare, the crisis of liberal constitutionalism, the Russian Revolution, and the rise of fascism.

HIST 259 - US IN THE 1960s AND 70s
Short Title: US IN THE 1960s AND 70s
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A political, cultural and economic history of the 1960s and 70s, with special attention to American culture and public policy.
HIST 266 - SLAVERY AND THE FOUNDING FATHERS
Short Title: SLAVERY & THE FOUNDING FATHERS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Course will explore the Founding Fathers’ attitudes towards slaves, towards slavery, and towards racial difference, beginning with interpretations of the Founders as a group, and moving to case studies of individual founders. Students will write a paper about the engagement with slavery of one person from the founding generation.

HIST 271 - HISTORY OF SOUTH ASIA
Short Title: HISTORY OF SOUTH ASIA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the history of the cultural, religious, economic and political systems of South Asia, beginning with the development of world religious systems such as Hinduism and Buddhism, indigenous state-building, the rise of Islamic power, emergent European colonialism, and subsequent resistance movements which resulted in South Asian independence in mid-20th century.

HIST 268 - MODERN SLAVERY
Short Title: MODERN SLAVERY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Slavery has re-emerged as a global issue in the 21st century. This course explores various forms of slavery and slave trades globally from the 17th century to the present, examining the emergence of contemporary human trafficking.

HIST 277 - PREMODERN MIDDLE EAST HISTORY
Short Title: PREMODERN MIDDLE EAST HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the rise of Islam to the middle of the 16th century. Topics include conquests and classical Islamic states, Arabization, Jewish and Christian communities, impact of Turkic peoples, and the Ottoman Empire, with emphasis on social, cultural, and political trends that shaped the region’s history. Cross-list: MDEM 281.

HIST 275 - MODERN ARAB HISTORY
Short Title: MODERN ARAB HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of the history and culture of the Arab world from World War I to the present. Topics include nationalism, colonialism, modern secular and Islamist politics and the “Arab Spring.” Equivalency: HIST 378. Mutually Exclusive: Credit cannot be earned for HIST 278 and HIST 378.

HIST 279 - THE CARIBBEAN IN THE AGE OF REVOLUTION, 1770-1820
Short Title: THE CARIBBEAN IN REVOLUTION
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An examination and analysis of Caribbean societies as they sought to adjust to forces unleashed by the American and French Revolutions amidst mounting antislavery sentiment in the western world. Equivalency: HIST 379. Mutually Exclusive: Credit cannot be earned for HIST 279 and HIST 379.

HIST 281 - THE MIDDLE EAST FROM THE PROPHET MUHAMMAD TO SULAYMAN THE MAGNIFICENT
Short Title: PREMODERN MIDDLE EAST HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the Middle East from the rise of Islam to the middle of the 16th century. Topics include conquests and classical Islamic states, Arabization, Jewish and Christian communities, impact of Turkic peoples, and the Ottoman Empire, with emphasis on social, cultural, and political trends that shaped the region’s history. Cross-list: MDEM 281.

HIST 291 - 20TH CENTURY AMERICAN PRESIDENTS
Short Title: 20TH C. AMERICAN PRESIDENTS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Course will study the American presidency and the evolving use of executive power from Theodore Roosevelt to Bill Clinton. It will analyze how presidents develop foreign and domestic policy, relate to congress and their cabinets, and lead the nation in wartime.
HIST 295 - THE AMERICAN SOUTH
Short Title: THE AMERICAN SOUTH
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of the American South from development of Native American cultures to present. Topics include slavery and plantation economy; emergence of southern distinctiveness; Civil War and Reconstruction; political reform and the civil rights movement; rise of the Sunbelt, southern religion, music, and literature; and the future of southern regionalism. Equivalency: HIST 395. Mutually Exclusive: Credit cannot be earned for HIST 295 and HIST 395.

HIST 300 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent study under the supervision of a history faculty member. Hours are variable. Instructor Permission Required. Repeatable for Credit.

HIST 302 - TRADITIONAL CHINESE CULTURE
Short Title: TRADITIONAL CHINESE CULTURE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An interpretive introduction to the language, philosophy, religion, art, literature, and social customs of premodern China.

HIST 305 - HISTORIES OF WORK
Short Title: HISTORIES OF WORK
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Work has been about earning a living, but also about identity, creativity, morality, and much else for people shaped by the modern capitalist world. This course draws mostly on Europe but also the Americas and other colonial and postcolonial societies since 1492 to examine the experiences and meanings of work.

HIST 307 - IMPERIAL ROME FROM CAESAR TO DIOCLETIAN
Short Title: IMPERIAL ROME
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examination of how Rome acquired, maintained, and understood her empire. Includes the development of a political, social, and ideological system reaching from Scotland to Mesopotamia during the three centuries of Rome’s greatest power.

HIST 308 - THE WORLD OF LATE ANTIQUITY
Short Title: THE WORLD OF LATE ANTIQUITY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the social, religious, and political history of the Roman world from Diocletian to the rise of Islam, with emphasis on the breaking of the unity of the Mediterranean world and the emergence of early medieval societies in the east and west. Cross-list: MDEM 308.

HIST 309 - CHINESE INTELLECTUAL HISTORY
Short Title: CHINESE INTELLECTUAL HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Framework and categories of modern Chinese intellectual history and its major traditions of thought in early modern and modern period.

HIST 311 - SEX, GENDER, AND FAMILY IN EUROPE, 1300-1700
Short Title: SEX & GEN IN EUROPE, 1300-1700
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: What did it mean to be child, woman, or man in Europe between 1300 and 1700? This course explores the experiences of nuns, soldiers, courtesans, sodomites, apprentices, witches, and slaves. It examines the construction of sexual identity in a period of dramatic change and increasing entanglement with non-Christian cultures.
HIST 312 - BIOMEDICAL APPROACH TO HISTORY
Short Title: BIOMEDICAL APPROACH TO HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This is a course in history of medicine, diseases and public health, demography, and nutrition. It delves on classic works on the history of human societies. It will also use historical studies from particular disciplines such as biology, demography, medicine, nutrition, anthropology, and economic concentrating around disease, medicine and public health.

HIST 314 - CARIBBEAN NATION BUILDING
Short Title: CARIBBEAN NATION BUILDING
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the concept of "paganism" from the first through seventh centuries A.D. Includes examination of the mutually tolerant character of Roman religions, invention of the category, and Christian application to all polytheists of the empire and beyond. Cross-list: CLAS 318.

HIST 315 - BLACKS IN THE AMERICAS
Short Title: BLACKS IN THE AMERICAS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Enriched version of HIST 215. Students may not receive credit for both HIST 215 and 315. Equivalency: HIST 215. Mutually Exclusive: Credit cannot be earned for HIST 315 and HIST 215.

HIST 316 - THE INVENTION OF PAGANISM IN THE ROMAN EMPIRE
Short Title: INVENTION OF PAGANISM
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course examines the concept of "paganism" from the first through seventh centuries A.D. Includes examination of the mutually tolerant character of Roman religions, invention of the category, and Christian application to all polytheists of the empire and beyond. Cross-list: CLAS 318.

HIST 318 - DIGITAL HISTORY METHODS
Short Title: DIGITAL HISTORY METHODS
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explores the use of computers and new media to conduct historical research and communicate its results. While working on their own digital projects, students will consider questions like: How should history be written in the age of Google? How will historians deal with primary sources like tweets and blogs?

HIST 320 - IMPERIAL GARDENS: A CULTURAL COMPARISON
Short Title: IMPERIAL GARDENS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course will examine the design and development of gardens (primarily those of the Islamic world - Al Andalus, the Middle East, Persia, Central and South Asia) and their use as political and religious metaphors, havens for meditation, stages of imperial performance and ritual, sites of social interaction, and affirmations of power and legitimacy.

HIST 321 - US ENVIRONMENTAL HISTORY
Short Title: US ENVIRONMENTAL HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to the interaction between humans and the natural environment in the present United States from the colonial era to recent environmentalism. The course will center on discussion and writing; readings will include primary sources as well as secondary analysis.

HIST 324 - COEXISTENCE IN MEDIEVAL SPAIN
Short Title: COEXISTENCE IN MEDIEVAL SPAIN
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course explores the history of the Iberian Peninsula from late Antiquity to the early 16th century, focusing on coexistence and conflict between medieval Spain's three religious communities - Christians, Jews, and Muslims. Cross-list: MDEM 324.
HIST 327 - MEDIEVAL BORDERLANDS
Short Title: MEDIEVAL BORDERLANDS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Courses examines the military, political, social and cultural developments on the European frontiers between 500-1500 AD. Topics include colonization and conquest, crusades and Spanish Reconquista, piracy, slavery, encounters with native peoples, spread of Christianity, medieval colonial regimes, map-making and cultural exchanges. Cross-list: MDEM 327.

HIST 328 - POVERTY AND SOCIAL JUSTICE IN LATIN AMERICA
Short Title: POVERTY & SOCIAL JUSTICE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course surveys the economic, political, social, environmental and geographic origins of poverty and inequality in Latin American countries since independence. It compares welfare policies to promote social justices across these nations and examines their different outcomes in historical perspective.

HIST 329 - STREETS AND URBAN LIFE: PARIS TO ISTANBUL
Short Title: STREETS AND URBAN LIFE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Exploration of the street as a focus of urban life in 18th and 19th century. We will look at ways streets functioned as spaces of livelihood, sociability, and transgression in cities such as London, Paris, Istanbul, Amsterdam and Cairo. Cross-list: ARCH 329, HART 329.

HIST 330 - ATLANTIC SLAVE TRADE AND THE ORIGINS OF AFRO-AMERICA
Short Title: SLAVE TRADE & AFRO-AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of black society, culture, and politics from the late 15th century through the late 18th century (focusing geographically on the Caribbean, and on black life within what is now Mexico and the United States).

HIST 333 - THE CULTURE OF IDENTITY POLITICS IN CONTEMPORARY BRAZIL
Short Title: CULTURE AND IDENTITY IN BRAZIL
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course introduces students to popular cultural manifestations in the form of festivals and artistic movements in the Nordeste of Brazil. The objective is to show how the cultural can be deeply political, with cultural manifestations speaking to everyday forms of representation, new identity formations, and struggles for social justice. Cross-list: ANTH 334.

HIST 334 - AFRICAN VOICES, AFRICAN HISTORIES: TOPICS IN ORAL AND WRITTEN LITERATURE AS HISTORICAL SOURCE
Short Title: AFRICAN VOICES, HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explores oral and written sources produced by Africans since 1800. Students will examine sources usually considered "literature" - poetry, oral narratives, novels, philosophy - and consider how Africans conceived of valued, and expressed history in their own words.

HIST 335 - CARIBBEAN HISTORY TO 1838
Short Title: CARIBBEAN HISTORY TO 1838
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of Caribbean history from the arrival of the Europeans to the abolition of slavery in the British West Indies in 1838, with emphasis on the social and economic history of the region. Includes the question of why slavery and the plantation system emerged and fell.

HIST 336 - CARIBBEAN HISTORY 1838 TO PRESENT
Short Title: CARIBBEAN HISTORY 1838-PRESENT
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of Caribbean history from the arrival of the Europeans to the abolition of slavery in the British West Indies in 1838, with emphasis on the social and economic history of the region. Includes the question of why slavery and the plantation system emerged and fell.
HIST 337 - LATIN AMERICAN PERSPECTIVES
Short Title: LATIN AMERICAN PERSPECTIVES
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Through an analysis of sea charts, maps, paintings, and city and town plans this course traces the changes in Latin American peoples, landscapes, and settlements from the time of contact (1492) to independence in the early 19th century. Attention will be given to European, Indigenous, and emerging "Latin American" perspectives.

HIST 338 - 19TH CENTURY WOMEN'S NARRATIVES
Short Title: 19TH C. WOMEN'S NARRATIVES
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the experiences of women in the United States during the nineteenth century through first-hand accounts and scholarly readings. Students will ready a variety of materials to explore the social and legal status of women and consider the impact of race on women's lives. Cross-list: SWGS 338.

HIST 340 - HISTORY OF FEMINISM
Short Title: HISTORY OF FEMINISM
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explores feminism as political thought and social movement in various times and places. Readings will include classic as well as non-canonical texts. We will consider the historical contexts of feminist action, and examine controversies over and within feminisms. Cross-list: SWGS 345.

HIST 341 - PRE-MODERN CHINA
Short Title: PRE-MODERN CHINA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Survey of Chinese history from antiquity to c.1800, highlighting major themes, issues, personalities and events.

HIST 342 - MODERN CHINA
Short Title: MODERN CHINA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A survey of Chinese history from c. 1800 to the present, focusing on the related themes of imperialism, nationalism, modernization and revolution.

HIST 344 - EUROPEAN REFORMATIONS
Short Title: EUROPEAN REFORMATIONS
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In the 16th century Europe's house divided. This juncture in the history of Christianity had extraordinary consequences for the modern world. The course traces the impact of Protestant and Catholic reform movements on politics, society and culture and on Europe's engagements with the rest of the world.

HIST 345 - RENAISSANCE EUROPE
Short Title: RENAISSANCE EUROPE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How did the recovery of ancient texts shape the discovery of new worlds and perhaps the destruction of the old? This course explores major developments in Western Europe from the rise of Italian humanism in the fourteenth century to the imperial expansion and devastating conflicts of the 1500s and 1600s. Cross-list: MDEM 345.

HIST 347 - BLACK AMERICA: FROM NADIR THROUGH THE GREAT DEPRESSION
Short Title: BLACK AMERICA: THE NADIR
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the changing nature of black society, culture, and politics in the United States from the census of 1890 through the attack on Pearl Harbor.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Distribution Group</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 350</td>
<td>AMERICA, 1900-1940</td>
<td>AMERICA, 1900-1940</td>
<td>History</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Distribution Group I</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Survey of major economic, social, and political developments in the United States from 1900 to 1940.</td>
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<tr>
<td>HIST 351</td>
<td>AMERICA SINCE 1945</td>
<td>AMERICA SINCE 1945</td>
<td>History</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Distribution Group I</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Survey of major economic, social and political developments in the United States since 1945.</td>
</tr>
<tr>
<td>HIST 352</td>
<td>HISTORY OF THE COLD WAR</td>
<td>HISTORY OF THE COLD WAR</td>
<td>History</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Distribution Group I</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Course will cover Russo-American relations from the end of World War II to the collapse of the Soviet Union in 1989, profiling the major policymakers and world leaders and exploring not only the diplomatic and military operations but also the cultural landscape of the Cold War.</td>
</tr>
<tr>
<td>HIST 354</td>
<td>GERMAN HISTORY, 1648-1890</td>
<td>GERMAN HISTORY, 1648-1890</td>
<td>History</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Distribution Group I</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Course will focus on Jewish-Christian coexistence in medieval Europe. Will examine the Jews' legal status in Christendom, their communal life, economic activities, intellectual achievements, while also focusing on the complex dynamics of Jewish-Christian interaction, and the shifting patterns of persecution and acceptance. Cross-list: MDEM 357.</td>
</tr>
<tr>
<td>HIST 355</td>
<td>FROM DEMOCRACY TO DICTATORSHIP: GERMAN HISTORY, 1890-1945</td>
<td>GERMAN HISTORY, 1890-1945</td>
<td>History</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Distribution Group I</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>From 1890-1945, Germans experienced dramatic changes in their political environment. This lecture class will examine these changes, taking into account not only political history, but also attempts to come to terms with the challenges posed by organized capitalism, the rise and fall of socialism, the development of an interventionist state, cultural critique, and political culture, the Nazi social revolution, and the Holocaust. Taught in English. Cross-list: GERM 345.</td>
</tr>
<tr>
<td>HIST 356</td>
<td>AFTER NAZISM: GERMAN HISTORY, 1945 - PRESENT</td>
<td>GERMAN HISTORY, 1945 - PRESENT</td>
<td>History</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Distribution Group I</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Course examines German politics and societies under Allied administration, West and East Germany 1949-1989, and the Federal Republic since 1990. Topics include democracy; post-1945 responses to Nazism; political economies; challenges of the &quot;new social movements;&quot; and national identity in context of European unification and global migration.</td>
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<tr>
<td>HIST 357</td>
<td>JEWS AND CHRISTIANS IN MEDIEVAL EUROPE</td>
<td>JEWS &amp; CHRISTIANS-MEDIEVAL EUR</td>
<td>History</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Distribution Group I</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Course will focus on Jewish-Christian coexistence in medieval Europe. Will examine the Jews' legal status in Christendom, their communal life, economic activities, intellectual achievements, while also focusing on the complex dynamics of Jewish-Christian interaction, and the shifting patterns of persecution and acceptance. Cross-list: MDEM 357.</td>
</tr>
</tbody>
</table>
HIST 358 - HUMANITARIANISM FROM THE 19TH CENTURY TO THE PRESENT  
Short Title: HUMANITARIANISM FROM 19TH C.  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course surveys the history of humanitarian sentiment and practices in the West from the 19th Century to the present. It is conceived as a critical investigation of the humanitarian movement and examines various patterns of Western interventions on behalf of "suffering humanity." Topics covered are evangelicalism, abolitionism, colonialism and war humanitarianism, as well as United Nations humanitarianism since 1945.  

HIST 359 - THE UNITED STATES IN THE TWENTIETH CENTURY WORLD  
Short Title: U.S. IN THE 20TH CENTURY WORLD  
Department: History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Overview of the United States interactions with the wider world in the 20th century. Impact of international affairs on the evolution of U.S. Domestic institutions, changing ideas about the United States' role in the world as articulated and practiced by key public figures, private-sector activists, intellectuals, and citizens at large.  

HIST 361 - HISTORY OF PREMODERN BRITAIN: TUDORS AND STUARTS, 1485 - 1707  
Short Title: TUDORS AND STUARTS, 1485-1707  
Department: History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Tudor and Stuart monarchs were some of the most intriguing characters to walk on the world's stage. This course will explore the foundational political and religious changes which occurred in their reigns, from the victory of Henry VII at Bosworth to the union of Great Britain in 1707.  

HIST 362 - BRITAIN FROM THE INDUSTRIAL REVOLUTION TO THE PRESENT  
Short Title: HISTORY OF MODERN BRITAIN  
Department: History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Exploration of Britain's take-off into the Industrial Revolution, the flourishing of the Empire, and the adjustment to the end of the Empire and the diminishment of world political and economic stature since the First World War. Includes the use of novels and films to examine these transformations.  

HIST 364 - CENTRAL ASIAN CONQUEST EMPIRES  
Short Title: CENTRAL ASIAN CONQUEST EMPIRES  
Department: History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Course examines the rise of Chingis Khan and Mongol Steppe society (religion, role of women, cultural exchange, strategies of violence, imperial ideologies) as well as successor empires: Yuan, Golden Horde, Ilkhanid and eventually that ruled by Timur/Tamerlane, who reproduced Mongol imperial power in Central Asia and India. Cross-list: MDEM 364.  

HIST 365 - WORLD ECONOMIC HISTORY  
Short Title: WORLD ECONOMIC HISTORY  
Department: History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): (ECON 100 or ECON 201 or ECON 211) and (ECON 200 or ECON 301 or ECON 370) and (ECON 203 or ECON 303 or ECON 375)  
Description: Study and analysis of world economy focusing on the economic expansion of Western countries between the 14th and 21st centuries. Emphasis on contextual changes in economy, geography, history, society, culture, religion and politics in determining economic leadership of certain economies, such as Italy, Portugal, Spain, the United Kingdom, Belgium, the Netherlands, France, Germany, Sweden, the United States and Japan. Cross-list: ECON 365. Mutually Exclusive: Credit cannot be earned for HIST 365 and HIST 235/HUMA 235.  

HIST 366 - RIO DE JANEIRO: A SOCIAL AND ARCHITECTURAL HISTORY  
Short Title: RIO DE JANEIRO  
Department: History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: The development of Rio de Janeiro from a colonial capital to an Olympic host with emphasis on the peoples of the city and evolution of the urban panorama. Cross-list: ARCH 366.  

HIST 367 - THE RISE AND FALL OF THE BRITISH EMPIRE  
Short Title: RISE & FALL OF BRITISH EMPIRE  
Department: History  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: The British Empire from the 1600s to the late 20th century. The class will examine the causes of its rise, world dominance and fall.
HIST 370 - EUROPEAN INTELLECTUAL HISTORY: BACON TO HEGEL
Short Title: EUROPEAN INTELLECTUAL HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Survey of major thinkers and intellectual movements from the scientific revolution to the French Revolution. Includes the use of primary and secondary sources to establish the main contours of philosophical, political, and cultural expression and to relate them to their historical context.

HIST 371 - HISTORY OF MODERN FRANCE
Short Title: HISTORY OF MODERN FRANCE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of transformations in French society, culture, and politics from the French Revolution to the end of the 20th century. Taught in English.

HIST 372 - IMMIGRATION AND THE STATE: 19TH & 20TH CENTURY
Short Title: IMMIGRATION AND THE STATE
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How did modern states organize and regulate immigration in the modern era? Lecture course explores the comparative history of labor migration and forced displacement from the point of view of state policies in the United States and Western Europe from 1800 to the present.

HIST 373 - SOCIAL AND POLITICAL THOUGHT IN 19TH CENTURY EUROPE
Short Title: 19TH C SOC/POLITICAL THOUGHT
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Social and political thinkers of the 19th century confronted revolutionary change in both politics and society: the demand for democracy as well as the challenges associated with industrial capitalism. Course combines lectures with discussion of original sources, including Smith, Mill, Marx, Proudhon, Wollstonecraft, and Weber.

HIST 374 - JEWISH HISTORY, 1500-1948
Short Title: JEWISH HISTORY, 1500-1948
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Survey of the history and culture of the Arab world from World War I to the present. Topics include colonialism and nationalism, modern secular and Islamist politics and the "Arab Spring." Equivalency: HIST 278. Mutually Exclusive: Credit cannot be earned for HIST 378 and HIST 278.
HIST 379 - THE CARIBBEAN IN THE AGE OF REVOLUTION, 1770-1820
Short Title: THE CARIBBEAN IN REVOLUTION
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An enriched version of HIST 279. Equivalency: HIST 279. Mutually Exclusive: Credit cannot be earned for HIST 379 and HIST 279.

HIST 380 - ASIAN AMERICAN EXPERIENCES
Short Title: ASIAN AMERICAN EXPERIENCES
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An enriched version of HIST 279. Equivalency: HIST 279. Mutually Exclusive: Credit cannot be earned for HIST 379 and HIST 279.

HIST 381 - GOD, TIME AND HISTORY
Short Title: GOD, TIME AND HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How is the passage of time given meaning, and what role - if any - is assigned to divinity in shaping the direction of events? Course explores various forms of recording and interpreting events, drawing from ancient Mesopotamia, Israel, and the Greco-Roman world - the cultures in which modern ideas of history began. Cross-list: RELI 385.

HIST 382 - CULTURAL TRENDS IN MEDIEVAL ISLAM, 750-1400
Short Title: CULTURAL TRENDS MEDIEVAL ISLAM
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Islamic cultural transformation in the context of caliphal Baghd and the peripheral regions of India, Anatolia and Central Asia - before and after Mongol invasions. Close examinations of the rise of ghulam states and Turkic sultanates, ideologies of kingship, literature and arts, conversion and suf mysticism.

HIST 383 - MODERN GIRL AND ASIA IN THE WORLD
Short Title: MOD GIRL & ASIA IN THE WORLD
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This interdisciplinary course will investigate the diverse cultural traditions and shared experiences of Asian Americans in the United States. By analyzing historical works, literary texts, and films, we will explore a range of topics including Asian immigration, gender roles, identity formation, and ethnic media. Cross-list: ASIA 380.

HIST 384 - MIGRATIONS AND DIASPORAS IN THE INDIAN OCEAN WORLD
Short Title: THE INDIAN OCEAN WORLD
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Using the textbook "The Modern Girl Around the World," this course examines the phenomenon of the so-called modern girl in Asia and the world, 1890-1949. Topics include: modernity, consumer culture, sexuality, and liberation. Cross-list: ASIA 328, SWGS 384.

HIST 385 - CARTER, REAGAN, AND THE END OF THE COLD WAR
Short Title: CARTER, REAGAN&END OF COLD WAR
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course will examine American policy during the climactic years of the Cold War. Topics will include detente under Nixon and Carter, confrontation under Reagan, the "new thinking" of Gorbachev, regional conflicts, and the fall of the Soviet Union.

HIST 386 - THE UNITED STATES IN THE WORLD: AGE OF EMPIRE AND REVOLUTION
Short Title: U.S. IN THE WORLD: 1750-1900
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course provides an overview of the United States' interactions with the world from the revolutionary period to the Spanish-American war. Impact of international affairs on the evolution of U.S. domestic institutions, changing ideas about America's role in the world by key political figures, private-sector activists, intellectuals, and citizens at large.

HIST 387 - MIGRATIONS AND DIASPORAS IN THE INDIAN OCEAN WORLD
Short Title: THE INDIAN OCEAN WORLD
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Using the textbook "The Modern Girl Around the World," this course examines the phenomenon of the so-called modern girl in Asia and the world, 1890-1949. Topics include: modernity, consumer culture, sexuality, and liberation. Cross-list: ASIA 328, SWGS 384.

HIST 388 - MODERN GIRL AND ASIA IN THE WORLD
Short Title: MOD GIRL & ASIA IN THE WORLD
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This interdisciplinary course will investigate the diverse cultural traditions and shared experiences of Asian Americans in the United States. By analyzing historical works, literary texts, and films, we will explore a range of topics including Asian immigration, gender roles, identity formation, and ethnic media. Cross-list: ASIA 380.

HIST 389 - MIGRATIONS AND DIASPORAS IN THE INDIAN OCEAN WORLD
Short Title: THE INDIAN OCEAN WORLD
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Using the textbook "The Modern Girl Around the World," this course examines the phenomenon of the so-called modern girl in Asia and the world, 1890-1949. Topics include: modernity, consumer culture, sexuality, and liberation. Cross-list: ASIA 328, SWGS 384.
HIST 390 - JOURNAL PUBLISHING WORKSHOP
Short Title: JOURNAL PUBLISHING WORKSHOP
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Participants will explore scholarly communication through hands-on-work running the university's new undergraduate history journal, talking with editors, and discussing readings. Tasks include preparing to publish the journal's annual issues, refining the workflow, issuing a call for papers, and promoting the journal. Repeatable for Credit.

HIST 392 - PRE-MODERN POLITICAL THOUGHT FROM CICERO TO LOCKE
Short Title: PRE-MOD POLITICAL THOUGHT
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examining major texts from Cicero's De Officiis (CCE 44) to Locke's Two Treatises (1689 CE) shows how significant political questions emerged from specific historical contexts and developed over time. Writing intensive. Students will have weekly meetings in groups of three at an agreed-upon time (inclusive of the regular class meeting time).

HIST 395 - THE AMERICAN SOUTH
Short Title: THE AMERICAN SOUTH
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An enriched version of HIST 295. Equivalency: HIST 295. Mutually Exclusive: Credit cannot be earned for HIST 395 and HIST 295.

HIST 398 - THE TEN MOST IMPORTANT SUPREME COURT DECISIONS IN U.S. HISTORY
Short Title: TOPICS IN LEGAL HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course on selected topics in legal history. Cross-list: SWGS 398.

HIST 401 - THE AGE OF ATTILA THE HUN
Short Title: THE AGE OF ATTILA THE HUN
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the fifth century A.D. in Western Europe, when the Roman Empire ended and new kingdoms were established from Britain to North Africa. The "barbarian invasions" and Attila and the Huns will be considered. Research seminar format. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 402 - CHINESE WOMEN THROUGH TIME
Short Title: CHINESE WOMEN THROUGH TIME
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This discussion- and research- based course uses history, biography, law, fiction and film to examine the experiences and images of Chinese women from the late imperial time to the present. Topics include foot-binding, matriarchy, social constructs such as the Tiger Mom and the submissive Asian woman, crime, art etc. Students will write a final paper based on primary sources, and there will be one mid-term project involving a collaborative online experience. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 403 - ADVANCED RESEARCH SEMINAR
Short Title: ADVANCED RESEARCH SEMINAR
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Restricted to students admitted to History Honors Program. Seminar is designed to advance students from preliminary research to development of a formal prospectus for the honors thesis and a first draft of one section. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.) Instructor Permission Required.
HIST 404 - HISTORY HONORS THESIS
Short Title: HISTORY HONORS THESIS
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): HIST 403
Description: Restricted to students admitted to History Honors Program. Seminar is designed to advance students from prospectus to draft and final version of the honors thesis. Prerequisite: HIST 403 and approval of Director of Undergraduate Studies. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.) Instructor Permission Required.

HIST 409 - MUSLIMS, JEWS, CHRISTIANS, HERETICS, AND PAGANS IN THE AGE OF THE CRUSADES
Short Title: CHRISTIAN HOLY WARS, 1095-1492
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the crusading movement between the proclamation of the First Crusade in 1095 and the fall of Muslim Granada in 1492. It focuses on the wars against Muslims in the Middle East and Iberia, Baltic crusades against pagans, wars against Christian heretics in Europe, and political crusades.

HIST 410 - THE EVOLVING AMERICAN CITY
Short Title: THE EVOLVING AMERICAN CITY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Urban areas, and the diverse peoples, conflicts, and experiences they contain, reflect elements of America’s transformations across the 20th and 21st centuries. This reading and research seminar examines the nature of urban and suburban life over the past century, in order to trace the influence of the metropolis on the nation as a whole.

HIST 411 - SLAVE REBELLIONS IN THE AMERICAS
Short Title: SLAVE REBELONIS IN AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class examines collective violent resistance to slavery, especially during the 18th and 19th centuries. It focuses on rebellion in North America, the Caribbean and Brazil. It explores their causes, the different courses that they took, and asks what we can learn about Atlantic slavery by studying collective resistance. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 416 - SEMINAR IN CONTEMPORARY AFRICAN AMERICAN HISTORY
Short Title: CONTEMP AF-AMER HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the exigencies of African American life from the Reagan era to the age of Obama. A reading- and writing-intensive seminar focusing on selected issues in black culture, politics, and community in the United States since the climax of the civil rights movement. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 420 - MEXICAN HISTORY
Short Title: MEXICAN HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is an advanced undergraduate seminar examining the history of Mexico from Independence to the Present. It addresses topics including the war of independence (1810-1821), civil wars and foreign invasions in the nineteenth and twentieth centuries, as well as social, cultural religious, political and economic transformations. Graduate/Undergraduate Equivalency: HIST 500. Mutually Exclusive: Credit cannot be earned for HIST 420 and HIST 500.

HIST 421 - RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH
Short Title: RACE, EDUCATION & SOCIETY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of urban life and education since the decision in Brown v. Board. Seminar focuses on the Brown cases, the development of the post war city in the context of American race relations, the course of court-ordered desegregation, and the impact of recent reforms on urban schools and neighborhoods. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.) Graduate/Undergraduate Equivalency: HIST 521. Mutually Exclusive: Credit cannot be earned for HIST 421 and HIST 521.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 422</td>
<td>TOPICS IN THE HISTORY OF RICE UNIVERSITY</td>
<td>History</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate</td>
<td>Research seminar on selected topics in the history of the university, with papers to be based on primary sources in the Woodson Research Center of Fondren Library and/or oral interviews. Topics will include academic departments and schools, student life, administrative evolution, community involvement, and Rice in a comparative context. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)</td>
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<tr>
<td>HIST 423</td>
<td>AMERICAN RADICALS AND REFORMERS</td>
<td>History</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate</td>
<td>Seminar on radicals and reformers in American history. Readings vary and will focus on a selected group of reformers, such as abolitionists, labor radicals, socialists, feminists, pacifists, Progressives, environmentalists, or health reformers. Students may conduct original research for a thesis-driven paper related to course themes. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)</td>
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<td>HIST 424</td>
<td>RAJ AND RESISTANCE</td>
<td>History</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate</td>
<td>Examination of the development and nature of the British-Indian relationship. From John Company to Company Raj (17th to 20th centuries), British mercantile and imperial ambitions in South Asia were met by indigenous movements of political independence and popular resistance across the subcontinent, in Bengal, Mysore, Punjab, Delhi and beyond. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)</td>
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<td>HIST 425</td>
<td>20TH CENTURY AMERICAN CONSERVATION MOVEMENT</td>
<td>History</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate</td>
<td>Exploration of the American conservation movement from Pres. Theodore Roosevelt, Sierra Club founder John Muir, and Chief of the U.S. Forest Service Gifford Pinchot to naturalists John Burroughs and George Perkins Marsh - focusing on their work in context of current issues in global warming and wetlands restoration. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)</td>
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<tr>
<td>HIST 427</td>
<td>HISTORY OF THE CIVIL RIGHTS MOVEMENT, 1954 TO THE PRESENT</td>
<td>History</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate</td>
<td>Seminar examines contemporary slavery and human trafficking in global historical context. It examines forms of gendered unfree labor that persisted after the legal abolition of slave trades and slavery. It explores the emergence of human rights discourse, activism, and law from the 19th century onwards. Houston is the contemporary case study. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)</td>
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<tr>
<td>HIST 428</td>
<td>MODERN SLAVERY AND HUMAN TRAFFICKING: GLOBAL AND LOCAL</td>
<td>History</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate</td>
<td>Seminar examines contemporary slavery and human trafficking in global historical context. It examines forms of gendered unfree labor that persisted after the legal abolition of slave trades and slavery. It explores the emergence of human rights discourse, activism, and law from the 19th century onwards. Houston is the contemporary case study. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)</td>
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HIST 429 - RELIGIOUS VIOLENCE AND IDENTITY IN THE MIDDLE EAST
Short Title: MIDEAST RELI VIOLENCE&IDENTITY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: What does religious violence in the modern Middle East mean? Seminar surveys the origins, meanings and forms of sectarianism in the modern Middle East. Examines examples of religious mobilizations and sectarian violence in the late Ottoman empire between Christians and Muslims, the Arab-Israeli conflict, and Iraq following the U.S. invasion of 2003. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 432 - THOMAS JEFFERSON AND HIS AGE
Short Title: THOMAS JEFFERSON AND HIS AGE
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of the life and writings of Jefferson, set in the Context of his Age: The American Revolution, France on the Eve of its Revolution, the Enlightenment, his Presidency, Slavery, and the Origins of the American Political System. Open to others only with permission of instructor.

HIST 433 - THE ARAB-ISRAELI CONFLICT
Short Title: THE ARAB-ISRAELI CONFLICT
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar traces the history and politics of the Arab-Israeli conflict. Course seeks to understand how and at what costs Israeli and Palestinian nationalisms have been constructed in both Palestinian and Israeli understandings of the past and present using books, documentaries, and films. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 434 - ISLAM AND THE WEST
Short Title: ISLAM AND THE WEST
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar explores issues of contact and exploration between Western and Islamic worlds, from the Crusades to the modern era. Investigations will explore how identities are formed and reshaped through interaction with other cultures and how traditions are "invented" by relationships between civilization and despotism, freedom and tyranny, religious tolerance and holy war. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 436 - AMERICA IN THE MIDDLE EAST
Short Title: AMERICA IN THE MIDDLE EAST
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar explores evolution of American involvement in the Middle East from missionary origins in the early 19th century to superpower hegemony in the 20th. Puts into perspective central issues such as the U.S. role in the Arab-Israeli conflict, the question of terrorism, and the U.S. invasion/occupation of Iraq in 2003. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)
Graduate/Undergraduate Equivalency: HIST 603. Mutually Exclusive: Credit cannot be earned for HIST 436 and HIST 603.

HIST 437 - GLOBAL HISTORY OF SPORT
Short Title: GLOBAL HISTORY OF SPORT
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This reading and research seminar explores key aspects of the world history of sport from the late nineteenth century to the present. It investigates how and why sport history shaped, and was shaped by, various factors and historical forces, including cultural values, identity, economic interests and market forces and power relations between different categories of people.

HIST 438 - GENDER AND HISTORY
Short Title: GENDER AND HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course focuses on the disruptive force of theories of sexual difference to the practice of writing history. Historiography of gender and history projects over last ½ century in international context. Research and Methods Course. Cross-list: SWGS 438.
HIST 439 - COMPARATIVE SLAVERY FROM ANTIQUITY TO THE PRESENT: AFRICA, ASIA, AND EUROPE
Short Title: COMPARATIVE SLAVERY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar introduces the debates on the history of slavery in human society. Examines case studies in Africa, Asia and Europe with comparative analyses of topics: slavery and the state; slavery and gender; slave trades; and slave resistance. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 443 - MULTICULTURAL EUROPE, 1400-1700
Short Title: MULTICULTURAL EUROPE, 1400-1700
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The art of Europe was never the product of a single culture working in isolation. This seminar will explore the multicultural aspects of medieval and early modern Europe by focusing on the visual culture of groups who defined themselves or are today defined by nationality, race, or religion. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.) Cross-list: HART 435, MDEM 435.

HIST 448 - WESTERN EUROPEAN WELFARE STATE, 1880-1980: ORIGINS, CONSOLIDATIONS, CRISIS
Short Title: WEST EUROPEAN WELFARE STATES
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This upper level seminar looks at why and how the welfare states came into being, how they were affected by the World Wars and dictatorship, postwar expansion, and the effects of the 1970s stagflation and oil crises. Focus on Germany, Britain, and France. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 455 - HISTORY OF HUMAN RIGHTS
Short Title: HISTORY OF HUMAN RIGHTS
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar will explore the history of human rights through disciplines of anthropology and legal philosophy as well as historical case studies of individual states and human rights organizations. Students will undertake independent research on an issue, location, and period of their choosing. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 457 - FOUR MODERN REVOLUTIONS: 1776, 1789, 1917, 1989
Short Title: FOUR MODERN REVOLUTIONS
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar brings together four leading examples of modern revolution in the western world: the American Revolution, the French Revolution of 1789, the Russian Revolution of October 1917, and the Eastern European revolutions of 1989. Topics include: revolutionary subjects, reactionaries, terror, law, and constitutions. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 459 - TOPICS IN MODERN GERMAN HISTORY: NAZISM AND THE HOLOCAUST
Short Title: TOPICS MODERN GERMAN HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar uses sources from the time and historians’ interpretations to analyze Nazism and the Holocaust, especially pre-war racial policy; economic policy; labor; the war experience; and the phases and legacies of the Holocaust.

HIST 461 - THE SECOND WORLD WAR: A POLITICAL HISTORY
Short Title: WW II: A POLITICAL HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: World War Two was not just a military conflict, but also a violent political and social struggle. Seminar explores the main ideologies and political blueprints devised during the war in the United States, Western and Eastern Europe. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 464 - U.S. FOREIGN POLICY IN THE ERA OF THE COLD WAR
Short Title: COLD WAR U.S. FOREIGN POLICY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar on American foreign policy during the Cold War. Readings and research. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)
HIST 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: History
Grade Mode: Standard Letter
Course Type: Seminar, Lecture, Laboratory, Internship/Practicum
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

HIST 478 - TOPICS IN LATIN AMERICAN HISTORY
Short Title: TOPICS LATIN AMERICAN HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar on selected topics in Latin American history. Contents vary. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 481 - GLOBAL HISTORY OF HEALTH AND WELFARE
Short Title: GLOBAL HISTORY OF HEALTH
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar explores the changing state of human welfare during industrialization by looking at the evolution of living standards in comparative international perspective. Compares experiences around the world using a broad range of indicators: region, timing of industrialization, nature of government policy, pace of change and cultural circumstances. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 482 - GLOBAL HISTORY OF HEALTH
Short Title: GLOBAL HISTORY OF HEALTH
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar with some lectures considers late imperial through 21st century China using conceptual tools (masculinity, femininity, gynotechnics, globalization, representation). Examines late Qing gender order, revolutionary era, party-state formation, and the Great Transformations of late 20th and early 21st centuries using visual culture, film, primary texts, and secondary histories. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.) Cross-list: ASIA 492, SWGS 492.

HIST 492 - GENDER HISTORIES OF MODERN CHINA
Short Title: GENDER HISTORIES: MODERN CHINA
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar with some lectures considers late imperial through 21st century China using conceptual tools (masculinity, femininity, gynotechnics, globalization, representation). Examines late Qing gender order, revolutionary era, party-state formation, and the Great Transformations of late 20th and early 21st centuries using visual culture, film, primary texts, and secondary histories. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.) Cross-list: ASIA 492, SWGS 492.

HIST 493 - EARLY MODERN EMPIRES
Short Title: EARLY MODERN Empires
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar on 16th century Central Asian Muslim Turks who conquered India and, in collusion with local political and social forces, developed a sophisticated syncretic royal culture. Readings include memoirs and letters of the royal family, Hindu courtiers, visiting Jesuit priests, European merchants, and Ottoman adventurers, examining religion, art, women, family, war and diplomacy. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 494 - MUGHAL HISTORY
Short Title: MUGHAL HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar on selected topics in modern Islamic culture and society, its inspiration and legacy. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 499 - COLONIAL MODERNITY IN EAST ASIA
Short Title: COLONIAL MODERNITY: EAST ASIA
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar on 16th century Central Asian Muslim Turks who conquered India and, in collusion with local political and social forces, developed a sophisticated syncretic royal culture. Readings include memoirs and letters of the royal family, Hindu courtiers, visiting Jesuit priests, European merchants, and Ottoman adventurers, examining religion, art, women, family, war and diplomacy. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.) Cross-list: ASIA 490.
HIST 495 - COMPARATIVE MODERNIZATION OF CHINA AND JAPAN
Short Title: MODERNIZATION OF CHINA & JAPAN
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Research seminar examining not only the respective modernizing experiences of Japan and China in the 19th and 20th centuries, but also the way that developments in one country influenced developments in the other. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 496 - A TURBULENT TIME: THE WORLD OF THE HAITIAN REVOLUTION
Short Title: THE HAITIAN REVOLUTION
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of the impact of the powerful forces unleashed by the Haitian Revolution on societies in the Caribbean, the U.S., and Latin America in the late 18th and early 19th centuries. Open to juniors and seniors. Open to others only with permission of instructor. (Please note that class rank is determined by year of matriculation, not credits.)

HIST 500 - GRADUATE SEMINAR IN MEXICAN HISTORY
Short Title: MEXICAN HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This reading course examines Mexico from the early nineteenth century to present through reading classic and current scholarship. It delves into questions in Mexican historiography such as political instability, economic development and inequality, the origins of social movements, the Mexican Revolution and the relationship with the US. Graduate/Undergraduate Equivalency: HIST 420. Mutually Exclusive: Credit cannot be earned for HIST 500 and HIST 420.

HIST 501 - WOMEN AND GENDER IN NATIVE AMERICA
Short Title: NATIVE WOMEN'S HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This reading course consists of texts that focus on women and gender in indigenous history from the colonial period to the early twentieth century.

HIST 505 - THE ATLANTIC SLAVE TRADE
Short Title: THE ATLANTIC SLAVE TRADE
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This research seminar studies four centuries of transatlantic slave voyages in comparative perspective and complements existing literature on the Atlantic economy. Primary sources will be drawn from the quantitative data of www.slavevoyages.org. Students will be able to focus on particular regions on both sides of the Atlantic.

HIST 506 - COLONIAL TO REPUBLICAN BRAZIL
Short Title: COLONIAL TO REPUBLICAN BRAZIL
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course traces the history of Brazil from colony to republic. Topics to be covered include: encounters, Jesuit missions, Indian and African slavery, plantation society, the court in Rio de Janeiro, and change and continuities in the 19th century.

HIST 508 - MODERN LATIN AMERICA
Short Title: MODERN LATIN AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate reading seminar on Latin America from the early nineteenth century to present through reading classic and current most relevant scholarship. Political events will provide the periodic framework of the course but it will delve on major economic, social and cultural developments to understand the complex social formations that comprise contemporary Latin American societies.

HIST 509 - DIRECTED READINGS
Short Title: DIRECTED READINGS
Department: History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level independent readings course. Topics vary. Repeatable for Credit.

HIST 510 - DIRECTED READINGS
Short Title: DIRECTED READINGS
Department: History
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level independent reading course. Topics vary. Repeatable for Credit.
HIST 521 - RACE, EDUCATION AND SOCIETY IN THE URBAN SOUTH
Short Title: RACE, EDUCATION & SOCIETY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An examination of urban life and education since the decision in Brown v. Board. Seminar focuses on the Brown cases, the development of the post war city in the context of American race relations, the course of court-ordered desegregation, and the impact of recent reforms on urban schools and neighborhoods Graduate/ Undergraduate Equivalency: HIST 421. Mutually Exclusive: Credit cannot be earned for HIST 521 and HIST 421.

HIST 533 - SCIENCE, TECHNOLOGY, AND THE COLD WAR
Short Title: SCIENCE, TECH, & THE COLD WAR
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar examines the mobilization of science and engineering in World War II and in the ensuing confrontation between capitalism and communism. Topics include the Nuclear Age, science and diplomacy, military-industrial-academic complex, McCarthyism, the space race, and the counterculture in environmentalism, biotechnology and computing.

HIST 534 - CIVILIZING MISSIONS
Short Title: CIVILIZING MISSIONS
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Reading Seminar. The development of "civilizing missions" legitimized territorial and spiritual conquest and validated the suppression of subject customs, cultures, and religions. Graduate reading seminar will explore the idea, which became an integral part of imperial, religious, and national ideologies. Readings include (in translation) modern historical, geographical, legal, ethnographic, religious, and literary texts.

HIST 536 - AMERICA AND THE WORLD
Short Title: AMERICA & THE WORLD
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this graduate seminar, we will examine U.S. history in a global context, focusing particularly on imperialism and empire-building. Students are encouraged to think broadly about empire and imperial relationships of which the United States constitute an integral part, looking at domination in economic and cultural forms in addition to political subjugation, formal colonialism and military interventions/dominations.

HIST 539 - ORIGINS OF AFRO AMERICA
Short Title: ORIGINS OF AFRO AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research seminar focused on key issues in the articulation of black society, culture, and labor in the Americas from the 15th century to the early 19th century.

HIST 540 - INDUSTRIALIZING AMERICA
Short Title: INDUSTRIALIZING AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate reading seminar will examine, through readings and discussion, the transformation of the United States under the impact of industrialization from 1870 through World War I. Topics include labor, immigration, feminism, the social gospel, Progressivism, the Great Migration of African Americans from the South, and the rise and fall of Victorian culture.

HIST 542 - HISTORIOGRAPHY OF THE MODERN MIDDLE EAST
Short Title: MODERN MIDDLE EAST
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics will vary.

HIST 549 - TOPICS IN AFRO-AMERICAN HISTORY: THE AFRICAN AMERICAN CENTURY
Short Title: THE AFRICAN AMERICAN CENTURY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research seminar focused on key issues in the development of black society and politics in the United States from the late 19th century to mid 20th century.
HIST 558 - RELIGION, RACE, AND DIFFERENCE IN A GLOBAL PERSPECTIVE  
Short Title: RELIGION, RACE, & DIFFERENCE  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate seminar will explore the relationship between religion, race, and difference in the modern world. Using both American and non-American cases, the course will explore how and why unequal multi-religious and multi-racial societies - from the United States to the Middle East and South Asia - have elaborated and adapted to modern ideas of secular citizenship and multiculturalism.

HIST 561 - TOPICS IN EUROPEAN INTELLECTUAL HISTORY  
Short Title: TOPICS EUR INTELLECTUAL HISTRY  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 4  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate research seminar on selected themes in European intellectual history. Contents vary. Reading knowledge of German is not required, but definitely advantageous.

HIST 563 - RACE AND SLAVERY IN THE EARLY ATLANTIC  
Short Title: EARLY ATLANTIC RACE & SLAVERY  
Department: History  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate research seminar designed to help students formulate, research, and produce an initial draft of what will hopefully become a publishable scholarly article dealing with race or slavery in the Atlantic World.

HIST 565 - THE ATLANTIC WORLD  
Short Title: THE ATLANTIC WORLD  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate reading seminar provides an introduction to the historiography of the Atlantic World, especially Africa and the British Atlantic during the 17th and 18th centuries with comparison to France and French Caribbean and to Iberia and Spanish and Luso-America. Thematic topics will include commercial networks, political/imperial/legal structures, and slavery.

HIST 566 - NORTH AMERICA, 1500-1800  
Short Title: NORTH AMERICA, 1500-1800  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate reading seminar provides overview of historical literature pertaining to British North America and the Atlantic World from 1500 to 1800. Related topics in Spanish and French North America also considered.

HIST 568 - POST-1945 U.S. HISTORY  
Short Title: POST-1945 U.S. HISTORY  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 4  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate reading seminar on post-1945 United States history. Contents vary.

HIST 570 - U.S. ENVIRONMENTAL HISTORY  
Short Title: U.S. ENVIRONMENTAL HISTORY  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate reading seminar on U.S. environmental history from the colonial era to the 20th century, including conservation and environmental movements.

HIST 571 - THE HISTORIOGRAPHY OF NATIONALISM, PLURALISM AND POLITICAL BELONGING.  
Short Title: HISTORIOGRAPHY OF NATIONALISM  
Department: History  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 4  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This seminar will explore the historiography of pluralism and political belonging and its relationship to various national formations, including the United States. It will read major figures such a W.E.B. Dubois alongside exemplary figures from the colonial and postcolonial worlds to explore how claims to national belonging are made through the construction of historical narratives.
HIST 572 - AMERICA IN THE MIDDLE EAST
Short Title: AMERICA IN THE MIDDLE EAST
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research seminar explores the history and historiography of American involvement in the Middle East from missionary origins in the early 19th century to superpower hegemony in the 20th. Participants will be expected to develop a primary-source based research essay. Instructor Permission Required.

HIST 574 - SLAVERY AND SLAVING IN AFRICA
Short Title: SLAVERY AND SLAVING IN AFRICA
Department: History
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces graduate students to the key debates, scholars, and historiography relating to slavery and slaving in African history. Students will also gain basic familiarity with the narrative of slaving in Africa as well as introductions to topics in slavery studies like gender, commodities, and identity.

HIST 575 - INTRODUCTION TO DOCTORAL STUDIES
Short Title: INTRO DOCTORAL STUDIES
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to a range of methodological and theoretical approaches to historical research, as well as to important current debates about the nature of historical investigation and interpretation. Instructor Permission Required.

HIST 577 - PEDAGOGY SEMINAR
Short Title: PEDAGOGY SEMINAR
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For ABD students who intend to teach. Required for those who intend to teach for the department.

HIST 578 - PROSPECTUS SEMINAR
Short Title: PROSPECTUS SEMINAR
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on prospectus and grant-writing for third-year graduate students. Required for students in the third year.

HIST 579 - COLONIAL LATIN AMERICA
Short Title: COLONIAL LATIN AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate reading seminar on the Spanish and Portuguese colonies in the Americas. Topics covered include: the Iberian heritage, encounters and conquests, historical demography, the colonial economy, slavery, family life, religion, and the coming of independence.

HIST 580 - MAJOR ISSUES IN BRITISH AND BRITISH EMPIRE HISTORY
Short Title: BRITAIN AND BRITISH EMPIRE
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research seminar in modern British and British Empire history. Open to all graduate students.

HIST 582 - MAJOR ISSUES IN BRITISH AND BRITISH EMPIRE HISTORY
Short Title: MAJOR ISSUES IN BRITISH AND BRITISH EMPIRE HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research seminar on the history of the American South.

HIST 583 - SOUTHERN HISTORY
Short Title: SOUTHERN HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research seminar on the history of the American South.

HIST 584 - THE EARLY SOUTH, 1600-1800
Short Title: THE EARLY SOUTH, 1600-1800
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research seminar focusing on the southern portions of colonial British North America.

HIST 587 - U.S. SOCIAL/CULTURAL HISTORY METHODS
Short Title: U.S. SOCIAL/CULTURAL HISTORY METHODS
Department: History
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate research and writing seminar on U.S. social/cultural history, with emphasis on methods and the nineteenth and twentieth centuries. Research paper required.
HIST 588 - 19TH CENTURY AMERICA
Short Title: 19TH CENTURY AMERICA
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate reading seminar on American history from the early republic to World War I. Contents vary.

HIST 590 - INTRODUCTION TO WORLD HISTORY
Short Title: INTRODUCTION TO WORLD HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate reading seminar in world history.

HIST 591 - GRADUATE READING
Short Title: GRADUATE READING
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate reading in conjunction with another course. Repeatable for Credit.

HIST 595 - THE AMERICAN SOUTH
Short Title: THE AMERICAN SOUTH
Department: History
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate reading seminar on major scholarly literature of southern history. Includes readings, discussions, and a major paper on historiographical topic decided in consultation with the instructor.

HIST 596 - PORT CITIES IN THE ATLANTIC WORLD: SIXTEENTH-NINETEENTH CENTURIES
Short Title: ATLANTIC WORLD PORT CITIES
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This graduate seminar investigates the social and economic history of key port cities in the Atlantic World from the sixteenth through the nineteenth centuries. Emphasis will be placed on slavery and the slave trade, the spatial history of the port city, and the experiences of men and women. Digital humanities methods will be demonstrated through a case study of Rio de Janeiro. Students will develop and write a final paper on the port city of their choice.

HIST 598 - THE MAKING OF THE MODERN ARAB WORLD
Short Title: MAKING OF THE MODERN ARAB WRLD
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar explores how various approaches from the secular to the religious, from the colonial to the post-colonial, and from the orientalist to the nationalist and post-orientalist have shaped the idea of what constitutes the Arab world.

HIST 599 - ADVANCED MUSEUM STUDIES
Short Title: ADVANCED MUSEUM STUDIES
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for credit. Offered as necessary. Repeatable for Credit.

HIST 601 - MASTER'S THESIS RESEARCH
Short Title: MASTER’S THESIS RESEARCH
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research for master’s thesis. Must take both HIST 601 and 602 to receive credit. Offered as necessary.

HIST 602 - MASTER'S THESIS RESEARCH
Short Title: MASTER’S THESIS RESEARCH
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of HIST 601. Must complete both HIST 601 and 602 to receive credit.

HIST 603 - AMERICA IN THE MIDDLE EAST
Short Title: AMERICA IN THE MIDDLE EAST
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar examining the encounter between the United States and Middle Eastern societies since the nineteenth century. Graduate students will complete all UG requirements in as well as an additional 15 page essay to be submitted with the project prospectus. Final papers must be at least 25 pages and incorporate non-English research as appropriate. Graduate/Undergraduate Equivalency: HIST 436. Mutually Exclusive: Credit cannot be earned for HIST 603 and HIST 436.
HIST 604 - ECONOMIC HISTORY
Short Title: ECONOMIC HISTORY
Department: History
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced graduate seminar examining world economic history and the history of political economy from 1500 to the present.

HIST 700 - THIRD-YEAR RESEARCH
Short Title: THIRD-YEAR RESEARCH
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 4-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Appropriate for third-year graduate students who are working on their prospectus and have not yet taken their general exam. Repeatable for Credit.

HIST 800 - PH.D. RESEARCH
Short Title: PH.D. RESEARCH
Department: History
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 9-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research for doctoral dissertation. Repeatable for Credit.

Honors Program (HONS)

HONS 470 - RICE UNDERGRADUATE SCHOLARS PROGRAM (RUSP)
Short Title: UNDERGRAD SCHOLARS PROGRAM
Department: Rice Undergrad Scholar Program
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: RUSP is a two-semester course for students pursuing careers in academia/research. With a faculty mentor, students engage in a year-long research project and attend weekly seminars on how to conduct and present research, work in the academy, apply to post-graduate education and fellowships, and understand the social impact of research. Instructor Permission Required.

HONS 471 - RICE UNDERGRADUATE SCHOLARS PROGRAM (RUSP)
Short Title: UNDERGRAD SCHOLARS PROGRAM
Department: Rice Undergrad Scholar Program
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): HONS 470
Description: RUSP is a two-semester course for students pursuing careers in academia/research. With a faculty mentor, students engage in a year-long research project and attend weekly seminars on how to conduct and present research, work in the academy, apply to post-graduate education and fellowships, and understand the social impact of research. Instructor Permission Required.

Humanities (HUMA)

HUMA 101 - FROM ANCIENT GREECE TO MEDIEVAL ISLAM: INTRODUCTION TO WESTERN LITERATURE, HISTORY, AND PHILOSOPHY
Short Title: ANCIENT GREECE TO MED ISLAM
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Study of the foundational intellectual and artistic texts of the western tradition from Ancient Greece to Medieval Islam. Consideration of texts and images over time and in their historical development as we reflect on who we are and how we got here. Readings from Homer, Plato, the Hebrew Bible, the New Testament, Thucydides, Vergil, Augustine, and the Qu’ran.

HUMA 102 - FROM RENAISSANCE TO PRESENT: INTRODUCTION TO WESTERN LITERATURE, HISTORY, AND PHILOSOPHY
Short Title: RENAISSANCE TO PRESENT
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Study of the foundational intellectual and artistic texts of the Western tradition from the Renaissance to Einstein. Consideration of texts and images over time and in their historical development as we reflect on who are and how we got here. Readings from Machiavelli, Shakespeare, Kant, Flaubert, Nietzsche, Freud, Beauvoir, Einstein, Levi, Kuhn, Borges, and King, and images from such artists as Michelangelo, Goya, and Picasso.
HUMA 103 - LIBERTY AND TERROR: THE FRENCH REVOLUTION  
Short Title: LIBERTY&TERROR: FRENCH REVOLUT  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: The French Revolution toppled an ancient monarchy and sent shockwaves throughout the world. We will interpret the historical sources, contexts, and problems of this watershed moment and investigate the problems by political, philosophical, literary, and visual documents regarding the pre-revolutionary status quo, the transformation of political liberty into repressive terror, worldwide warfare, and ideological struggle. The course will focus on historical contexts such as the influence of the Enlightenment; the emergence of citizenship and human rights; the development of social spectacles and the public sphere; the Reign of Terror and the regression to Tyranny; emancipationist discourses (the abolition of slavery, colonial revolt, radical feminism); and the contradictory figure of Napoleon. We will consider, finally, how the Revolution has come to be viewed, both within France and without, considering its many aftershocks and reverberations up until the present day.

HUMA 107 - GREEK CIVILIZATION AND ITS LEGACY  
Short Title: GREEK CIVILIZATION & LEGACY  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: An examination of the literary, artistic, and intellectual achievements of classical Greek civilization from Homer through the golden age of classical Athens to the spread of Greek culture in the Hellenistic world. The influence of ancient Greece on Western culture will be a focus. Case studies in the later reception of classical Greek literature (e.g. tragedy), philosophy (e.g., Socrates), history (e.g., democracy), and art (e.g., Parthenon) will be examined. Cross-list: CLAS 107.  

Course URL: classicallegacy.rice.edu

HUMA 108 - ART IN CONTEXT: LATE MEDIEVAL AND RENAISSANCE CULTURE  
Short Title: LATE MEDIEVAL & RENAISSANCE  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course will be concerned with art, architecture, and history of the late middle-ages and Renaissance. We will employ historical texts, literature, and illustrations of works of art, showing how historical documents and sources can illuminate the culture context of art and architecture. Cross-list: HART 240, MDEM 108.

HUMA 111 - ROMAN CIVILIZATION AND ITS LEGACY  
Short Title: ROMAN CIVILIZATION &ITS LEGACY  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course will investigate central aspects of Roman civilization: politics, religion, law, oratory, private life, public entertainment, literature, and visual art and architecture. Through case studies, we will also examine the place of ancient Rome in the western imagination, and the influence of ancient Rome on later politics, literature, and art. Cross-list: CLAS 108.  

Course URL: classicallegacy.rice.edu/

HUMA 201 - PUBLIC SPEAKING  
Short Title: PUBLIC SPEAKING  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course is designed to give the student exposure to and experience using basic principles and skills of oral communication in the public context. Emphasis will be on the development of speech organization, support, and delivery. Informative and persuasive speeches will be practiced. An important outcome of the course is that the student better understand and appreciate the important role public speaking plays in modern society.

HUMA 202 - CULTURE, ENERGY AND THE ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES  
Short Title: CULTURE ENERGY & ENVIRONMENT  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Humanity faces extraordinary challenges in an era of climate change and energy transition. These challenges are not only technological but also questions of value, power, behavior, and understanding. This course draws upon new research across the arts, humanities and social sciences to help students better understand the cultural and social dimensions of our current patterns of energy use, their environmental impacts, and the possibility of new energy futures. Intended for both STEM majors and humanities and social science students. Cross-list: ENST 202.
HUMA 203 - CULTURES OF FUEL  
Short Title: CULTURES OF FUEL  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Can fuels (prior to their insertion in systems of energy) offer us hope in the face of climate change? This seminar, open to undergraduates and graduates from all disciplines, will consider fuels (real and imaginary; fossil-based and renewable) in literature, film, art and culture. Grades based on participation in discussions.

HUMA 210 - FORENSICS PRACTICUM  
Short Title: FORENSICS PRACTICUM  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hour: 1  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course will focus on junior varsity intercollegiate speech and debate competition. Students will be required to prepare speeches and debate material for local, regional and possibly national competitions. Participation in intercollegiate competition is mandatory. Instructor Permission Required. Repeatable for Credit.

HUMA 238 - SPECIAL TOPICS  
Short Title: SPECIAL TOPICS  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum, Lecture, Seminar  
Credit Hours: 1-4  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Repeatable for Credit.

HUMA 300 - PJHC SUMMER SERVICE INTERNSHIP REFLECTION  
Short Title: PJHC SERVICE REFLECTION  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Returning PJHC Summer Service Interns reflect on their experiences in an academic context, producing short digital stories. This course is required for all returning interns who received financial support from the Program in Poverty, Justice, and Human Capabilities for service learning and suggested for PJHC minors who completed other summer service internships. Offered in the first half of the full term in the Fall, weekly. Instructor permission required. Instructor Permission Required.

HUMA 302 - THEORIES OF RHETORICAL COMMUNICATION  
Short Title: RHETORICAL THEORY  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course will survey major theorists of speech and public communication ranging from classical to contemporary thinkers. Emphasis will be on understanding speech and public communication from consumer and scholarly perspectives. Students are expected to read and discuss material with the goals of gaining basic understanding of major rhetorical theorists specifically engage a particular topic in rhetorical theory. Our central questions involve the nature of and relationship between speaker, text, and audience.

HUMA 303 - PERSUASION AND POLITICAL RHETORIC  
Short Title: PERSUASION&POLITICAL RHETORIC  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course will survey research and writing in the fields of persuasion and political communication. Of particular interest will be explanations of political communication based in rhetorical theory. Students will study historically important political speeches, debates, and advertisements. Emphasis will be on academic exploration of political rhetoric as human expression.

HUMA 308 - BUSINESS AND PROFESSIONAL SPEAKING  
Short Title: BUSINESS&PROFESSIONAL SPEAKING  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Practical application of communication theory with emphasis on oral presentations, interviewing and small group dynamics. The course will consider many aspects of the business and professional sphere as they pertain to public speaking and public discourse. Through a series of four or more in-class speeches, in-class group exercises, outside speaker presentations, reading, and writing, the course will serve as basis of instruction to ready the student for the public or private sphere. Class will focus particularly on aspects of business and professional leadership communication, and business and office communications both written and oral, toward a greater mastery of authentic organizational, management, competitive, and community discourse.
HUMA 309 - ARGUMENTATION AND DEBATE  
Short Title: ARGUMENTATION & DEBATE  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Designed to help students develop communication, analysis, and research skills through the construction and presentation of arguments on questions of fact, value, and policy. Debate assignments will explore current issues. The course emphasizes argumentation exercises and in-class debates.

HUMA 310 - ADVANCED FORENSICS PRACTICUM  
Short Title: ADVANCED FORENSICS PRACTICUM  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hour: 1  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course will focus on varsity intercollegiate speech and debate competition. Students will be required to prepare speeches and debate material for local, regional, and possibly national competitions. Participation in intercollegiate competition is mandatory. Instructor Permission Required. Repeatable for Credit.

HUMA 311 - THE RHETORIC OF LEADERSHIP  
Short Title: RHETORIC OF LEADERSHIP  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course will examine the relationship between leadership and communication within organizations. Explore leadership as a communication phenomenon. Emphasis will be on leadership as a set of relationships that manifest themselves in practices that arise from the implementation of theory. Historical and contemporary leadership and communication theory will be surveyed. An important outcome is an increased understanding of the relationship between communication and leadership. Cross-list: LEAD 320.

HUMA 312 - HISTORICAL AND INTELLECTUAL FOUNDATIONS OF LEADERSHIP  
Short Title: FOUNDATIONS OF LEADERSHIP  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: The focus of this course is to construct a historically informed philosophy of leadership that encompasses not just what leadership is but why it is valued, when it is legitimate, what its moral purpose is, and how it both shapes and reflects societal norms. Cross-list: LEAD 301.

HUMA 313 - THEORIES OF HUMAN COMMUNICATION  
Short Title: THEORIES OF HUMAN COMM  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course offers an introduction to the study of human communication and surveys explanations of human communication from a variety of perspectives. Theories of interpersonal, intercultural, nonverbal and mass communication are explored.

HUMA 314 - COMMUNICATION, TECHNOLOGY, AND CHANGE  
Short Title: COMMUNICATION/TECHNOLOGY/CHANG  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: New communication technologies have profoundly altered daily life and challenge the definition of some of humanity's basic societal structures. This course explores interpretations of this transformation from many fields to better understand the change we are currently witnessing and to ask what the human experience is gaining and losing.

HUMA 315 - COMMUNICATION LAW  
Short Title: COMMUNICATION LAW  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course will explore the historical development, contemporary state of and future direction of the relationship between law and communication. The central question is "What is the relation of the law to the human communication experience?"

HUMA 316 - RHETORIC OF POPULAR CULTURE  
Short Title: RHETORIC OF POPULAR CULTURE  
Department: Humanities Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: What really persuades people? Many scholars consider popular culture to be the most influential persuasive force in the everyday lives of contemporary humans. Music, television, social media, film, fashion, books, and other elements of popular culture comprise a tremendous amount of the universe of meaning in which the modern human resides. This course will explore these phenomena by looking at current and historical popular cultural artifacts and trends and various ways of understanding them from a variety of fields. Students will pursue an original study of a specific artifact or trend.
HUMA 317 - INTERPERSONAL COMMUNICATION
Short Title: INTERPERSONAL COMMUNICATION
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is a study of the historical and contemporary principles and theories of interdependent human communication. Communication skills which will increase interpersonal effectiveness will be studied, including verbal and nonverbal behavior, listening, assertiveness, and conflict resolution.

HUMA 320 - FROM PHYSICS LABS TO OIL FUTURES: SOCIAL STUDIES OF ENERGY
Short Title: SOCIAL STUDIES OF ENERGY
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How did whale oil become replaced by fossil fuels? What were the turning points in implementing electricity networks within urban centers? What is the role of markets and industries when producing such new energy infrastructures? This interdisciplinary course will trace ideas of energy in anthropology, science and technology studies, literary studies and environmental history, and investigate how energy production and consumption affects social life.

HUMA 321 - EUROPEAN WOMEN FILMMAKERS
Short Title: EUROPEAN WOMEN FILMMAKERS
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Filmmaking has celebrated its first hundred years. Women's contributions were significant and deserve to widen the film canon for all filmgoers. This course will concentrate on films by European women directors, taking into account aesthetic particularities, gender commitment, and post-feminist attempts. Importance will also be given to the contexts and conditions of women's film production. All films subtitled in English. Taught in English. Cross-list: GERM 321, HART 385, SWGS 358.

HUMA 322 - MARX, FREUD, EINSTEIN: FOREBEARERS OF MODERNITY
Short Title: MARX, FREUD, EINSTEIN
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Like no others, these three thinkers of the 19th and 20th century have influenced the intellectual, historical, social, and cultural development not only of Germany, but of the entire world. The course examines the works of these authors in the context of their own time as well as their continued importance in the present. Works by Brecht, Christa Wolf, Schnitzler, Kafka will also be considered. Taught in English. Cross-list: GERM 322.

HUMA 324 - BERLIN, RESIDENCE, METROPOLIS, CAPITAL
Short Title: BERLIN: RESIDENCE, METRO, CAPITAL
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course offers an introduction to German history, politics, and culture as mirrored in the history of the old and new German capital. Berlin has always been a city of contradictions: from imperial glamour to proletarian slums, from the Roaring Twenties to Hitler's seizure of power. Emerging from the ruins of WWII Berlin became both the capital of Socialism and the display window of the Free World. After the fall of the wall, Berlin is still looking for its role in the center of a reshaped Europe. Readings and discussions encompass fine arts and literature from the 18th century to the present, including film. Taught in English. Cross-list: GERM 324.

HUMA 325 - MODERN GERMAN WRITERS: KAFKA
Short Title: MODERN GERMAN WRITERS: KAFKA
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Goethe's vision of "world-literature" came true in the twentieth century. German authors, among them Kafka, transcended the confines of national traditions and redefined the concepts of literature and authorship in view of a modern globally dispersed audience. Topics may vary. Taught in English. Cross-list: GERM 325. Repeatable for Credit.
HUMA 328 - GERMAN ADAPTATIONS: TEXT TO FILM
Short Title: GERMAN ADAPTATIONS: TEXT–FILM
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: Prominent novels of the 20th century will be studied for their possibilities or impossibilities of rendition from print medium to cinematic medium. From the myriad of adaptations we will concentrate on Thomas Mann: Tod in Venedig; Franz Kafka: Das Schloss; Klaus Mann: Mehiito; Gunter Grass: Die Blechtrommel; H. Boll: Katharina Blum; Jurek Becker. Jacob der Lugner. All films are subtitled in English. Taught in English. Cross-list: GERM 328.

HUMA 329 - LITERATURE OF THE HOLOCAUST AND EXILE
Short Title: LIT OF HOLOCAUST & EXILE
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: Most of the authors from Germany and Austria, who were persecuted and fled into exile, used literature to search for meaning in life that apparently had been stripped of all meaning. Among these authors are the most distinguished writers of time, i.e. Th. and H. Mann, Brecht, Benjamin, Werfel, Doblin, J. Roth, S. Zweig, N. Sachs, Celan, Auslander. Taught in English. Cross-list: GERM 329.

HUMA 340 - WALTER BENJAMIN: AESTHETICS, HISTORY AND POLITICS
Short Title: WALTER BENJAMIN
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: Benjamin has been celebrated as a revolutionary Marxist, a theologian of Jewish Messianism, and as an essayist and literary critic. The course offers an introduction to his writings by way of situating them in the historical background of the Weimar Republic and the crises of European society on the eve of WWII. Taught in English. Cross-list: GERM 340.

HUMA 368 - CONCEIVING AND MISCONCEIVING THE MONSTROUS IN FICTION AND IN ART, IN MEDICINE AND IN BIOSCIENCE
Short Title: MONSTER
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: However various the forms of life, we draw boundaries between normal, not normal, and monstrous. From the Biosciences to the Arts, our conceptions of the "monstrous" illuminate our identity, perceptions, and fears. Priority for enrollment beyond the cap given to students also enrolled in ARTS 358. Cross-list: BIOC 368.

HUMA 371 - POVERTY, JUSTICE, AND HUMAN CAPABILITIES
Short Title: POVERTY, JUSTICE, CAPABILITIES
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: This course provides an overview of the study of poverty, justice, and human capabilities. The course considers theory and economic policy oriented towards improving human well-being in the US, Asia, Africa, and other regions. Readings address not just material deprivations but also gender, racial and ethnic disparities, health status, education, human rights, and political freedoms. To be considered for the course, please complete the brief questionnaire at pjhc.rice.edu/enrollment-questionnaire. Preference is given to those that have declared the PJHC minor. Formerly HUMA/SOCI 280. Instructor Permission Required. Cross-list: SOCI 371. Mutually Exclusive: Credit cannot be earned for HUMA 371 and HUMA 280/SOCI 280.

HUMA 372 - THE GERMAN FAIRY TALE: OLD AND NEW
Short Title: GERMAN FAIRY TALE: OLD & NEW
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: Discussion of several prototypes from the fairy-tale collection of the Brothers Grimm and the subsequent development of the "literary" fairy tale from Goethe and the Romantics to the 20th century. Taught in English. Cross-list: GERM 326.

HUMA 373 - NEW GERMAN FILM: HITLER'S CINEMATIC CHILDREN
Short Title: NEW GERM FILM: HITLER'S CINEMA
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: From the 1960 to 2000, Germany has developed a very distinct auteur cinema with independent filmmakers such as Fassbinder, Herzog, Wenders, Adlon, Trotta, Sander, Brueckner, Doerrie, Garnier, Tykwer, and others. The first 20 years of German film were oriented on coming to terms with the fascist past; the second 20 years focused on more contemporary issues. Film, critical reading and class discussion in English. All films are subtitled in English and will be assessed with podium technology. Taught in English. Cross-list: GERM 338, SWGS 361.
HUMA 401 - INDEPENDENT STUDY IN MEDICAL HUMANITIES RESEARCH
Short Title: IND STDY MEDICAL HUMA RESEARCH
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent Study with a faculty member at the Texas Medical Center focusing on a medical humanities research topic. Students spend up to 10 hours/week at TMC and are graded on evaluations submitted by faculty supervisors. Instructor Permission Required. Repeatable for Credit.

HUMA 402 - HEALTH, HUMANISM, AND SOCIETY SCHOLARS INTERNSHIP 1
Short Title: MEDICAL HUMANITIES INTERNSHIP1
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Continuation of HUMA 401; part 1 of a year-long sequence. Department Permission Required. Repeatable for Credit.

HUMA 403 - HEALTH, HUMANISM, AND SOCIETY SCHOLARS INTERNSHIP 2
Short Title: MEDICAL HUMANITIES INTERNSHIP2
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Continuation of HUMA 402; part 2 of a year-long sequence. Department Permission Required. Repeatable for Credit.

HUMA 404 - LAW, JUSTICE, AND SOCIETY SCHOLARS INTERNSHIP 1
Short Title: LAW INTERNSHIP 1
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The Office of the Dean of Humanities and relevant faculty match students individually with one of the variety of internships related to law. Students will conduct research or related activities under guidance of on-site supervisor and the section instructor of record. Continuation of HUMA 404; part 2 of a year-long sequence. Department Permission Required. Repeatable for Credit.

HUMA 405 - LAW, JUSTICE AND SOCIETY SCHOLARS INTERNSHIP 2
Short Title: LAW INTERNSHIP 2
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The Office of the Dean of Humanities and relevant faculty match students individually with one of the variety of internships related to law. Students will conduct research or related activities under guidance of on-site supervisor and the section instructor of record. Continuation of HUMA 404; part 2 of a year-long sequence. Department Permission Required. Repeatable for Credit.

HUMA 406 - ARTS AND CULTURE INTERNSHIP 1
Short Title: ARTS AND CULTURE INTERNSHIP 1
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The Office of the Dean of Humanities and relevant faculty match students individually with one of a variety of projects in the area of arts/museums/public culture. Students conduct research or related activities under guidance of on-site supervisor and section instructor of record. Will be continued as HUMA 407 in Spring. Department Permission Required. Repeatable for Credit.

HUMA 407 - ARTS AND CULTURE INTERNSHIP 2
Short Title: ARTS AND CULTURE INTERNSHIP 2
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The Office of the Dean of Humanities and relevant faculty match students individually with one of a variety of projects in the area of arts/museums/public culture. Students conduct research or related activities under guidance of on-site supervisor and section instructor of record. Will be continued as HUMA 407 in Spring. Department Permission Required. Repeatable for Credit.

HUMA 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Humanities Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Seminar
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.
HUMA 498 - INDEPENDENT STUDY  
**Short Title:** INDEPENDENT STUDY  
**Department:** Humanities Division  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hours:** 1-3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Independent Study. Instructor Permission Required.

HUMA 499 - RESEARCH IN THE HUMANITIES  
**Short Title:** RESEARCH IN THE HUMANITIES  
**Department:** Humanities Division  
**Grade Mode:** Standard Letter  
**Course Type:** Research  
**Credit Hours:** 1-3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** For advanced independent research in a humanities subject. Student must arrange mentorship with a faculty member and seek permission from the Dean of Humanities office, then a section of this course can be opened for the fall, spring, or summer. Department Permission Required. Repeatable for Credit.

**Humanities Research Center (HURC)**

HURC 101 - JETT-MOELLER RESEARCH INTRODUCTION  
**Short Title:** JETT-MOELLER RESEARCH INTRO  
**Department:** Humanities Research Center  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** The course will provide foundational research skills to a select group (7) of freshman students - equivalent of Century Scholars. Instruction will be provided by faculty and Fondren Library staff, under the coordination of the Office of Fellowships & Undergraduate Research and Humanities Research Center. Department Permission Required. Cross-list: UNIV 101. Repeatable for Credit.

HURC 210 - INTRODUCTION TO POSTHUMANISM  
**Short Title:** INTRODUCTION TO POSTHUMANISM  
**Department:** Humanities Research Center  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Recent advances in sciences and humanities show that the line between the human and non-human has become blurred. This interdisciplinary course will ready fictional, scientific, and philosophical texts to challenge traditional representations of the human by finding the human already enmeshed in or produced through relationships with technology, the animal, and the environment.

HURC 211 - 19TH CENTURY PSYCHOLOGICAL FICTION AND MEDICINE  
**Short Title:** 19c PSYCH FICTION & MEDICINE  
**Department:** Humanities Research Center  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** The Romantic and Victorian periods saw debates among literary and medical authors over the nature, function, and location of consciousness. This course explores these debates to learn the history of a literary and medical movement, critically engage with present-day debates about these texts, and reflect on the changing relationship between sciences and humanities in general.

HURC 213 - THE DOCTOR IS ON  
**Short Title:** THE DOCTOR IS ON  
**Department:** Humanities Research Center  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Fictionalized characters such as House, Doogie Houser, and Hawkeye Pierce reinforce stereotypes as much as they challenge assumptions and (re)define cultural attitudes toward doctors (and the medical profession in general). This course examines the portrayal of healthcare professionals in television, fiction and film to discuss philosophical and ethical questions as well as the modern medical apparatus from biopolitical and social systems perspectives.

HURC 238 - SPECIAL TOPICS  
**Short Title:** SPECIAL TOPICS  
**Department:** Humanities Research Center  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum, Lecture, Seminar  
**Credit Hours:** 1-4  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
HURC 245 - INTERDISCIPLINARY APPROACHES
Short Title: INTERDISCIPLINARY APPROACHES
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Interdisciplinary study of cultural forms as diverse as poetry, advertisement, and film as well as topical interdisciplinary courses on literature and the arts, psychology, cultural studies, film media, anthropology, social theory, philosophy, law, and ethics. Taught by English Department Ph.D. candidates. Cross-list: ENGL 245. Repeatable for Credit.

HURC 299 - ENGLISH LITERATURE AND THE PUBLIC HUMANITIES
Short Title: ENGLISH LIT/PUBLIC HUMANITIES
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, students learn to apply critical humanistic methods to issues of public importance, especially in the Houston area. Participants study necessary applications of humanistic inquiry to civic life and contribute to this work themselves. Consult the Humanities Research Center or the English department for more information. Cross-list: ENGL 299. Repeatable for Credit.

HURC 301 - HRC UNDERGRADUATE FELLOWSHIP
Short Title: HRC UNDERGRADUATE FELLOWSHIP
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The HRC Undergraduate Fellowship requires students to attend a series of workshops and lectures. Fellow will also conduct research with HRC faculty. Contact HRC to apply. Department Permission Required. Repeatable for Credit.
Course URL: www.hrc.rice.edu/undergraduate.aspx

HURC 302 - UNDERSTANDING ENERGY: ENERGY LITERACY AND CIVICS
Short Title: UNDERSTANDING ENERGY
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Energy is a foundational driver of human development. Energy impacts our economy, politics, culture, and environment. In this course, students will learn the fundamentals of energy in the context of broader systems and will be asked to think critically about how and why we rely on particular energy resources.
Course URL: understandingenergy.rice.edu

HURC 303 - HRC RICE SEMINAR UNDERGRADUATE COURSE
Short Title: HRC RICE SEMINAR COURSE
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: HURC Rice Seminar undergraduate course requires students to attend a series of lectures by scholars studying the historical and modern day issues of the year’s Rice Seminar topic and participate in monthly discussion groups. Repeatable for Credit.

HURC 304 - HRC SUPERVISED RESEARCH
Short Title: HRC SUPERVISED RESEARCH
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course designed for students who want to pursue intensive semester-long study of a particular topic that is the specialty of visiting faculty or postdoctoral fellow. Department Permission Required.

HURC 305 - URBAN SPACES, MAPPED PLACES
Short Title: URBAN SPACES, MAPPED PLACES
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will challenge students to understand what information about a city can be analyzed and conveyed via cartography. Students will acquire mapping skills using CartoDB, Mapbox and Leaflet and will examine historical cartography via Adobe Illustrator and qGIS. Readings will include urban theory, representation in cartography, critical debates on big data and social media, and works of fiction that involve mapping and the city.

HURC 306 - HEALTH AND HUMANITIES MASTER CLASS
Short Title: HEALTH AND HUMANITIES MC
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Faculty from Rice University, University of Texas School of Public Health, and University of Houston, as well as practitioners in the Texas Medical Center, will lead class discussions on different aspects of the health industry today. The class will meet Tuesday evenings at the McGovern Museum of Health and Medical Science and at Rice Thursdays. Students will read essays, case studies, and fiction or watch films to prepare for each discussion. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 506. Mutually Exclusive: Credit cannot be earned for HURC 306 and HURC 506.
HURC 307 - CRITICAL HUMANITIES - HEALTH AND BODY
Short Title: CRITICAL HUMA - HEALTH & BODY
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course comprises six modules co-taught by faculty and medical professionals. Modules will address DNA and genetics, changes in medical education, the pathologization of difference, the process of dying, disability and ability, the doctor-patient relationship, and more.

HURC 308 - ADVANCED STUDY IN MUSEUMS AND HERITAGE: ARTS OF ANCIENT MEDITERRANEAN AT THE MENIL COLLECTION
Short Title: ADV STUDY IN MUSEUMS/HERITAGE
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course consists of a series of sessions with Rice faculty and outside speakers that focus on specific texts to explore important critical questions and debates. There will be 14 Masterclass sessions per term. At the end of the year; the students will present their own work in a symposium. Instructor Permission Required. Repeatable for Credit.

HURC 310 - CINEMATICS: THE ECOLOGICAL PARADIGM
Short Title: CINEMATICS: ECOLOGIC PARADigm
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course introduces the study of film form in relation to ecological experience. Topics include screen space, sound effects, camera movements, and the many ways these can be related to produce meaning. Students explore how film aesthetics “think” through social and species coexistence, life, death, technology, globality, or even “galacticality,” with or without environmentalism.

HURC 311 - PUBLIC HUMANITIES MASTERCLASS
Short Title: PUBLIC HUMANITIES MASTERCLASS
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course explores the place of humanities in the public sphere, presenting tools for critical assessment. Undergraduate and graduate students from across campus form research cohorts with Rice faculty, outside scholars, and members of local institutions. Graduate students serve as mentors for undergraduates and will be assessed on papers and the class sessions they design and lead. Graduate/Undergraduate Equivalency: HURC 511. Mutually Exclusive: Credit cannot be earned for HURC 311 and HURC 511. Repeatable for Credit.

HURC 341 - MUSEUMS AND HERITAGE: EXHIBITING ART, EXHIBITING CULTURE
Short Title: MUSEUMS AND HERITAGE
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A wide-ranging introduction to museum studies with a particular focus on the collection and exhibition of cultural heritage materials. We will examine how heritage objects are displayed and represented in museums of art, natural historical history, and heritage. Topics include looking and ethics of collecting, policies of display, changing roles for museums; exhibition design and curatorial practice. Cross-list: ANTH 341.

HURC 361 - THE HUMANITIES OF CARE & END OF LIFE
Short Title: THE HUMANITIES OF CARE
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Pairing the perspectives of medicine, bioethics, and the medical humanities with thematic case studies in art, literature, cinema, and visual culture, the class examines the humanities of care and the end of life. Cross-list: RELI 361.

HURC 401 - MASTER CLASS IN LITERARY STUDIES
Short Title: MASTER CLASS CULTURAL HERITAGE
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course consists of a series of sessions with Rice faculty and outside speakers that focus on specific texts to explore important critical questions and debates. There will be 14 Masterclass sessions per term. At the end of the year; the students will present their own work in a symposium. Instructor Permission Required. Repeatable for Credit.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hour</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HURC 402</td>
<td>Digital History Masterclass - Undergraduate</td>
<td>HURC 402</td>
<td>Humanities Research Center</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Lecture</td>
<td>1</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>This course considers what it means for poets to seek meaning and inspiration in the world of the visual arts. Students will visit Houston art venues to examine objects of cultural heritage, seek insight about the practice of making, preserving and presenting art with curators and conservators, and will have an opportunity to work with two practicing artists.</td>
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<tr>
<td>HURC 403</td>
<td>Sawyer Seminar: Platforms for Knowledge in a Wide Web of Worlds</td>
<td>Sawyer Seminar</td>
<td>Humanities Research Center</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>The seminar explores digital knowledge platforms (e-learning, publishing, collaborative research, crowd-sourced) that uphold our academic mission to disseminate knowledge by enabling teachers, students and researchers to discover, analyze, and share information without regard to barriers of space and time. These same platforms, however, raise questions about expertise, access, metrics, power shifts, and academic autonomy. Department Permission Required. Repeatable for Credit.</td>
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<tr>
<td>HURC 404</td>
<td>The Poet and the Museum</td>
<td>The Poet and the Museum</td>
<td>Humanities Research Center</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>1</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>This course will introduce graduate and upper-level undergraduate students to scholarly publishing, exploring its history, functions, processes and possible futures. It will feature guest lectures from those involved in publishing at Rice and discussions of issues such as open access, peer review, authorship, audience, and preservation. Students will be trained in conducting peer review, performing copy editing, and producing and promoting academic publications. Graduate/Undergraduate Equivalency: HURC 607. Mutually Exclusive: Credit cannot be earned for HURC 407 and HURC 607. Repeatable for Credit.</td>
</tr>
<tr>
<td>HURC 405</td>
<td>Diachronic Mapping: The Rice University Campus</td>
<td>Diachronic Mapping</td>
<td>Humanities Research Center</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Lecture</td>
<td>1</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>The objective of this course is to collaboratively design a digital atlas of the Rice Campus where visual archives, locatable in time and space, can be embedded. The evolution of the campus will be presented by historians and training sessions in ArcGIS, Rhino, and Shared Shelf will be conducted by specialists. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 605. Mutually Exclusive: Credit cannot be earned for HURC 405 and HURC 605. Repeatable for Credit.</td>
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<tr>
<td>HURC 406</td>
<td>Masterclass in Publishing, Editing, Presenting and Public Writing</td>
<td>Masterclass in Publishing</td>
<td>Humanities Research Center</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Lecture</td>
<td>1</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>Offers undergraduate and graduate students insight into the public life of writing with particular attention to academic and literary publishing, editing, and presenting. Sessions organized around topics in these areas and visits with experts (agents, editors, authors, presenters, etc.) with experience in publishing, and creating series, festivals, and other forms of presentation. Meets 3 times per semester, helps develop internship possibilities for participants, and develop strategies for increasing the presentation of public writing at Rice. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 606. Mutually Exclusive: Credit cannot be earned for HURC 406 and HURC 606. Repeatable for Credit.</td>
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<tr>
<td>HURC 407</td>
<td>Introduction to Scholarly Publishing</td>
<td>Intro to Scholarly Publishing</td>
<td>Humanities Research Center</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>This course will introduce graduate and upper-level undergraduate students to scholarly publishing, exploring its history, functions, processes and possible futures. It will feature guest lectures from those involved in publishing at Rice and discussions of issues such as open access, peer review, authorship, audience, and preservation. Students will be trained in conducting peer review, performing copy editing, and producing and promoting academic publications. Graduate/Undergraduate Equivalency: HURC 607. Mutually Exclusive: Credit cannot be earned for HURC 407 and HURC 607. Repeatable for Credit.</td>
</tr>
</tbody>
</table>
HURC 408 - FUTURES OF THE BOOK
Short Title: FUTURES OF THE BOOK
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: From an ongoing interest in the book as a physical object, to the exploration of its potentials expanding into a four-dimensional digital realm, to rapidly changing demands for the storage and retrieval of knowledge, this master class will provide a platform to engage experts from various disciplines in a debate on the shifting futures of the book. Instructor Permission Required. Cross-list: ARCH 456. Graduate/Undergraduate Equivalency: HURC 608. Mutually Exclusive: Credit cannot be earned for HURC 408 and HURC 608.

HURC 423 - HRC PRACTICUM IN CULTURAL HERITAGE
Short Title: PRACTICUM IN CULTURAL HERITAGE
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This research-based course is conducted in partnership with cultural heritage institutions in Houston. Qualified and advanced students work 10 hours/week on site with curators, artists, archivists, center directors, and others to develop projects in specific research areas. Students meet regularly with instructor to discuss research and to present work at an end of semester symposium. Instructor Permission Required. Repeatable for Credit.

HURC 430 - HRC PRACTICUM IN HEALTH HUMANITIES
Short Title: PRACTICUM IN HEALTH HUMANITIES
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This research-based course is conducted in partnership with health institutions in Houston. Qualified and advanced students work 10 hours/week on site with health professionals, archivists, center directors, and others to develop projects in specific research areas. Students meet regularly with instructor to discuss research and to present work at an end of semester symposium. Instructor Permission Required. Repeatable for Credit.

HURC 432 - SPATIAL HUMANITIES
Short Title: SPATIAL HUMANITIES
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will trace the evolution of a city as it existed and as it was imagined. Views, historic maps, and ground-floor plans will be located in both time and space while their associated visual and spatial data will be integrated across digital platforms. Graduate students enroll in an additional bootcamp and mentor undergraduate students. Graduate/Undergraduate Equivalency: HURC 632. Mutually Exclusive: Credit cannot be earned for HURC 432 and HURC 632. Repeatable for Credit.

HURC 450 - SPATIAL HUMANITIES MASTERCLASS
Short Title: SPATIAL HUMANITIES MASTERCLASS
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores current developments in humanistic practices and theories of cartography and 3-D modeling. Undergraduates and graduate students from across campus form research cohorts with Rice faculty, external scholars, and practitioners. Each course assigns credit hours based on the number of guess speakers and class meetings on a semester-by-semester basis. Repeatable for Credit.

HURC 480 - HURC SUPERVISED RESEARCH
Short Title: HRC SUPERVISED RESEARCH
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course designed for students who want to pursue intensive semester-long study of a particular topic under the supervision of a faculty member. Instructor Permission Required. Repeatable for Credit.

HURC 501 - ENVIRONMENT, CULTURE, LIMITS: THINKING THROUGH THE LONG ANTHROPOCENE IN THE UNITED STATES
Short Title: MELLON GRADUATE SEMINAR I
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An advanced graduate seminar treating the history of religions and human sexualities within American culture from the colonial period to the present, with a special focus on how sexuality functions as both a focus of religious experience and expression and the privileged object of moral discipline and institutional anxiety. Instructor Permission Required. Repeatable for Credit.
Course URL: www.hrc.rice.edu/mellonseminars.aspx
HURC 502 - HRC MELLON RESEARCH SEMINAR
Short Title: MELLON SEM: THE QUANTIFIED SELF
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We live in the era of big data. This seminar will explore how the digital residue of our daily lives is reshaping our understanding of selfhood, social relationships, and human behavior. We will develop critical frameworks for what it means to quantify the self in the 21st century. Instructor Permission Required. Repeatable for Credit.
Course URL: www.hrc.rice.edu/mellonseminars.aspx

HURC 506 - HEALTH AND HUMANITIES MASTER CLASS
Short Title: HEALTH AND HUMANITIES MC
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Faculty from Rice University, University of Texas School of Public health, and University of Houston, as well as practitioners in the Texas Medical Center, will lead class discussions on different aspects of the health industry today. The class will meet Tuesday evenings at the McGovern Museum of Health and Medical Science and at Rice Thursdays. Students will read essays, case studies, and fiction or watch films to prepare for each discussion. Graduate students will have additional assignments. Graduate students will not write 5 papers required of undergraduates and may opt out of 3 lectures and the corresponding discussions. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 306. Mutually Exclusive: Credit cannot be earned for HURC 506 and HURC 306.

HURC 508 - ADVANCED STUDY IN MUSEUMS AND HERITAGE: ARTS OF ANCIENT MEDITERRANEAN AT THE MENIL COLLECTION
Short Title: ADV STUDY IN MUSEUMS/HERITAGE
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces students to advanced ethical, legal and practical issues facing museums as they acquire and maintain collections from areas prone to looting and destruction, especially the Ancient Mediterranean. We will examine the civic engagement and operation of the Menil Collection through close, on-site archival and object study. Cross-list: HART 540. Graduate/Undergraduate Equivalency: HURC 308. Mutually Exclusive: Credit cannot be earned for HURC 508 and HURC 308.

HURC 511 - PUBLIC HUMANITIES MASTERCLASS
Short Title: PUBLIC HUMANITIES MASTERCLASS
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course explores the place of humanities in the public sphere, presenting tools for critical assessment. Undergraduate and graduate students from across campus form research cohorts with Rice faculty, outside scholars, and members of local institutions. Graduate students serve as mentors for undergraduates and will be assessed on papers and the class sessions they design and lead. Graduate/Undergraduate Equivalency: HURC 311. Mutually Exclusive: Credit cannot be earned for HURC 511 and HURC 311. Repeatable for Credit.

HURC 601 - GRADUATE MASTERCLASS
Short Title: RICE SEMINARS
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is a discussion of issues and methods associated with HURC 401. Instructor Permission Required. Repeatable for Credit.

HURC 602 - RICE SEMINARS
Short Title: RICE SEMINARS
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Year long intellectual inquiry during which faculty and grad students develop, present, and discuss original scholarship that explores aspects of the seminar’s annual topic. Instructor Permission Required. Repeatable for Credit.

HURC 604 - INTRODUCTION TO DIGITAL HUMANITIES
Short Title: INTRO TO DIGITAL HUMANITIES
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces students to current digital humanities projects as well as tools for approaching humanities research in new ways. Faculty from across the humanistic disciplines will address trends in this expanding field and guide hands-on workshops. Sessions will also focus on the job market and grant opportunities. Repeatable for Credit.
HURC 605 - DIACHRONIC MAPPING: THE RICE UNIVERSITY CAMPUS
Short Title: DIACHRONIC MAPPING
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: The objective of this course is to collaboratively design a digital atlas of the Rice Campus where visual archives, locatable in time and space, can be embedded. The evolution of the campus will be presented by historians and training sessions in ArcGIS, Rhino, and Shared Shelf will be conducted by specialists. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 405. Mutually Exclusive: Credit cannot be earned for HURC 605 and HURC 405. Repeatable for Credit.

HURC 606 - MASTERCLASS IN PUBLISHING, EDITING, PRESENTING AND PUBLIC WRITING
Short Title: MASTERCLASS IN PUBLISHING
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: Offers undergraduate and graduate students insight into the public life of writing with particular attention to academic and literary publishing, editing, and presenting. Sessions organized around topics in these areas and visits with experts (agents, editors, authors, presenters, etc.) with experience in publishing, and creating series, festivals, and other forms of presentation. Meets 3 times per semester, helps develop internship possibilities for participants, and develop strategies for increasing the presentation of public writing at Rice. Instructor Permission Required. Graduate/Undergraduate Equivalency: HURC 406. Mutually Exclusive: Credit cannot be earned for HURC 606 and HURC 406. Repeatable for Credit.

HURC 607 - INTRODUCTION TO SCHOLARLY PUBLISHING
Short Title: INTRO TO SCHOLARLY PUBLISHING
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: This course will introduce graduate and upper-level undergraduate students to scholarly publishing, exploring its history, functions, processes and possible futures. It will feature guest lectures from those involved in publishing at Rice and discussions of issues such as open access, peer review, authorship, audience, and preservation. Students will be trained in conducting peer review, performing copy editing, and producing and promoting academic publications. Graduate/Undergraduate Equivalency: HURC 407. Mutually Exclusive: Credit cannot be earned for HURC 607 and HURC 407.

HURC 608 - FUTURES OF THE BOOK
Short Title: FUTURES OF THE BOOK
Department: Humanities Research Center
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: From an ongoing interest in the book as a physical object, to the exploration of its potentials expanding into a four-dimensional digital realm, to rapidly changing demands for the storage and retrieval of knowledge, this master class will provide a platform to engage experts from various disciplines in a debate on the shifting futures of the book. Instructor Permission Required. Cross-list: ARCH 656. Graduate/Undergraduate Equivalency: HURC 408. Mutually Exclusive: Credit cannot be earned for HURC 608 and HURC 408.

HURC 632 - SPATIAL HUMANITIES
Short Title: SPATIAL HUMANITIES
Department: Humanities Research Center
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: This course will trace the evolution of a city as it existed and as it was imagined. Views, historic maps, and ground-floor plans will be located in both time and space while their associated visual and spatial data will be integrated across digital platforms. Graduate students enroll in an additional bootcamp and mentor undergraduate students. Graduate/Undergraduate Equivalency: HURC 432. Mutually Exclusive: Credit cannot be earned for HURC 632 and HURC 432. Repeatable for Credit.

Italian Language and Culture (ITAL)

ITAL 106 - ACCELERATED FIRST YEAR ITALIAN
Short Title: ACCELERATED FIRST YEAR ITALIAN
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.

Course Level: Undergraduate Lower-Level

Description: Alternative first year Italian for students who have already completed two semesters of French or Spanish. This is an intensive course covering the equivalents of ITAL 141 and ITAL 142. Students will be prepared for ITAL 263 upon completion of the course. Mutually Exclusive: Credit cannot be earned for ITAL 106 and ITAL 141/ITAL 142.
ITAL 141 - FIRST YEAR ITALIAN I
Short Title: FIRST YEAR ITALIAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Italian (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Italian. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Mutually Exclusive: Credit cannot be earned for ITAL 141 and ITAL 101/ITAL 106/ITAL 222.
Course URL: clicitalian.blogs.rice.edu

ITAL 142 - FIRST YEAR ITALIAN II
Short Title: FIRST YEAR ITALIAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ITAL 141
Description: Continuation of ITAL 141. Development of interactional competence in Italian (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Italian. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for ITAL 142 and ITAL 106/ITAL 262.
Course URL: clicitalian.blogs.rice.edu

ITAL 222 - AP/OTH CREDIT IN ITALIAN LANGUAGE
Short Title: AP/OTH CREDIT ITALIAN LANGUAGE
Department: Cntr Lang & Intercultural Comm
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Credit cannot be earned for ITAL 222 and ITAL 101/ITAL 141.
Course URL: clicitalian.blogs.rice.edu

ITAL 263 - SECOND YEAR ITALIAN I
Short Title: SECOND YEAR ITALIAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ITAL 142
Description: Continuation of ITAL 142. Development of interactional competence in Italian (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Italian. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for ITAL 263 and ITAL 201.
Course URL: clicitalian.blogs.rice.edu

ITAL 264 - SECOND YEAR ITALIAN II
Short Title: SECOND YEAR ITALIAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ITAL 263
Description: Continuation of ITAL 263. Development of interactional competence in Italian (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Italian. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for ITAL 264 and ITAL 202.
Course URL: clicitalian.blogs.rice.edu

ITAL 301 - ADVANCED ITALIAN I
Short Title: ADVANCED ITALIAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ITAL 264
Description: This course helps students develop an ADVANCED level of proficiency in Italian through the analysis and use of the target language in the context of specific topics of interest that will vary.

ITAL 302 - ADVANCED ITALIAN II
Short Title: ADVANCED ITALIAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ITAL 301
Description: This course helps students develop an ADVANCED level of proficiency in Italian through the analysis and use of the target language in the context of specific topics of interest that will vary. Repeatable for Credit.
Japanese (JAPA)

JAPA 141 - FIRST YEAR JAPANESE I
Short Title: FIRST YEAR JAPANESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Japanese (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Japanese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Mutually Exclusive: Credit cannot be earned for JAPA 141 and JAPA 101/JAPA 222.

Course URL: clicjapanese.blogs.rice.edu

JAPA 142 - FIRST YEAR JAPANESE II
Short Title: FIRST YEAR JAPANESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): JAPA 141
Description: Continuation of JAPA 141. Development of interactional competence in Japanese (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Japanese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for JAPA 142 and JAPA 262.

Course URL: clicjapanese.blogs.rice.edu

JAPA 222 - AP/OTH CREDIT IN JAPANESE LANGUAGE
Short Title: AP/OTH CREDIT JAPANESE LANG.
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Credit cannot be earned for JAPA 222 and JAPA 101/JAPA 141.

JAPA 263 - SECOND YEAR JAPANESE I
Short Title: SECOND YEAR JAPANESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): JAPA 142
Description: Continuation of JAPA 142. Development of interactional competence in Japanese (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Japanese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for JAPA 263 and JAPA 201.

Course URL: clicjapanese.blogs.rice.edu

JAPA 264 - SECOND YEAR JAPANESE II
Short Title: SECOND YEAR JAPANESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): JAPA 263
Description: Continuation of JAPA 263. Development of interactional competence in Japanese (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Japanese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for JAPA 264 and JAPA 202.

Course URL: clicjapanese.blogs.rice.edu

JAPA 301 - THIRD YEAR JAPANESE I
Short Title: THIRD YEAR JAPANESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): JAPA 264
Description: Continuation of JAPA 264. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.

Course URL: clicjapanese.blogs.rice.edu
JAPA 302 - THIRD YEAR JAPANESE II
Short Title: THIRD YEAR JAPANESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): JAPA 301
Description: Continuation of JAPA 301. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.
Course URL: clicjapanese.blogs.rice.edu

JAPA 398 - JAPANESE TEACHING PRACTICUM
Short Title: JAPANESE TEACHING PRACTICUM
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course gives students with advanced proficiency in Japanese the opportunity to acquire teaching experience in the tutorial format. Includes regular meetings with supervising faculty member. Instructor Permission Required. Repeatable for Credit.

JAPA 399 - JAPANESE TEACHING PRACTICUM
Short Title: JAPANESE TEACHING PRACTICUM
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course gives students with advanced proficiency in Japanese the opportunity to acquire teaching experience in tutorial format. Includes regular meetings with supervising faculty member. Instructor Permission Required. Repeatable for Credit.

Jewish Studies (JWST)

JWST 121 - ISRAEL: LANGUAGE AND CULTURE II
Short Title: ISRAEL: LANGUAGE AND CULTURE II
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course is a continuation of JWST 120, but is open to any student who can read basic Hebrew. It will explore Israeli culture through literature, music, current events, and film.

JWST 238 - SPECIAL TOPICS - BECOMING AMERICANS: THE JEWISH IMMIGRANT EXPERIENCE IN THE UNITED STATES
Short Title: SPECIAL TOPICS
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Lecture/Laboratory, Internship/Practicum
Credit Hours: 3-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: SPECIAL TOPIC FOR SPRING 2017: Becoming Americans - This course examines the history of the American Jewish immigrant experience from colonial times to the present as a means of trying to understand how newcomers navigate the processes of adaptation, acculturation, and integration into American life. We will travel to Galveston and New York City to visit significant historical sites and immigrant communities. Instructor Permission Required. Repeatable for Credit.

JWST 301 - JEWISH FOOD: RELIGION, CULTURE, AND CONSUMPTION FROM THE BIBLE TO BAGELS
Short Title: JEWISH FOOD
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: "We are what we eat," the saying goes. But is that true? How do choices and practices connected to eating define us and our communities? Our study of Jewish food traditions from the Bible to the present will engage this and other important issues related to religion and identity politics. Repeatable for Credit.

JWST 317 - JEWISH GRAPHIC NOVEL
Short Title: JEWISH GRAPHIC NOVEL
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine contemporary works that combine image and text to depict Jewish history, culture, community, and identity in the form of the graphic novel.
JWST 318 - ISRAELI WOMEN WRITERS
Short Title: ISRAELI WOMEN WRITERS
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In the last 25 years there has been an explosion of women's poetry and fiction in Israel. In this course we will explore Israeli women's writing since the inception of the state of Israel and examine what the work of contemporary women writers means for Israeli culture, society, and politics. Cross-list: SWGS 318.

JWST 348 - SEX AND GENDER IN MODERN JEWISH CULTURE
Short Title: SEX & GENDER IN JEWISH CULTURE
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How has Jewish identity historically been constructed as gendered, and how has that affected Jewish self-perception and representation as well as the representations of others? This course explores the intersection between gender and Jewishness from several different historical and cultural perspectives, using literature, film, and philosophy. Cross-list: SWGS 348. Mutually Exclusive: Credit cannot be earned for JWST 348 and RELI 347/SWGS 347.

JWST 351 - HOLOCAUST REPRESENTATION IN LITERATURE, ART, AND FILM
Short Title: HOLOCAUST REPRESENTATION
Department: Jewish Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will address the representation of the Holocaust in literature, art, and film. Is the Holocaust representable? What literary and artistic techniques and devices have been employed to represent the unrepresentable? Through Holocaust narrative, poetry, fiction, art, memorials, documentary and narrative film, we will explore these questions. Cross-list: FILM 351. Mutually Exclusive: Credit cannot be earned for JWST 351 and FILM 349/RELI 349.

Kinesiology (KINE)

KINE 120 - SCIENTIFIC FOUNDATIONS OF KINESIOLOGY
Short Title: FOUNDATIONS OF KINESIOLOGY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Freshman. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to studies in the areas of human movement: anatomy and physiology, exercise physiology, biomechanics, motor learning and control, and psychological aspects of sport and exercise.

KINE 300 - HUMAN ANATOMY
Short Title: HUMAN ANATOMY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to human anatomy including concepts of function.

KINE 301 - HUMAN PHYSIOLOGY
Short Title: HUMAN PHYSIOLOGY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will address the fundamental principles of human physiology at the cell, tissue, organ, organ system, and organism levels. Emphasis will be placed on mechanisms of function and homeostasis as achieved through the coordinated function of homeostatic control systems.

KINE 302 - BIOMECHANICS
Short Title: BIOMECHANICS
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 300
Description: An introduction to the discipline of mechanics as it applies to biological systems. Primary emphasis is placed on humans and other vertebrate species. Topics covered include the kinematics and kinetics of movement, material and functional properties of musculoskeletal tissues and the integration of musculoskeletal function from molecules and cells to whole animals. Recommended prerequisite(s): KINE 321.
KINE 310 - PSYCHOLOGICAL ASPECTS OF SPORT AND EXERCISE
Short Title: PSYC OF SPORT & EXERCISE
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examine the psychological foundations that underlie sport and exercise participation. Recommended Prerequisite(s): PSYC 101.

KINE 311 - MOTOR LEARNING
Short Title: MOTOR LEARNING
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Designed to provide a basic understanding of the theories related to skill acquisition, development, and movement. Learners develop an understanding of the cognitive, behavioral, and neurological concepts needed to become skilled at movements. The course will also incorporate laboratory experiences in the physiological, neurological, and psychological factors of human movement.

KINE 319 - STATISTICS FOR THE HEALTH PROFESSIONAL
Short Title: STATS FOR HEALTH PROFESSIONAL
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics include displaying and describing data, the normal curve, regression, statistical inference including parametric and non-parametric analyses, and hypothesis testing. Students also have the opportunity to analyze data using SPSS and Excel software.

KINE 321 - EXERCISE PHYSIOLOGY
Short Title: EXERCISE PHYSIOLOGY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 300 and KINE 301
Corequisite: KINE 323
Description: This course examines the acute and chronic effects of exercise on physiological functions. Topics include nutrition, energy transfer, fatigue, metabolism, disease, aging, preventative medicine, genetics, elite performance, ergogenic aids, exercise testing, and specificity of training. Must register for co-req course KINE 323 also.

KINE 323 - EXERCISE PHYSIOLOGY LABORATORY
Short Title: EXERCISE PHYSIOLOGY LABORATORY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 300 and KINE 301
Corequisite: KINE 321
Description: This course introduces the concepts and assessment techniques used to quantify physiological function. Laboratory experiences will require students to acquire and apply knowledge of systems physiology to make direct functional assessments using themselves as subjects. A major emphasis will be placed on metabolism and energy transfer in the body. Cardiovascular, musculoskeletal, and central nervous system function will also be covered. Individual body composition, musculoskeletal levers, metabolic power and fitness, and neuromuscular control and coordination. Must register for co-req course KINE 321 also.

KINE 326 - EXERCISE EPIDEMIOLOGY
Short Title: EXERCISE EPIDEMIOLOGY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course provides an epidemiological foundation to exercise and physical activity research related to public health. The course is designed to present evidence of the positive effects of physical activity and exercise in preventing disease, disability, and increasing quality of life. Recommended Prerequisite(s): KINE 321 or KINE 323.

KINE 351 - HUMAN ANATOMY LAB
Short Title: HUMAN ANATOMY LAB
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Kinesiology. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 300
Description: Study of the pro-sections and cadavers are used for learning and understanding human anatomy in a gross anatomy examination laboratory at BCM in the Texas Medical Center. Hands-on examination of human anatomy in this course provides supplemental practical experience for lectures in KINE 300, Human Anatomy courses.
KINE 375 - SPORTS MEDICINE INTERNSHIP
**Short Title:** SPORTS MEDICINE INTERNSHIP
**Department:** Kinesiology
**Grade Mode:** Standard Letter
**Course Type:** Internship/Practicum
**Credit Hours:** 1-3
**Restrictions:** Students with a class of Junior or Senior may not enroll. Enrollment is limited to students with a major in Kinesiology. Graduate level students may not enroll.
**Course Level:** Undergraduate Upper-Level
**Description:** Internship experience for upperclassmen in the sports medicine concentration. Department Permission Required. Repeatable for Credit.

KINE 403 - SPORT NUTRITION
**Short Title:** SPORTS NUTRITION
**Department:** Kinesiology
**Grade Mode:** Standard Letter
**Course Type:** Lecture
**Credit Hours:** 3
**Restrictions:** Graduate level students may not enroll.
**Course Level:** Undergraduate Upper-Level
**Prerequisite(s):** KINE 375 and KINE 319
**Description:** This course will address current scientific knowledge about common macronutrients, micronutrients, and supplements, and how they may enhance athletic performance. The course will also focus on the role of nutritional timing, volume, and periodization to achieve practical results in endurance, strength, power and speed. Recommended Prerequisite(s): KINE 321.

KINE 410 - CASE STUDIES IN HUMAN PERFORMANCE
**Short Title:** CASE STUDIES HUMAN PERFORMANCE
**Department:** Kinesiology
**Grade Mode:** Standard Letter
**Course Type:** Research
**Credit Hours:** 3
**Restrictions:** Graduate level students may not enroll.
**Course Level:** Undergraduate Upper-Level
**Description:** An advanced, multidisciplinary consideration of how humans perform. Class work will center around problem solving using a case study methodology.

KINE 412 - MOTOR CONTROL
**Short Title:** MOTOR CONTROL
**Department:** Kinesiology
**Grade Mode:** Standard Letter
**Course Type:** Lecture
**Credit Hours:** 3
**Restrictions:** Graduate level students may not enroll.
**Course Level:** Undergraduate Upper-Level
**Prerequisite(s):** KINE 311 and KINE 325
**Description:** Exploration of the neurophysiological, behavioral, and biomechanical aspects of human movement and development.

KINE 421 - ADVANCED TOPICS IN EXERCISE PHYSIOLOGY AND PREVENTIVE MEDICINE
**Short Title:** ADV TOPICS IN EX PHYS & MED
**Department:** Kinesiology
**Grade Mode:** Standard Letter
**Course Type:** Seminar
**Credit Hours:** 3
**Restrictions:** Graduate level students may not enroll.
**Course Level:** Undergraduate Upper-Level
**Prerequisite(s):** KINE 321 and KINE 323
**Description:** This course is a seminar style course that examines acute and chronic effects of exercise stimuli on physiological adaptation as relevant to health, disease and human performance. Topics will vary depending on current issues in exercise physiology. Examples include metabolism, fatigue, diabetes, genetics, muscular dystrophy, orthopedics, cancer and cardiovascular disease. The course is intended for those with a background in biology and/or physiology and interest in exercise and health.

KINE 430 - SPORTS INJURY: EVALUATION, MANAGEMENT, AND TREATMENT
**Short Title:** SPORTS INJURY
**Department:** Kinesiology
**Grade Mode:** Standard Letter
**Course Type:** Lecture
**Credit Hours:** 3
**Restrictions:** Graduate level students may not enroll.
**Course Level:** Undergraduate Upper-Level
**Prerequisite(s):** KINE 300 and KINE 302 and KINE 321
**Description:** Upper level course designed to provide students with practical application of basic science knowledge obtained in lower level courses within the department of Kinesiology. The course will address the management of common sports injuries from time of injury to return to play. At the end of the course, students will have a comprehensive understanding of athletic injuries and their management.

KINE 440 - RESEARCH METHODS
**Short Title:** RESEARCH METHODS
**Department:** Kinesiology
**Grade Mode:** Standard Letter
**Course Type:** Lecture
**Credit Hours:** 3
**Restrictions:** Graduate level students may not enroll.
**Course Level:** Undergraduate Upper-Level
**Prerequisite(s):** KINE 319
**Description:** Designed to introduce students to research methods, statistical techniques, and topics appropriate for experimental research.

KINE 490 - SEMINAR IN SPORTS MEDICINE
**Short Title:** SEMINAR IN SPORTS MEDICINE
**Department:** Kinesiology
**Grade Mode:** Standard Letter
**Course Type:** Seminar
**Credit Hours:** 3
**Restrictions:** Graduate level students may not enroll.
**Course Level:** Undergraduate Upper-Level
**Description:** Considers issues related to athletic injury including mechanisms, assessment, management, and rehabilitation.
KINE 495 - INDEPENDENT STUDY IN SPORTS MEDICINE
Short Title: INDEPENDENT STUDY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to students with a major in Kinesiology. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: To provide the student with research opportunity to gain or enhance knowledge in the sports medicine area or to explore an area of interest related to research in sports medicine. Department Permission Required. Recommended Prerequisite(s): KINE 319 and KINE 440. Repeatable for Credit.

KINE 496 - INDEPENDENT STUDY IN SPORTS MEDICINE
Short Title: INDEPENDENT STUDY
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to students with a major in Kinesiology. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: To provide the student with research opportunity to gain or enhance knowledge in the sports medicine area or to explore an area of interest related to research in sports medicine. Department Permission Required. Recommended Prerequisite(s): KINE 319 and KINE 440. Repeatable for Credit.

KINE 498 - SPECIAL TOPICS IN SPORTS MEDICINE
Short Title: SPECIAL TOPICS IN SPORTS MED
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KINE 300
Description: Course will address management of common sports injury to return to play. Students will learn how to identify common athletic injuries including mechanism of injury, signs and symptoms, treatment, evaluation of involved body region, and return to play decision making criteria. Fall 2015 topic: Management, Evaluation and Treatment of Sports Injuries. Recommended Prerequisite(s): KINE 321 or KINE 323. Repeatable for Credit.

KINE 499 - TEACHING PRACTICUM IN SPORTS MEDICINE
Short Title: TEACHING PRACTICUM
Department: Kinesiology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced teaching experience for upper level students who have demonstrated particular aptitude and interest in one area of kinesiology. Students will assist in conducting a course in which they have previously excelled. The student will learn techniques in course management, instruction, and evaluation. Department Permission Required. Recommended prerequisite(s): Junior or senior standing, declared major in Kinesiology, and at least an "A-" in the course serving as the practicum. Repeatable for Credit.

Korean (KORE)
KORE 141 - FIRST YEAR KOREAN I
Short Title: FIRST YEAR KOREAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Korean (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Korean. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required.
Course URL: clickorean.blogs.rice.edu

KORE 142 - FIRST YEAR KOREAN II
Short Title: FIRST YEAR KOREAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): KORE 141
Description: Continuation of KORE 141. Development of interactional competence in Korean (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Korean. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for KORE 142 and KORE 262.
Course URL: clickorean.blogs.rice.edu
KORE 263 - SECOND YEAR KOREAN I
Short Title: SECOND YEAR KOREAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): KORE 142
Description: Continuation of KORE 142. Development of interactional competence in Korean (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Korean. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for KORE 263 and KORE 201.
Course URL: clickorean.blogs.rice.edu

KORE 264 - SECOND YEAR KOREAN II
Short Title: SECOND YEAR KOREAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): KORE 263
Description: Continuation of KORE 263. Development of interactional competence in Korean (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Korean. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for KORE 264 and KORE 202.
Course URL: clickorean.blogs.rice.edu

KORE 301 - THIRD YEAR KOREAN I
Short Title: THIRD YEAR KOREAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KORE 301
Description: Continuation of KORE 301. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.
Course URL: clickorean.blogs.rice.edu

KORE 302 - THIRD YEAR KOREAN II
Short Title: THIRD YEAR KOREAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): KORE 301
Description: Continuation of KORE 301. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.
Course URL: clickorean.blogs.rice.edu

KORE 398 - KOREAN TEACHING PRACTICUM
Short Title: KOREAN TEACHING PRACTICUM
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Under the instructor's close supervision, students with a high level of proficiency in Korean acquire teaching skills by tutoring the students in lower level. Instructor Permission Required. Repeatable for Credit.
Course URL: clickorean.blogs.rice.edu

KORE 399 - KOREAN TEACHING PRACTICUM
Short Title: KOREAN TEACHING PRACTICUM
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Under the instructor's close supervision, students with a high level of proficiency in Korean acquire teaching skills by tutoring the students in lower level. Instructor Permission Required. Repeatable for Credit.
Course URL: clickorean.blogs.rice.edu

Latin (LATI)

LATI 101 - ELEMENTARY LATIN I
Short Title: ELEMENTARY LATIN I
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Study of the fundamentals of Latin grammar with emphasis on acquisition of reading skills. Cross-list: MDEM 101.
LATI 102 - ELEMENTARY LATIN II
Short Title: ELEMENTARY LATIN II
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LATI 101 or MDST 101
Description: Continuation of LATI 101 and MDST 101. Graduate students require permission of instructor. Cross-list: MDEM 102.

LATI 104 - AP/OTH CREDIT IN ELEMENTARY LATIN
Short Title: AP/OTH CREDIT ELEMENTARY LATIN
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

LATI 201 - INTERMEDIATE LATIN I: PROSE
Short Title: INTERMEDIATE LATIN I: PROSE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Review of grammar and readings in Latin prose. Cross-list: MDEM 211.

LATI 202 - INTERMEDIATE LATIN II
Short Title: INTERMEDIATE LATIN II
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LATI 201 or MDST 211
Description: Readings in Virgil. Cross-list: MDEM 212.

LATI 204 - AP/OTH CREDIT IN INTERMEDIATE LATIN
Short Title: AP/OTH CREDIT INTERM. LATIN
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

LATI 302 - ADVANCED LATIN
Short Title: ADVANCED LATIN
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: We will read Propertius' elegies with a view to understanding the poetics of Latin love elegy and the relationship of this genre to its social context. D1 credit.

LATI 303 - ADVANCED LATIN: PLAUTUS AND TERENCE
Short Title: ADV LATIN: PLAUTUS & TERENCE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: We will read Plautus' Pseudolus and Terence's Adelphoe. We will consider the background of Greek comedy and the contemporary social situation in Rome.

LATI 304 - ADVANCED LATIN: ROMAN EPIC
Short Title: ADV. LATIN: ROMAN EPIC
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Readings in Latin epic poetry, from the Republic through late antiquity. Topics will include the nature of the epic genre, the development of Roman epic, the styles of individual epic poets, and the works' political and cultural contexts.

LATI 305 - ADVANCED LATI: HORACE
Short Title: ADVANCED LATIN: HORACE
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Readings from Horace.

LATI 306 - ADVANCED LATIN: OVID'S METAMORPHOSES
Short Title: OVID'S METAMORPHOSES
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Readings in Ovid's Metamorphoses. Repeatable for Credit.
LATI 307 - LATIN POETRY OF LATE ANTIQUITY
Short Title: LATIN POETRY OF LATE ANTIQUITY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Readings from Latin poetry, ca. 300 CE - ca. 600 CE. Topics include the relationship of this poetry to its classical past, its identity as "late" literature, the historical contexts and purposes of the texts and the development of a Christian Latin poetic tradition.

LATI 308 - LUCRETIUS
Short Title: LUCRETIUS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LATI 202
Description: This course will study the great philosophical poem of the Roman Epicurean Lucretius, De Rerum Nature (On the Nature of Things). In addition to selections from the Latin, students will read the entire poem in English translation as well as scholarship on the poem from a variety of perspectives.

LATI 313 - CICERO AND CATULLUS: LITERATURE AND SOCIETY IN THE ROMAN REPUBLIC
Short Title: CICERO AND CATULLUS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: We will read Cicero’s PRO CAELIO and several of Catullus’ longer poems as a vehicle for understanding politics and culture in the late Roman Republic.

LATI 316 - READINGS IN VIRGIL’S AENEID
Short Title: READINGS IN VIRGIL’S AENEID
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced study of Virgil’s great Roman epic. Areas of interest will include Virgil’s poetic technique, the history of ancient epic, and Roman politics and society, particularly in the Augustan Age. Since different books of the Aeneid will be read in different semesters, the course is repeatable for credit. Repeatable for Credit.

LATI 317 - READINGS IN LIVY
Short Title: READINGS IN LIVY
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Selections from the Roman historian Livy. Close attention will be given to Livy’s prose style and narrative techniques. We will also examine his historical method, the Augustan context of his work, and the information he provides as a source on Roman history. Repeatable for Credit.

LATI 318 - READINGS IN CICERO
Short Title: CICERO
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course features readings in Cicero (1st c. BCE), the politician, orator, and philosopher of first-century BCE Rome. The single most influential writer in Latin, Cicero is also a primary source for the fall of the Roman Republic. Spring 2016 will focus on the speech Pro Caelio, addressed to a law course in defense of the Roman aristocrat Caelius Rufus, and one of Cicero’s most entertaining speeches. Repeatable for Credit.

LATI 320 - SILVER LATIN PROSE: SENECA AND TECITUS
Short Title: SENECA AND TACITUS
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Latin culture during the Silver Age (AD 18-133) developed in unforeseen directions, which remain provocative and stimulating today. This course will focus on the two writers who developed new pathways in prose writing and new ideas about Rome, the moralist Seneca and the historian Tacitus. We will read one of Seneca’s moral essays, De brevitate vitae, and book four of Tacitus’ Annals.

LATI 491 - DIRECTED READING
Short Title: DIRECTED READING
Department: Classical and European Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent work for qualified juniors and seniors in genres or authors not presented in other upper level courses. Repeatable for Credit.
LASR 158 - INTRODUCTION TO LATIN AMERICAN STUDIES
Short Title: INTRO LATIN AMERICAN STUDIES
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course immerses students into Caribbean and Latin American studies by introducing them to the history, society, politics, and culture of the region, through a cross-disciplinary and a multi-national approach. Taught in English. Open to all students. Cross-list: SPPO 158.

LASR 251 - CONTINUITIES AND CHANGES IN BRAZILIAN HISTORY
Short Title: BRAZIL: CONTINUITY & CHANGE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An exploration of themes essential to understanding modern Brazil, such as the origins of a multi-racial society, the transition from monoculture to industry, authoritarian and democratic trends, the emergence of a uniquely Brazilian culture, and the conflicts - environmental, political, and economic - over the development of the Amazon. Cross-list: HIST 251.

LASR 373 - WOMEN'S SOCIAL MOVEMENTS IN LATIN AMERICA AND THE CARIBBEAN
Short Title: WOMEN'S SOCIAL MOVEMENTS
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course will examine the historical development of women's social movements in Latin America and the Caribbean. We will explore how they are transforming the region through their diverse forms of political engagement. This is a lecture/seminar course that emphasizes writing and discussion. Cross-list: SWGS 373.

LASR 374 - FEMINIST AND QUEER THEORY IN THE AFRICAN DIASPORA
Short Title: FEM THEORY IN AFRICAN DIASPORA
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course provides an interdisciplinary overview of the body of Black feminist and queer theory that has emerged within the last forty years. We will examine these frameworks in order to understand how racial difference shapes gender and sexual identities. This is a seminar that emphasizes research and discussion. Cross-list: SWGS 374.

LASR 375 - LATINA AND AFRICAN AMERICAN WOMEN'S ACTIVISM IN THE URBAN METROPOLIS
Short Title: WOMEN'S ACTIVISM URBAN METRO
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will investigate the contemporary writings of Latina and African American women in urban spaces across the U.S. Understanding these women's experiences in relationship to each other will reveal the shared, yet distinct, trajectories that orient their struggle to resist poverty, racism, homophobia, and sexual and reproductive violence. Cross-list: SWGS 375.
LASR 376 - CHICANA AND LATINA EXPERIENCE THRU FILM
Short Title: CHICANA/LATINA EXP THRU FILM
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the Chicana and Latina experience in the U.S. We examine these women's response to each other and forces of conquest, capitalism, and patriarchy. Novels, oral life histories, film, and art will be used to interrogate these women's conceptualization and assertion of feminism, activism, and history. Cross-list: SWGS 376.

LASR 491 - LATIN AMERICAN STUDIES CAPSTONE
Short Title: LATIN AMERICAN STUDIES CAPSTN
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students will write original seminar paper on Latin America incorporating reading and research in English and in the Spanish or Portuguese language sources; to be drawn from their research conducted during a study abroad semester in Latin America.

**Liberal Studies Core/Capstone (MLSC)**

MLSC 501 - THE SHAPING OF WESTERN THOUGHT
Short Title: THE SHAPING OF WESTERN THOUGHT
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the foundational, intellectual and artistic texts of the western tradition from Ancient Greece to Medieval Islam. Consideration of texts and images over time and in their historical development as we reflect on who we are and how we got here. Readings would include: The Gilgamesh Epic, Homer's Iliad, Thucydides' War, Plato's Republic, Book of Genesis, Virgil's Aeneid, Gospels of Luke and of Thomas, Augustine's Confessions and The Qur'an. Department Permission Required.

MLSC 502 - OUR ENVIRONMENT: SCIENCE AND CULTURE
Short Title: OUR ENVIRONMENT:SCIENCE & CULT
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course, students will learn environmental concepts, the science and culture behind them and possible reactions to related problems from a political, economic and cultural perspective. The instructor will introduce the necessary background material in biology, ecology and chemistry as needed but the emphasis will be on obtaining scientific literacy in environmental studies. Department Permission Required.

MLSC 505 - SHAKESPEARE AND FILM
Short Title: SHAKESPEARE AND FILM
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine several Shakespeare plays and their theatrical productions. The instructor will teach each play as a text (and a script) first, and then study the films of these plays in an effort to understand the choices the film-makers have made in adapting Shakespeare's plays to the screen. In this course, then, we will be concerned with studying both Shakespeare's plays and what happens to those plays in the hands of a creative film-maker. Department Permission Required.

MLSC 506 - THE SOLAR SYSTEM, THE SUN AND THE MIND OF MAN
Short Title: SOLAR SYSTEM,SUN & MIND OF MAN
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore the beauty of our near-by cosmic environment, the solar system, both as a work of nature and also from the standpoint of a challenge to the observational and analytical capabilities of human beings. The course will follow two parallel tracks: a historical/conceptual understanding of the solar system and the various paradigms or models used to describe the physical "universe". In the second track we will tour the solar system beginning with the Sun, examining each planet and its satellite(s) in detail. The course will be non-mathematical; however, a few equations may show to illustrate a point. Department Permission Required.
MLSC 508 - EARTH SYSTEMS DYNAMICS
Short Title: EARTH SYSTEMS DYNAMICS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enroll is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course involves exposing the advanced student to the interactions among several mechanisms that combine to produce a working Earth. It would include concepts of Physics, Chemistry, Biology, Geology, Meteorology and Ecology. Department Permission Required.

MLSC 509 - STEREOTYPES, PREJUDICE AND DISCRIMINATION
Short Title: STEREOTYPES, PREJUDICE, DISCRIM
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In the past century social scientists have learned an enormous amount about stereotypes, prejudice and discrimination, yet they remain poorly understood by the public at large and especially by public policy makers. We all hold stereotypes, show prejudices and discriminate although not necessarily in traditional racist or sexist ways. This course will explore what social scientists, especially social psychologists, have learned about these issues especially in the last quarter century. While we will cover traditional racial and gender issues, we will also consider material related to obesity, homosexuality, mental and physical disability and age among other topics. Department Permission Required.

MLSC 510 - MUSIC AND OTHER ARTS: COLLABORATION AND FUSION
Short Title: MUSIC AND OTHER ARTS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce students to the collaboration between music and other arts - poetry, drama, mythology, the visual arts (as applied to set and costume design) and dance - that often occurs during the creation of large musical works such as symphonies, operas and ballets. By investigating six musical masterpieces, it will be possible to discuss aspects of the collaborative process and how they lead to artistic fusion. Department Permission Required.

MLSC 513 - DNA: HUMAN IDENTITY AND ORIGINS
Short Title: DNA: HUMAN IDENTITY & ORIGINS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: "Who am I?" "Where did I come from?" All branches of knowledge address these fundamental questions. This course examines how DNA informs the structure and function of humans, and how humans have in turn used DNA as a source of information to solve mysteries and improve lives. We will introduce the structure of DNA and show how it influences physical traits and is passed on from parent to child. We will review the original goals of the Human Genome Project and discuss how the surprising results that emerged from it have altered the way we view the role of genes in human development. We will examine how breakthroughs in DNA technology have allowed us to answer questions about human origins, worldwide migrations and personal genealogy and aided criminal investigations and medical treatment. This course will also use the specifics of DNA investigation as examples of science in action. Department Permission Required.

MLSC 515 - SCIENCE IN THE FIRST PERSON
Short Title: SCIENCE IN THE FIRST PERSON
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Have you wondered what it would be like to participate in a major scientific discovery, or to deal with highly competitive or cantankerous colleagues, or to convince a skeptical world that your idea is right and the rest of the world has got it wrong? By reading material written by scientists who have made major discoveries, we will look at how science is done from the first-person perspective. We will see how scientists confront troubling thoughts when they see the modern world in conflict with the nature they love, and why science has been called a "contact sport." Department Permission Required.

MLSC 517 - MODERN DRAMA ON FILM AND IN PERFORMANCE
Short Title: MODERN DRAMA
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will focus on drama not only as text but also as performance. We will read modern plays and discuss them as they are often discussed in English courses, concentrating on theme, character, world, imagery, language and dramatic action. In addition, we will also examine the "texts" as scripts, as working papers for actors and directors: in short, as source materials for performance. To this end we will also view movie versions of many of these plays. Department Permission Required.
MLSC 519 - PSYCHOLOGY OF BELIEFS
Short Title: PSYCHOLOGY OF BELIEFS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Beliefs are among the most primitive, important and central of mental constructs. Many of our reactions to others are based on our beliefs and our perceptions of theirs, and it is impossible to understand racism, prejudice, religious and national conflicts without considering disagreement over basic belief systems. While there are several ways to approach the study of beliefs, we will focus on problematic beliefs, sometimes called anomalous or bizarre beliefs. Examples are beliefs in ESP and the paranormal, astrology, the reality of events that could not possibly have occurred, scientific theories and medical cures that are rejected by most experts, as well as extreme religious and political ideas. Department Permission Required.

MLSC 523 - THEORY AND PRACTICE OF PUNISHMENT
Short Title: THEORY & PRACTICE OF PUNISHMENT
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will focus on the writings of some of the most influential scholars in sociology, legal philosophy and political theory who have contributed to the creation of ideal or normative views of legal punishment and exposing the harsh realities of how non-violent and violent criminals are actually punished. Department Permission Required.

MLSC 525 - PLAGUES AND POPULATIONS
Short Title: PLAGUES AND POPULATIONS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine the interaction of pathogens and human societies. It will cover the biological nature of pathogens and disease, the human immune system and therapeutic and societal interventions to prevent and cure disease. Specific diseases will be studied to determine the biology of the disease agent, its exploitation of the human host, its transmission and epidemiology and how the disease impacts the economic, political, social structure and values of the affected populations, and how the response to disease may limit its impact. Department Permission Required.

MLSC 526 - CONTEMPORARY MORAL ISSUES
Short Title: CONTEMPORARY MORAL ISSUES
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The cardinal objective of the course is to stimulate students to analyze and evaluate the opposing viewpoints of some scholars who have expressed their views on some of the most disputed moral issues in contemporary American culture. Specifically, the required readings for the class focus on abortion, the death penalty, euthanasia, world hunger and poverty, sexual morality, drugs and addiction and affirmative action. Arrangements will be made for a tour of a prison unit and the opportunity to discuss the death penalty with several inmates. Department Permission Required.

MLSC 532 - THE GRAND DESIGN
Short Title: THE GRAND DESIGN
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The book "The Grand Design" by Stephen Hawking and Leonard Mlodinow asks the big questions: how did our universe begin and is it the only one or are there multiple parallel universes; why is there something rather than nothing; why are we here; why are the laws of nature so finely tuned that they allow a stable universe? Guided by the Hawking/Mlodinow book, this course will explore these questions. We will address the question: do the laws of physics provide for the possibility of a multiplicity of universes of which ours, by happenstance or probability, turned out to have the right set of physical constants to provide for a stable universe and hence the possibility of life or is a Devine Creator necessary? To address these questions we will take a layman's tour of basic concepts of cosmology, quantum mechanics, relativity, string theory, and extra-dimensions. Department Permission Required.

MLSC 533 - SELF-DETERMINATION IN ARAB WORLD
Short Title: SELF-DETERMINATION ARAB WORLD
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course investigates the history of the struggle for self determination and democracy in the Arab world. It provides a historical perspective by exploring the antecedents to the current so-called "Arab Spring," specifically by comparing the anti-colonial nationalism of the twentieth century with the today's pro-democracy movements. It will also examine the role of the West, including the United States, in hindering or promoting anti-colonialism, nationalism and democracy in the Arab world. Department Permission Required.
MLSC 534 - HUMAN RIGHTS IN WORLD AFFAIRS
Short Title: HUMAN RIGHTS IN WORLD AFFAIRS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: The course examines the history of human rights and humanitarianism from the eighteenth century Enlightenment era to the present. How did human rights become the premier moral language of our times and the idiom in which recent generations frame their idealism? While universal human rights may seem timeless, they have a long and checkered political and philosophical history. This seminar will explore that history through anthropology and legal studies as well as through case studies of non-governmental organizations. Special attention will be given to international law and shifts in international politics in the twentieth century. The course will also analyze the passions that motivated people to pursue human rights and the empathy that led them to uproot injustice. Department Permission Required.

MLSC 535 - "PLEASE SIR, I WANT SOME MORE": DICKENS, OLIVER TWIST, POVERTY, AND SOCIAL JUSTICE
Short Title: DICKENS, TWIST, SOCIAL JUSTICE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: During the worldwide celebrations of Charles Dickens’s bicentenary in 2011-12 Oliver Twist received vibrant new attention because its treatment of children, welfare, poverty, domestic violence, and anti-Semitism seemed so relevant to contemporary issues. In this course we will read the novel alongside and against the economic and social theories and practices of Dickens’s time, and ask many questions. Department Permission Required.

MLSC 536 - TRADITIONAL CHINESE CULTURE AND ITS MODERN LEGACY
Short Title: TRADITIONAL CHINESE CULTURE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: An analysis of the language, philosophy, religion, art, literature, institutions and social customs of the Qing dynasty (1644-1912), the last imperial regime and a crucial bridge between "traditional" and "modern" China. Although this course is intended in part as an exercise in appreciation, it is designed primarily to encourage critical and creative thinking about another place and time. Department Permission Required.

MLSC 537 - PROFILES FROM THE PAST: FAMOUS FIGURES IN WESTERN HISTORY
Short Title: PROFILES FROM THE PAST
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: What has happened during the course of time, regarding culture and human experience that has been transmitted from the ancient to the modern world? What ideas and concepts concerning subjects such as politics, art, music, and philosophy have been our legacy from the western past? This course will survey the answers to these questions covering the time of classical Greece through the period of the high middle ages. Department Permission Required.

MLSC 538 - OUR CHANGING PLANET
Short Title: OUR CHANGING PLANET
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: The Earth can be studied by considering it to be made up of certain elements or systems that interact. The systems that we will consider in this course are the lithosphere, atmosphere, hydrosphere and biosphere. Not quite earth, air, fire and water, but close. We will then explore how these systems interact and finally attempt to evaluate the human impact on the entire earth. Department Permission Required.

MLSC 539 - IMMIGRATION AND THE STATE: EUROPE AND THE US IN COMPARATIVE PERSPECTIVE
Short Title: IMMIGRATION AND THE STTE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: The course traces the history of immigration within and to Europe and to the United States from the late 19th century to the present. How did the United States and the European states elicit, regulate or contain successive waves of labor and colonial migrants, stateless persons and asylum seekers? And what type of legal, political and cultural debates did the "immigrant question" raise in the public sphere since the advent of mass migration? We will discuss key issue regarding immigration including political asylum, guest-worker programs, assimilation and integration debates, and immigrants and the welfare state Department Permission Required.
MLSC 540 - IS ANYBODY OUT THERE: THE SEARCH FOR LIFE BEYOND EARTH
Short Title: IS ANYBODY OUT THERE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Imagine what the reaction would be if life were discovered on another planet in the solar system or on a planet orbiting another star. With the dawn of the space age tools have become available to tackle this problem with serious scientific research. This course will look at some of this research and examine the prospects for finding life. Department Permission Required.

MLSC 541 - HUMAN RIGHTS, GENDER EQUALITY AND RELIGIOUS BELIEFS
Short Title: EQUALITY & RELIGIOUS BELIEFS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This class aims to explore the intertwined relationship between gender equality, human rights and religious beliefs globally. Additionally, the class will focus on realities and misconceptions on women's status in the Middle East and North Africa and explore the impact of the socio-cultural and political context on shaping gender relations across the region. Department Permission Required.

MLSC 542 - THE EPIC JOURNEY
Short Title: THE EPIC JOURNEY
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This class explores some of the classic texts of Western literature, books from the ancient world that have had, and continue to have a formative influence on who we are and how we got here. The works we will study all share a common theme: the epic journey. We explore different variations of this theme, follow ancient travelers on their journeys, and reflect with them about their discoveries. Department Permission Required.

MLSC 543 - THE CITY IN LITERATURE
Short Title: THE CITY IN LITERATURE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We will read a variety of writers from both the nineteenth and twentieth centuries. For some historical background and city discourse, we will also read parts of Lewis Mumford's The City in History, Jane Jacobs's The Death and Life of Great American Cities, and the essays of Michel de Certeau, Georg Simmel, E B White, among others. Department Permission Required.

MLSC 544 - WRITING LITERATURE FOR CHILDREN
Short Title: WRITING CHILDREN'S LITERATURE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore the music of a variety of religious and ethnic groups in an attempt to bridge differences and create understanding among those of different traditions. Each class session will be based upon the music connected to a specific religious or ethnic group. Department Permission Required.

MLSC 545 - WINDOW TO THE SOUL: EXPLORING RELIGION AND ETHNICITY THROUGH MUSIC
Short Title: RELIGION & ETHNICITY MUSIC
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore the music of a variety of religious and ethnic groups in an attempt to bridge differences and create understanding among those of different traditions. Each class session will be based upon the music connected to a specific religious or ethnic group. Department Permission Required.

MLSC 546 - THE ROLE OF CHEMISTRY IN HISTORY
Short Title: ROLE OF CHEMISTRY IN HISTORY
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Could the outcome of a war be decided simply on the material chosen for the buttons on the soldier's garments? What in pantyhose was desired for WWII? How did phenols and formaldehyde lead to a worldwide revolution via plastics? These questions and more will be answered as we explore important molecules that have changed the course of human history. Department Permission Required.

MLSC 547 - PROFILES FROM THE PAST II: FAMOUS FIGURES IN WESTERN HISTORY
Short Title: PROFILES FROM THE PAST II
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers the span of years from the end of the Middle Ages through the eve of the French Revolution. In addition to the study of a selected group of people from these years, there will also be an examination of the Renaissance, the Reformation, the Enlightenment, and Absolutism. Department Permission Required.
MLSC 548 - HISTORY OF PHILOSOPHY SET IN INTERDISCIPLINARY CONTEXT
Short Title: HIST OF INTERSIC PHILOSOPHY
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce students to leading figures, ideas and arguments of the history of western philosophy, set in interdisciplinary context in this interdisciplinary MLS program. For a general educated audience philosophy is best approached from multiple perspectives - historical, literary, scientific, religious, artistic - and we will take this approach.

MLSC 549 - COMPARATIVE IMPERIAL PLEASURE GARDENS: POWER AND LANDSCAPE
Short Title: IMPERIAL PLEASURE GARDENS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce students to leading figures, ideas and arguments of the history of western philosophy, set in interdisciplinary context in this interdisciplinary MLS program. For a general educated audience philosophy is best approached from multiple perspectives - historical, literary, scientific, religious, artistic - and we will take this approach.

MLSC 550 - MODERN ASTRONOMY AND OUR PLACE IN THE UNIVERSE
Short Title: MODERN ASTRONOMY
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to modern astrophysics beyond the solar system including a brief history of astronomy from antiquity through Galileo and Newton. Our modern understanding of the formation, evolution, and death of stars; the composition and evolution of galaxies; the structure and evolution of the universe will then be surveyed. Department Permission Required.

MLSC 551 - PROFILES FROM THE PAST III: FAMOUS FIGURES IN WESTERN HISTORY
Short Title: PROFILES FROM THE PAST III
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will cover the span of years from the beginning of the French Revolution to the middle of the 20th century. In addition to the study of selected individuals such as Napoleon Bonaparte, Czar Alexander I, Cecil Rhodes, Gregor Rasputin, Vladimir Lenin, Joseph Stalin, Adolf Hitler and Mohandas Gandhi, there will be examinations of Romanticism, Nationalism, Imperialism, and Fascism. Department Permission Required.

MLSC 552 - CONSERVING BIODIVERSITY
Short Title: CONSERVING BIODIVERSITY
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Many scientists have coined the current geological age as the "Anthropocene" in reference to the impact of mankind on the planet. This course will examine biodiversity, how biodiversity influences our lives, the forces that affect biodiversity worldwide, and how we can protect it. Local species and ecosystems will be highlighted.

MLSC 553 - SOLVING THE CLIMATE CHALLENGE
Short Title: SOLVING THE CLIMATE CHALLENGE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course overviews climate science and explores strategies for transforming electricity, transportation, and agriculture to avert the impacts of abrupt climate change. Department Permission Required.

MLSC 554 - MY FAVORITE NOVELS - AND GREAT FILMS MADE FROM THEM
Short Title: MY FAVORITE NOVELS AND FILMS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this class we will carefully examine four great novels from different eras: "Pride and Prejudice," "Great Expectations," "One Flew Over the Cuckoo's Nest," and "Atonement," to see what makes them so successful. Then we will watch and discuss the great films made from them. Department Permission Required.

MLSC 555 - THE POLITICAL PHILOSOPHY OF THE AMERICAN REVOLUTION
Short Title: POL PHIL OF AMER REVOLUTION
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will 1) discuss the significance of some events in Colonial American that precipitate the clarion call the dissolve forever all political ties to Great Britain: 2) discuss the ideological origins of the American Revolution in the key documents, specifically the Declaration of Independence, the Constitution, the Bill of Rights and the Federalist Papers. Department Permission Required.
**MLSC 600 - INTRODUCTION TO GRADUATE RESEARCH, ANALYSIS AND EXPOSITION**

**Short Title:** INTRO GRAD RESEARCH & WRITING  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** The goals of this course will be to develop the students’ abilities to perform library or Internet scholarly research at a graduate level; conduct graduate-level analysis of representative graduate-level readings and topics similar to those encountered in the MLS program; demonstrate the advanced analytical and critical thinking abilities required inside and outside the graduate classroom; express the results of scholarly research and analysis and original ideas in the written formats that meet the criteria for graduate-level essays, papers and reports; use oral expression, discussion and presentation techniques at the level expected in graduate classrooms. Department Permission Required.

**MLSC 604 - EXPLORATION AND DISCOVERY IN ANTARCTICA**

**Short Title:** EXPLOR & DISC IN ANTARCTICA  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course will introduce students to the seventh continent through the history of austral exploration and through an explanation of the scientific research that has happened, is happening and will happen there. This course will begin with a basic scientific description of the highest, driest, coldest, windiest continent on Earth. Participants will then study journals of some of the original explorers as well as recent works analyzing the "glory days" of polar exploration. The class will then move from the period of exploration, through the early scientific work, and on to the modern hypothesis-driven science that is taking place now and is being planned for the future. The class will close with an examination of tourism and its effects on the nature of the Antarctic ecosystems and cryosphere. Department Permission Required.

**MLSC 606 - THE HEBREW BIBLE AND ITS INTERPRETERS**

**Short Title:** HEBREW BIBLE/ITS INTERPRETERS  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This seminar seeks to acquaint students with the principal parts of the Hebrew Bible/Old Testament, with the modern, historical-critical study of the Bible as an academic discipline, and a few episodes in the recent history of the Bible in the West. Our reading of the biblical literature will primarily be historical-critical in the sense that it emphasizes that the Hebrew Bible is rooted in the ancient Near East, its history and literature. At the same time we will be sensitive to traditional, Jewish and Christian readings of the Bible as they evolved over two millennia and examine how these faith-based traditions arose, how they differ from modern critical approaches and how the two can complement each other. Department Permission Required.

**MLSC 610 - PSYCHOLOGY OF HAPPINESS**

**Short Title:** PSYCHOLOGY OF HAPPINESS  
**Department:** School of Continuing Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Truth, beauty and, yes, happiness, are issues that have engaged thoughtful people over the centuries. What is happiness (and what makes us happy)? Until recently we have relied on philosophers and religious thinkers for answers to that question, and many of them have provided useful recipes that seem to work for at least some people some of the time. The last century or so has seen many psychologists and self-help gurus who have also handed out (well, more often sold) recipes that generally seem to be less satisfactory than the wisdom of the ancients. Interestingly until recently psychologists have tended to ignore this seeming important topic, but in the past 10 or so years social and personality psychologists, neuroscientists and even economists have begun to pose empirically answerable questions about happiness and to find some data-based answers to what makes people happy. In this course we will read some of the traditional wisdom provided by religious and philosophical thinkers, but we will focus primarily on questions and issues that are subject to empirical resolution. Department Permission Required.
MLSC 612 - THE DEAD SEA SCROLLS
Short Title: THE DEAD SEA SCROLLS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The discovery of the Dead Sea Scrolls a little over a half a century ago in the Judean desert has been celebrated as the most significant manuscript discovery of the 20th century. Students will study the fascinating history of the discovery and publication of the Scrolls. They will read the most important Scrolls, learn about the beliefs and practices of the Jewish group that authored them and discuss what can be learned from the Scrolls about the nature of Early Judaism and the origins of Christianity. Department Permission Required.

MLSC 614 - PUBLIC SPEAKING
Short Title: PUBLIC SPEAKING
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed to give the student exposure to and experience using basic principles and skills of oral communication in the public context. Emphasis will be on the development of speech organization, support and delivery. Informative and persuasive speeches will be practiced. An important outcome of the course is that the student better understand and appreciate the important role public speaking plays in modern society. Instructor Permission Required.

MLSC 615 - TEN MASTERPIECES OF NORTHERN RENAISSANCE ART
Short Title: MASTERPIECES OF REN ART
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce students to the great "masterpieces" of painting produced in Northern Europe during the Renaissance of the fifteenth and sixteenth centuries. Each week we will focus on a single work of art from this period and explore a constellation of issues around the creation and reception of the painting. Students will learn in-depth methods of visual analysis and interpretation of works within their historical context. These same skills and strategies may be applied to the full range of western painting and provide useful tools for enriching visits to museums or experiences of European travel. Department Permission Required.

MLSC 617 - CREATIVE NONFICTION
Short Title: CREATIVE NONFICTION
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Creative nonfiction takes many forms, including expository writing, personal essay, narrative story-telling, literary journalism, memoir, nature and science writing, travel and food writing, historical narrative, biographical narrative, and academic and cultural criticism. This course is designed to help students read and write creative nonfiction with a focus on the voice, structure, messages, style, and technique found in contemporary creative nonfiction. The material covered applies to the humanities, the social sciences, and the sciences. Department Permission Required. Repeatable for Credit.

MLSC 618 - THE AWAKENING OF RUSSIA: A MUSICAL AND HISTORICAL PASSAGE
Short Title: THE AWAKENING OF RUSSIA
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: There was a spectacular flowering of Russian culture in the aftermath of the death of Czar Nicholas I (1825-55). Ushered in was a relatively liberal ear which, combined with a powerful natural upsurge, yielded a period of remarkable creativity - noted especially in this course by Russian music. This interdisciplinary course will couple the historical and musical threads of Russian culture. Department Permission Required.

MLSC 620 - MASTERPIECES OF THE POETIC TRADITION
Short Title: POETIC TRADITION MASTERPIECES
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce students to the appreciation and analysis of poetic masterpieces. We will focus on poetry produced in the English and American literary tradition, with particular attention paid to the poems, poets, and cultures that influence the development of those traditions. Department Permission Required.
MLSC 621 - ART MUSIC IN WESTERN EUROPEAN CULTURE II
Short Title: ART MUSIC IN WESTERN EUROPEAN CULTURE II
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is the second course in a sequence devoted to advanced musical understanding. In the first part of this sequence (Art Music in Western European Culture I) we will examine a wide range of music from a single time period. In this, the second part of the sequence, we will instead concentrate in depth upon one piece of music per class and will combine a focus upon advanced listening skills with music specific research techniques. The first weeks of the class will review musical listening, discourse, and the specialized skills necessary for musical research. Subsequently, each class session will focus upon a major work by a significant composer such as Mozart, Beethoven, Schubert, Mahler, and Debussy, among others. Department Permission Required.

MLSC 622 - THE SCEPTER'D ISLE: ANCIENT AND MEDIEVAL BRITAIN
Short Title: ANCIENT AND MEDIEVAL BRITAIN
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: From the murky prehistoric times of Stonehenge and New Grange to the tumultuous times of Henry II and Eleanor of Aquitaine, the dramatic combinations of history and myth have continually fascinated lovers of the British Isles. This course will explore ancient and medieval Britain, meandering from prehistoric sites to the early invaders, from the delightful legends of Glastonbury to the centuries of Roman invasions, from the Anglo-Saxon heptarchy to the Norman invasion, and from the hegemony of the Roman Catholic church to the challenge of secular kings. Department Permission Required.

MLSC 623 - WHAT MODERN WAS: CELEBRATING THE CENTENNIAL
Short Title: CELEBRATING THE CENTENNIAL
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: What constituted "modern music" in 1912? Works such as Arnold Schoenberg's Perrot lunaire, Claude Debussy's Jeux, and compositions by American composers Henry Cowell and Charles Ives set the bar for musical modernism that year. But other pieces from France, Germany, Russia, Spain, Hungary and England suggested that the future would present major changes. What did audiences in the United States know about such music? What did they think about it? What did the founders of the Rice Institute think about the new musical trends? How did the music played at the opening festivities of the Rice Institute reflect these perceptions of musical modernism? This course will consider these questions from a variety of parameters and get a sense of "what modern was" and its relationship to the momentous events of 1912 in Houston, Texas. Department Permission Required.

MLSC 624 - ADVANCED CREATIVE NONFICTION
Short Title: ADVANCED CREATIVE NONFICTION
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers students an opportunity to continue to practice writing creative nonfiction in a guided workshop format. The primary emphasis in the course will be on the professor and students reading and providing constructive feedback on the students' creative nonfiction writings. In addition, the students will read further examples of various types of creative nonfiction writing and complete writing exercises designed to allow them to work on the voice, structure, and technique of their writing. This course is designed for students with experience in writing creative nonfiction, such as completion of MLSC 617 or a similar course or creative writing workshop experience elsewhere. For those who have not taken a creative nonfiction course in the MLS program, consultation with the instructor is recommended before enrolling. Department Permission Required.

MLSC 625 - THE SHAPES OF POETRY: A WORKSHOP
Short Title: THE SHAPES OF POETRY
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines fundamental architecture of poetry. How do poets create a sense of shape? What are the nuts and bolts of a poem? Students will read widely in the history of poetry, from traditional meters and historical forms to contemporary free verse and experimental or open forms. Part workshop and part seminar, this course will feature critical and creative assignments and is designed for writers and non-writers of any level of experience. Department Permission Required.

MLSC 626 - THE BROTHERHOOD: LIVES AND LOVES OF THE PRE-RAPHAELITES
Short Title: PRE-RAPHAELITES LIVES & LOVES
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Pre-Raphaelite Brotherhood (PRB), founded in 1848, was a small group of British artists who boldly challenged the conventions of Victorian-era art and the materialism of industrialized England. While the PRB influenced the British art world for the remainder of the century, this course will focus on the intriguing personal lives of the artists, including Dante Gabriel Rossetti, William Holman Hunt, and John Millais, rather than the art they created. These artists, along with their wives, paramours, and models (often all one and the same) were part of a highly prolific Victorian creative class which for this course will revolve around the locale of central London and the influence of the towering figure of art and architecture - critic John Ruskin. Department Permission Required.
MLSC 627 - JOHN RUSKIN AND HIS WORLD
Short Title: JOHN RUSKIN AND HIS WORLD
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine John Ruskin (1819-1900), who rose from a troubled childhood to become one of the most influential critics of art and architecture of his century, forever fulminating the notion that art had a moral purpose and especially that art and architecture produced in France and Italy in the Middle Ages. Department Permission Required.

Short Title: THE BIRTH OF MODERNISM
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: One hundred years have passed since the momentous decade that brought us the beginnings of modernism, the "war to end all wars," and post war cynicism. This course will examine those tumultuous years from the perspective of the wide array of music written to satisfy all types of tastes and circumstances. Department Permission Required.

MLSC 629 - EFFECTIVE THINKING
Short Title: EFFECTIVE THINKING
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The basis of success in everything, academics, personal relationships, professional life, business leadership, or anything, is effective thinking. This course will address the process and practice of how to think effectively, analytically, and creatively. Department Permission Required.

MLSC 630 - POST-BOP: JAZZ'S GOLDEN AGE
Short Title: JAZZ'S GOLDEN AGE
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course we will explore the music of some of the most influential and important jazz musicians of the period, and we will also study the social, cultural and political context within which the music was created. We will focus in particular on Charlie Parker, Thelonious Monk, Billie Holiday, Miles Davis, Charles Mingus, and John Coltrane. Department Permission Required.

MLSC 631 - INTRODUCTION TO READING AND WRITING FICTION
Short Title: INTRO READING WRITING FICTION
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an introduction to reading fiction critically and writing short fiction successfully. The reading portion of the class focuses on the primary elements of fiction: scenes, tension and conflict, character, point of view, structure, voice, and dialogue. For the writing portion, students will compose original prose and provide feedback on one another's work in a workshop format. Department Permission Required.

MLSC 632 - MUSIC MYTH AND MADNESS
Short Title: MUSIC MYTH AND MADNESS
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of biographical narratives about musicians including Bach, Bob Dylan, Thelonious Monk, Mozart, and Schumann. Considers the nature of creativity and inspiration. Examines the extent to which biography borrows from mythology and literary fiction. Materials include memoirs, letters, novels, and films. Department Permission Required.

MLSC 633 - HOW TO READ A NOVEL
Short Title: HOW TO READ A NOVEL
Department: School of Continuing Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We will start this course by making one of Jane Austen's novels our "norm" and then read a survey of the novel's great variety through the nineteenth, twentieth, and twenty-first centuries. As we read the novels, we will keep asking what we mean by narrative, point of view, the nature of character, the paradigm of character relationships each novel creates, and the meaning of the end. Department Permission Required.
MLSC 700 - CAPSTONE I
Short Title: CAPSTONE I  
Department: School of Continuing Studies  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The capstone course is designed to help students utilize the knowledge gained in the previous courses and to demonstrate mastery of the intellectual skills required for a Master of Liberal Studies degree. The capstone course will culminate in an extensive written paper (or original creative work such as poetry or fiction) and an oral presentation to MLS faculty and fellow students. The capstone course may be completed in one term as one course, or, optionally, the student may with the advisor’s approval, take two terms to complete the capstone. The determination as to whether the capstone will be a one or two term project should, in most cases, be made before the start of the first term. Department Permission Required.

MLSC 701 - CAPSTONE II
Short Title: CAPSTONE II  
Department: School of Continuing Studies  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Liberal Studies. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Continuation of MLSC 700 Capstone I; or for students who plan to take only one term to complete the capstone. Department Permission Required.

MLSC 750 - INTRODUCTION TO DIPLOMA RESEARCH
Short Title: INTRO TO DIPLOMA RESEARCH  
Department: School of Continuing Studies  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment limited to students in the DLS program. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Open only to students in the Diploma in Liberal Studies Program. The purpose of this course is to prepare students for diploma research in general and for the diploma project research in particular. The course will accomplish this by giving students an opportunity to gain knowledge of research in the two chosen disciplines outlined in their Diploma Proposal. Department Permission Required.

MLSC 797 - ADVANCED INDEPENDENT READINGS
Short Title: ADVANCED INDEPENDENT READINGS  
Department: School of Continuing Studies  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 3  
Restrictions: Enrollment limited to students in the DLS program. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Independent study under faculty supervision and open only to students in the Diploma in Liberal Studies Program. The primary purpose of this course is to allow for study centrally relevant to the two disciplines chose by the DLS student not covered by existing coursework in liberal studies curriculum. Department Permission Required. Repeatable for Credit.

MLSC 798 - DIPLOMA PROJECT I
Short Title: DIPLOMA PROJECT I  
Department: School of Continuing Studies  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment limited to students in the DLS program. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Research for Diploma Project. Open only to students in the Diploma in Liberal Studies program. This is the first of a two-term course sequence in which the diploma student works on his or her diploma project under the supervision of the diploma first reader (advisor), second reader and third reader. Department Permission Required.

MLSC 799 - DIPLOMA PROJECT II
Short Title: DIPLOMA PROJECT II  
Department: School of Continuing Studies  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment limited to students in the DLS program. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Research for Diploma Project. Open only to students in the Diploma in Liberal Studies program. This is the second and final course in the two-term course sequence in which the diploma student works on his or her diploma project under the supervision of the diploma first reader (advisor), second reader and third reader. Department Permission Required.
Lifetime Phys Activity Credit (LPCR)

LPCR 200 - ADVANCED MENTAL TRAINING
Short Title: ADVANCED MENTAL TRAINING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course is designed to focus on the psychology of performance excellence. Specifically, it will highlight the relationship between mental toughness and performance and will explore the ways in which the psychological skills training can be applied to a variety of performance setting (e.g. business, music, drama and sport). LPCR 200 is excluded and cannot be substituted or used to meet the University LPAP Requirement for graduation. Instructor Permission Required.

Lifetime Phys Activity Program (LPAP)

LPAP 100 - INTRODUCTION TO TENNIS
Short Title: INTRODUCTION TO TENNIS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class is for the student who already possesses a fundamental knowledge of tennis and is looking to hone and sharpen her/his skills.

LPAP 104 - INTRODUCTION TO RACQUETBALL, SQUASH, AND BADMINTON
Short Title: INTRO RACQUET SPORTS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An introduction to basic skills and knowledge necessary to play badminton, racquetball and squash at the beginning level.

LPAP 107 - INTERMEDIATE TENNIS
Short Title: INTERMEDIATE TENNIS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class is for the student who already possesses a fundamental knowledge of tennis and is looking to hone and sharpen her/his skills.

LPAP 109 - INTRODUCTION TO FOXTROT AND WALTZ
Short Title: INTRO TO FOXTROT AND WALTZ
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Course content includes demonstration of and brief lectures on the American Style Foxtrot and Waltz. Students will participate in drills created to improve footwork, arm positioning, leading and following skills.

LPAP 110 - INTRODUCTION TO GOLF
Short Title: INTRODUCTION TO GOLF
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This class will cover the fundamental skills, rules, and etiquette of golf. There is an additional $90 fee associated with this course. Class will often meet at the Memorial Hermann Park Golf Course. Students are expected to carpool or walk to class on those days.

LPAP 111 - INTERMEDIATE GOLF
Short Title: INTERMEDIATE GOLF
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LPAP 110
Description: This class is intended for an intermediate level player. Topics covered include: swing fundamentals, set up, aim & alignment, putting, chipping, and club selection. There is an additional $60 course fee associated with this class.

LPAP 113 - MENTAL TRAINING FOR PERFORMANCE ENHANCEMENT
Short Title: MENTAL TRAINING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will provide a broad overview of sport psychology concepts that are relevant to most performance related activity. Specifically, the class will cover topics designed to enhance performance such as arousal and anxiety regulation, behavior modification, goal setting, leadership and communication skills, intrinsic motivation and self-confidence.


LPAP 115 - MINDFULNESS: MEDITATION FOR STRESS REDUCTION  
Short Title: MINDFULNESS MEDITATION  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course is designed to help students cultivate mindfulness by intentionally bringing awareness to the present, and noticing and letting go of judgment, critical thoughts and preconceived ideas. The course consists of instruction in and practice of mindfulness meditations as well as discussion of integrating mindfulness into everyday life.

LPAP 116 - INTERMEDIATE SALSA/ CHA CHA  
Short Title: INTERMEDIATE SALSA/CHA CHA  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): LPAP 138  
Description: Students will develop increased proficiency at leading and following and creating complex turns/footwork as are commonly utilized in American style salsa and cha cha.

LPAP 117 - INTRODUCTION TO OUTDOOR LEADERSHIP  
Short Title: INTRO TO OUTDOOR LEADERSHIP  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This is a survey course that addresses the theory and practice of outdoor leadership. It will explore such topics as outdoor trip planning, risk management, effective decision making, group dynamics, and environmental stewardship. In addition, it will cover outdoor skills such as rock climbing and paddling. There is a $20 fee associated with this course.

LPAP 118 - INTRODUCTION TO TEAM SPORTS  
Short Title: INTRODUCTION TO TEAM SPORTS  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course is designed to offer an introduction to the skills, basic rules, and strategies of a variety of team sports.

LPAP 119 - INTRODUCTION TO TEAM SPORTS OFFICIATING  
Short Title: INTRO TEAM SPORTS OFFICIATING  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course is designed to introduce students to the fundamental rules, regulations, mechanics and strategies required to officiate a multitude of team sports. In addition, students will develop strong interpersonal and communication skills necessary for effective game management.

LPAP 120 - INTRODUCTION TO DISC GOLF/ULTIMATE FRISBEE  
Short Title: DISC GAMES  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This is a course designed to offer an introduction to the fundamental disc golf and ultimate frisbee skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions.

LPAP 125 - INTRODUCTION TO SOCCER  
Short Title: INTRODUCTION TO SOCCER  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This is an entry level course offering fundamental soccer skills, basic rules, and team tactics. These basic principles will be presented through active participation and instruction and evaluated through physical performance, participation and written assessment.

LPAP 126 - INTERMEDIATE SOCCER  
Short Title: INTER SOCCER  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): LPAP 125  
Description: This is an intermediate level course offering advanced soccer skills and team tactics. These skills and tactics will be presented through active participation and instruction and evaluated through physical performance, participation and written assignments.
LPAP 127 - INTRODUCTION TO VOLLEYBALL/BASKETBALL
Short Title: INTRO TO VOLLEYBALL/BASKETBALL
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This is a beginning level course designed to offer an introduction to the fundamentals of basketball and volleyball including skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions.

LPAP 130 - CONTACT IMPROVISATION
Short Title: CONTACT IMPROVISATION
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to help students develop the physical and perceptual skills basic to the movement of Contact Improvisation including: falling, rolling, responding to touch, momentum and gravity, and developing awareness to the physical environment. Additionally, the course provides an overview of the history of Contact Improvisation and its relevance as a global social dance form.

LPAP 131 - INTRODUCTION TO MIDDLE EASTERN DANCE
Short Title: INTRO TO MIDDLE EASTERN DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This is a beginning level course which will introduce the basic movements of Middle Eastern Dance. Students will also be expected to develop a knowledge and appreciation of Middle Eastern dance as a cultural, communal, and recreational activity. Due to cultural restrictions, this course is for women only.

LPAP 132 - INTERMEDIATE MIDDLE EASTERN DANCE
Short Title: INTER MIDDLE EASTERN DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This is an intermediate course which will introduce advanced movements of Middle Eastern Dance. Students will also be expected to develop a knowledge and appreciation of Middle Eastern Dance as a cultural, communal, and recreational activity. Due to cultural restrictions, this course is for women only.

LPAP 133 - CAPOEIRA
Short Title: CAPOEIRA
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Capoeira is a truly unique art, combining martial arts, dance and music. Students will learn the history, traditions and essential moves and strategies, as well as how to play the music associated with this activity.

LPAP 134 - INDIAN DANCE: FROM CLASSICAL TO BOLLYWOOD
Short Title: INDIAN DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course focuses on the Bharatanatyam form of dance that is very popular in South India. Bharatanatyam is the oldest of all classical Indian forms and its narrative style is known for its grace, purity, tenderness and statuesque poses.

LPAP 135 - INTRODUCTION TO DANCE
Short Title: INTRODUCTION TO DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course introduces students to various dance techniques, (e.g. hip-hop, modern, ballet), choreography, improvisation, and performance as fundamental elements in the art of dance. Students will investigate dynamic and expressive methods of dance, and will develop foundational dance abilities including aerobic conditioning, coordination, alignment and dexterity.

LPAP 136 - INTRODUCTION TO LATIN DANCE: MERENGUE AND SAMBA
Short Title: INTRO TO MERENGUE AND SAMBA
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Course content includes demonstration of and brief lectures on Merengue and Samba. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills.
LPAP 137 - INTRODUCTION TO EAST COAST SWING  
Short Title: INTRO TO EAST COAST SWING  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Course content includes demonstration of and brief lectures on the East coast Swing, including swing and triple step versions. Students will participate in drills to improve footwork, arm positioning, and leading and following skills.

LPAP 138 - INTRODUCTION TO LATIN DANCE - SALSA/MAMBO & CHA CHA  
Short Title: INTRO TO SALSA/MAMBO & CHA CHA  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Course content includes demonstration of and brief lectures on the American Style Salsa/Mambo and Cha Cha. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills.

LPAP 139 - INTRODUCTION TO BALLROOM DANCE - TANGO AND RUMBA  
Short Title: INTRO TO TANGO & RUMBA  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Course content includes demonstration of and brief lectures on the American Style Tango and Rumba. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills.

LPAP 141 - INTERMEDIATE BALLROOM DANCE  
Short Title: INTER BALLROOM DANCE  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): LPAP 109  
Description: Course content includes demonstration of and brief lectures on intermediate-level American Style Foxtrot and Waltz. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills.

LPAP 143 - MUSICAL THEATER JAZZ  
Short Title: MUSICAL THEATER JAZZ  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: This course will focus on fundamental musical theater vocabulary and steps. Students will study musical theater styles from the golden era of Broadway to contemporary shows.

LPAP 144 - INTRODUCTION TO COUNTRY WESTERN DANCE  
Short Title: COUNTRY WESTERN DANCE  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Description: Course content includes demonstration of and brief lectures on the Two Step and Polka. Drills are created to improve footwork, arm positioning, and leading and following skills. Other topics: history of C&W Dance, terminology, proper body alignment, leading and following, and social dance etiquette.

LPAP 145 - INTERMEDIATE COUNTRY WESTERN DANCE  
Short Title: INTER COUNTRY WESTERN DANCE  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): LPAP 144  
Description: Course content includes demonstration of and brief lectures on the intermediate level Two Step and Country Western Polka. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills.

LPAP 147 - INTERMEDIATE EAST COAST SWING DANCE  
Short Title: INTER EAST COAST SWING DANCE  
Department: Lifetime Physical Activity  
Grade Mode: Standard Letter  
Course Type: Activity Course  
Credit Hour: 1  
Restrictions: Enrollment is limited to Undergraduate level students.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): LPAP 137  
Description: Course content includes demonstration of and brief lectures on the intermediate level of East Coast Swing, including single step and triple step versions.
LPAP 148 - DANCE CHOREOGRAPHY
Short Title: CHOREOGRAPHY
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course teaches basic dance making skills (choreography) for all styles of dance. Units covered will include the creation of inventive movement through improvisation, structures for dance, how to extend your movement ideas, partnering, working with a group, and the selection of dance themes, music, and props. Students will be required to compose short dance studies that will be critiqued in class through codified dance criticism methods then revise work.

LPAP 149 - ADVANCED DANCE TECHNIQUE AND THEORY
Short Title: ADV DANCE TECH AND THEORY
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course helps students to develop an advanced level of dance technique through the study of different dance styles (modern dance, ballet, and jazz dance) with emphasis on understanding the anatomical body, training methods (body therapies), and performance skills. Course taught by dance staff and guest teachers. Instructor Permission Required.

LPAP 150 - IMPROVISATION DANCE
Short Title: IMPROVISATION DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The class will focus on expanding students’ creative movement through dance improvisation which will allow for self-discovery, self-experience, and will build composition skills. Each class will focus on improvisational structures, and the elements of dance that will lead to choreography methods.

LPAP 151 - THE ALEXANDER TECHNIQUE
Short Title: THE ALEXANDER TECHNIQUE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: We all have habits of tension that interfere with our natural ease in movement. The Alexander Technique helps us to first recognize our habits and then interrupt them so we can experience greater freedom, strength, and coordination in our movement.

LPAP 152 - INTRODUCTION TO CONTEMPORARY DANCE
Short Title: INTRO TO CONTEMPORARY DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This is a beginning dance class that introduces students to contemporary dance technique and the performing of dance combinations to music. The class has a progression: core work on the floor; exercises at center; moving across the floor; and movement combinations. The majority of the classes are spent learning dance technique, the history of modern dance and modern dance choreography.

LPAP 153 - INTERMEDIATE MODERN DANCE
Short Title: INTERMEDIATE MODERN DANCE
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: An intermediate level modern dance class that incorporates a variety of modern dance techniques. The class places emphasis on correct anatomical alignment, breathe and release, rhythmic and spatial accuracy, and performance commitment. This class is for students who audition for the Rice Dance Theatre and are accepted into the company. Auditions and class registration are held during the second week of classes. Class requirements include participation in a minimum of one rehearsal per week and a dance performance series near the end of the semester.

LPAP 155 - INTRODUCTION TO BALLET
Short Title: INTRODUCTION TO BALLET
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This is a beginning dance class that introduces students to contemporary ballet technique. Each student is required to attend a ballet audition for the Rice Dance Theatre and are accepted into the company. Auditions and class registration are held during the second week of classes. Class requirements include participation in a minimum of one rehearsal per week and a dance performance series near the end of the semester.

LPAP 156 - INTERMEDIATE BALLET
Short Title: INTERMEDIATE BALLET
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LPAP 155 or LPCR 155
Description: This class will introduce students to advanced principles and steps of ballet technique. Students must have dance experience (ballet preferred) to take this class. Students are required to attend a ballet performance during the semester.
LPAP 157 - JAZZ DANCE/HIP HOP
Short Title: JAZZ DANCE/HIP HOP
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A beginning level dance class that teaches basic technique, performance, dance fitness, alignment, and introduces the stylistic and historical components of jazz dance and hip hop.

LPAP 159 - LIFEGUARDING
Short Title: LIFEGUARDING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides the skills and knowledge to become lifeguard certified. Students will learn to prevent and respond to aquatic emergencies. $35 book fee. Students must be able to swim at least 300 yards.

LPAP 161 - INTRODUCTION TO AQUATIC ACTIVITIES
Short Title: INTRO TO AQUATIC ACTIVITIES
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to offer basic knowledge and skill development in a variety of aquatic activities. Focus will be given to basic swimming and diving techniques as well as competitive, recreational and fitness activities.

LPAP 162 - WATER SAFETY INSTRUCTOR
Short Title: WATER SAFETY INSTRUCTOR
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will work toward the American Red Cross Water Safety Instructor Certification. $57.00 additional course fee.

LPAP 164 - FITNESS SWIMMING
Short Title: FITNESS SWIMMING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to introduce students to triathlon training. Students will participate in a fitness conditioning program comprised of swimming, cycling, and running designed specifically for the completion of a sprint triathlon. Additionally, students will learn about technical aspects of the sport including equipment needs and maintenance, and safety requirements. Equipment needed to take the course: bike, swimsuit, running shoes.

LPAP 170 - YOGA
Short Title: YOGA
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides a solid foundation in the principals of yoga theory and practice. By incorporating traditional philosophy, physical poses (asana) and breath control (pranayama), this class helps you to discover vitality, flexibility and strength within yourself.
LPAP 171 - TAI CHI
Short Title: TAI CHI
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Translated as Grand Ultimate Boxing, Taijiquan (also Tai Chi Chuan) has five major family styles in practice today. These are the Chen, Yang, Wu, Wu (Hao), and Sun styles. Through kung fu warm ups and a series of special Chen Taiji drills called silk reeling, students will be introduced to a deeper awareness of physical fitness, body movement, and mental clarity. The student will then be taught a basic introductory level form designed to give a taste of what Chen Style Taijiquan has to offer. The students will also be introduced to some Push Hands training (a two person drill) and basic martial applications.

LPAP 172 - INTRODUCTION TO FENCING
Short Title: INTRODUCTION TO FENCING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Fencing is a fast paced sport that develops mental agility and focus. This class will teach the student the fundamentals of movement, bladework, and basic strategies in foil. Course goals are to compete at a beginner level and to understand the history and rules of the sport. Students will use exercises, drills, and bouts to develop their abilities and meet these goals.

LPAP 173 - INTERMEDIATE FENCING
Short Title: INTER FENCING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LPAP 172
Description: This course is designed to introduce the student to the skills and strategy necessary to participate in fencing at the intermediate level.

LPAP 175 - INTRODUCTION TO MARTIAL ARTS
Short Title: INTRO TO MARTIAL ARTS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to introduce students to the basic principles of Martial Arts. Students will learn the philosophy and physical conditioning components associated with this martial arts form with a particular emphasis on reflex development, timing, eye-hand coordination, balance and a sense of well-being.

LPAP 176 - SELF DEFENSE FOR WOMEN
Short Title: SELF DEFENSE FOR WOMEN
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course exposes students to a program of realistic self-defense tactics and techniques. It is a comprehensive course for women that begins with awareness, prevention, risk reduction and avoidance, while progressing through the basics of hands-on defense training.

LPAP 177 - INTERMEDIATE YOGA TECHNIQUES
Short Title: INTER YOGA
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LPAP 170
Description: This course builds on the primary principles of yoga theory and practice that are learned in basic yoga courses. This class will introduce more advanced physical poses, breath control and meditation techniques.

LPAP 178 - THE ART OF RELAXATION
Short Title: THE ART OF RELAXATION
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to provide students with an overview of the evolution of relaxation techniques and the various forms they have taken in different cultures across time. Each class will focus on the stress-relieving benefits of and different modalities for relaxation practice.

LPAP 180 - WALK, JOG, RUN
Short Title: WALK, JOG, RUN
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The purpose of this class is to teach students how to improve cardiovascular and muscular strength and endurance as well as stress management through fitness walking and jogging.
LPAP 181 - PERSONAL FITNESS
Short Title: PERSONAL FITNESS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Class will consist of brief lectures on health and fitness topics. Students will be exposed to activities that may be incorporated into an individualized personal fitness program. The goal of this course is to motivate the students to include physical activity as an integral part of his/her lifestyle.

LPAP 182 - WEIGHT TRAINING
Short Title: WEIGHT TRAINING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The class will consist of brief lectures and discussions on topics related to weight training. Students will be exposed to several different types of weight training techniques throughout the semester that may be incorporated into an individual's personal fitness program.

LPAP 183 - WEIGHT TRAINING AND CONDITIONING
Short Title: WEIGHT TRAINING & CONDITIONING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will be exposed to several different types of weight training and cardiovascular conditioning techniques throughout the semester that may be incorporated into an individual's personal fitness program.

LPAP 185 - CARDIO KICKBOXING
Short Title: CARDIO KICKBOXING
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Kickboxing combines the best of boxing and other martial arts techniques and brings it to you in an exciting and easy to learn format. As the name implies, cardio kickboxing involves kickboxing movements, but with cardiovascular training principles.

LPAP 186 - PILATES
Short Title: PILATES
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This is a beginning level course designed to offer an introduction to the fundamentals and beginner/intermediate classic Pilates mat work exercises. The acquisition and understanding of these exercises, their goal, and intent will be presented through activity and lecture sessions and will be evaluated through physical performance, participation, and written assessment.

LPAP 187 - GROUP FITNESS
Short Title: GROUP FITNESS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The purpose of this class will be to provide students a learning opportunity in the broad area of group exercise.

LPAP 189 - INTRODUCTION TO OUTDOOR RECREATION
Short Title: INTRO TO OUTDOOR RECREATION
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course will offer students the opportunity to explore a variety of outdoor activities including teambuilding and leadership skill development, rock climbing, disc golf and camping. The class will be largely activity based and includes a $20 additional course fee.

LPAP 191 - GROUP FITNESS INSTRUCTOR TRAINING
Short Title: GROUP FITNESS INSTRUCTOR
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to provide the theoretical and practical skills necessary to achieve a national certification in group fitness instruction. The student will develop and lead group fitness routines as well as learn the general principles of anatomy, exercise science, and biomechanics. $30.00 additional course fee.
LPAP 192 - EXERCISE AND WEIGHT MANAGEMENT
Short Title: EXERCISE & WEIGHT MANAGEMENT
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is intended to help overweight students gain a comprehensive understanding of weight and exercise management, including nutrition/portion control, emotional eating, medical perspectives and creating sustainable exercise programs. Participants will gain the necessary skills and understanding for obtaining optimum health. All classes will feature both lecture and physical activity.

LPAP 193 - WEIGHT TRAINING FOR WOMEN
Short Title: WEIGHT TRAINING FOR WOMEN
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to provide female students with a non-intimidating environment in which they can learn the fundamental principles of resistance training, the focus of the course will be on safe lifting practices, exercise variation/manipulation, and program design.

LPAP 194 - OPEN WATER SCUBA
Short Title: SCUBA
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course is designed to provide students with the basics of SCUBA in accordance with P.A.D.I. standards. Topics include diving equipment, physiology, planning and safety, and there will be practical sessions in both pool and open water sites. An additional course fee of $400, which covers the cost of all equipment, and transportation/entrance fees to dive sites, is required.

LPAP 195 - CRITICAL THINKING IN SEXUALITY
Short Title: CRITICAL THINKING IN SEXUALITY
Department: Dean of Undergraduates
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Course Level: Undergraduate Lower-Level
Description: CTIS will draw from a public health model of violence prevention to teach students the dynamics of domestic and sexual violence, bystander intervention, healthy relationships and healthy sexuality. This course is only available to first time matriculants in the fall but anyone can register for it in the spring.

LPAP 197 - DISCOVERING PERSONAL WELLNESS: CREATING AWARENESS & DEVELOPING SKILLS FOR BEHAVIOR CHANGE
Short Title: DISCOVERING PERSONAL WELLNESS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will discuss the many factors that influence personal well-being, giving particular attention to individual needs and behavior change goals. Major areas to be covered include: time management, coping strategies, healthy relationships, body image, food choices, self-esteem, physical activity, spirituality, environmental awareness, alternative medicine and self-care.

LPAP 198 - NUTRITION
Short Title: NUTRITION
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The class will consist of lectures and discussions on the science of nutrition.

LPAP 199 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Independent Study is intended for the student who shows interest in an area of study not offered or who wishes to pursue a discipline in greater depth than possible through the regular curriculum. A contract between the student and the teacher shall define the responsibilities of both student and the teacher, and will specify standards for the successful completion of the project. Department Permission Required.

LPAP 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Lifetime Physical Activity
Grade Mode: Standard Letter
Course Type: Activity Course, Lecture, Laboratory, Seminar, Internship/Practicum
Credit Hours: 1-4
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
Linguistics (LING)

LING 107 - LANGUAGE IN THE MEDIA
Short Title: LANGUAGE IN THE MEDIA
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In this course, we examine the effect language use in the media has on an American and global culture. Students will collect data to contribute to a class data set, which they will then use to complete their own original research projects. This course is limited to first-year students only. Cross-list: FSEM 108.

LING 200 - INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE
Short Title: INTRO TO STUDY OF LANGUAGE
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Overview of the scientific study of the structure and function of language. Introduces the main fields of linguistics: phonetics, phonology, morphology, syntax, semantics, discourse, historical linguistics, sociolinguistics, and psycholinguistics. Highlights the interdisciplinary relationship of linguistics with anthropology, sociology, psychology, and cognitive sciences. Fall 2017 - Section 002 is open only to Fall 2017 New Matrics. Cross-list: ANTH 200.

LING 201 - METAPHORS IN SCIENCE AND COGNITION
Short Title: SCIENCE & COGNITION METAPHORS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course provides a brief overview of the theory of conceptual metaphor and investigates its relevance in the creation and diffusion of scientific concepts.

LING 205 - LANGUAGE AND SOCIETY
Short Title: LANGUAGE AND SOCIETY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course treats language as a social phenomenon to show how language, personal identity and institutions of social control inter-relate. The course focuses on linguistic interaction in daily life and how gender, ethnic, class, activity, and geographic variation affect language use. Cross-list: SWGS 205.

LING 207 - LANGUAGE IN THE MEDIA
Short Title: LANGUAGE IN THE MEDIA
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the systematic study of English words. Topics include word formation, origins and history of English, etymology, new words, slang and jargon. Students will investigate words using online lexical tools and collect and describe neologisms. Understanding of word formation helps increase mastery of English vocabulary for GRE and other tests. No linguistics background required. Mutually Exclusive: Credit cannot be earned for LING 216 and ENGL 215/LING 215.

LING 216 - WORDS IN ENGLISH
Short Title: WORDS IN ENGLISH
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Overview of the theory of conceptual metaphor and investigates its relevance in the creation and diffusion of scientific concepts.

LING 200 - INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE
Short Title: INTRO TO STUDY OF LANGUAGE
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LING 200 or ANTH 200
Description: Overview of the scientific study of the structure and function of language. Introduces the main fields of linguistics: phonetics, phonology, morphology, syntax, semantics, discourse, historical linguistics, sociolinguistics, and psycholinguistics. Highlights the interdisciplinary relationship of linguistics with anthropology, sociology, psychology, and cognitive sciences. Fall 2017 - Section 002 is open only to Fall 2017 New Matrics. Cross-list: ANTH 200.

LING 201 - METAPHORS IN SCIENCE AND COGNITION
Short Title: SCIENCE & COGNITION METAPHORS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course provides a brief overview of the theory of conceptual metaphor and investigates its relevance in the creation and diffusion of scientific concepts.

LING 205 - LANGUAGE AND SOCIETY
Short Title: LANGUAGE AND SOCIETY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course treats language as a social phenomenon to show how language, personal identity and institutions of social control inter-relate. The course focuses on linguistic interaction in daily life and how gender, ethnic, class, activity, and geographic variation affect language use. Cross-list: SWGS 205.

LING 216 - WORDS IN ENGLISH
Short Title: WORDS IN ENGLISH
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Overview of the systematic study of English words. Topics include word formation, origins and history of English, etymology, new words, slang and jargon. Students will investigate words using online lexical tools and collect and describe neologisms. Understanding of word formation helps increase mastery of English vocabulary for GRE and other tests. No linguistics background required. Mutually Exclusive: Credit cannot be earned for LING 216 and ENGL 215/LING 215.

LING 300 - LINGUISTIC ANALYSIS
Short Title: LINGUISTIC ANALYSIS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: A hands-on, data-oriented approach to how different languages construct words and sentences. Students will develop skills in linguistic problem solving and the foundations for pursuing grammatical description. Topics: word classes, morphology, tense-aspect-modality, clause structure, word order, grammatical relations, existentials/possessives/locatives, voice/valence, questions, negation, relative clauses, complements, causatives. Cross-list: ANTH 300. Graduate/Undergraduate Equivalency: LING 500. Mutually Exclusive: Credit cannot be earned for LING 300 and LING 500.

LING 301 - PHONETICS
Short Title: PHONETICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: An introductory study of speech as it relates to speech and sound systems in the world’s languages. Speech sounds are examined in terms of production mechanisms (articulatory phonetics), propagation mechanisms (acoustic phonetics), and perception mechanisms (auditory phonetics). Includes a basic introduction to Digital Signal Processing. Cross-list: ANTH 301. Graduate/Undergraduate Equivalency: LING 501. Mutually Exclusive: Credit cannot be earned for LING 301 and LING 501.
LING 303 - LANGUAGE AND GENDER
Short Title: LANGUAGE AND GENDER
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the theoretical, cultural, and social grounding of gender and language use. We use analytical tools from linguistics, cognitive science, cultural anthropology, psychology and biology. Emphasis is placed on the historical role of gender in such research, and the debates that result as perspectives shift.

LING 304 - INTRODUCTION TO SYNTAX
Short Title: INTRODUCTION TO SYNTAX
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 300
Description: An introduction to syntactic theory and analysis. Functional and formal approaches to both universal and language specific aspects of various syntactic phenomena are compared and evaluated in the light of the data drawn from typologically and geographically diverse languages. LING 300/500 is an absolute prerequisite to this course. Graduate/Undergraduate Equivalency: LING 504. Mutually Exclusive: Credit cannot be earned for LING 304 and LING 504.

LING 305 - HISTORICAL LINGUISTICS
Short Title: HISTORICAL LINGUISTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (LING 200 or ANTH 200) and (ANTH 301 or LING 301)
Description: Exploration of the nature of language change. Topics covered include sound change, syntactic and semantic change, modeling language splits, the sociolinguistics of language change, and the history of European languages. Cross-list: ANTH 305. Graduate/Undergraduate Equivalency: LING 505. Mutually Exclusive: Credit cannot be earned for LING 305 and LING 505.

LING 306 - LANGUAGE, THOUGHT, AND MIND
Short Title: LANGUAGE, THOUGHT, AND MIND
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200 or LING 300
Description: Study of language as a cognitive system. Linguistic data as evidence for the cognitive structures and processes that enable people to learn and use language; how linguistic structure influences concept formation and patterns of thinking. Graduate/Undergraduate Equivalency: LING 506. Mutually Exclusive: Credit cannot be earned for LING 306 and LING 506.

LING 307 - INTRODUCTION TO LINGUISTIC MODELING
Short Title: INTRO TO LING MODELING
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: This course addresses phenomena which span a variety of linguistic domains and sub-disciplines with the objective of modeling data in various frameworks.

LING 309 - PSYCHOLOGY OF LANGUAGE
Short Title: PSYCHOLOGY OF LANGUAGE
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203
Description: Study of human and other animal communication. Includes the structure of human language, word meaning and semantic memory, psychological studies of syntax, bilingualism, language and thought, and language errors and disorders. Cross-list: PSYC 309.

LING 310 - MORPHOLOGY
Short Title: MORPHOLOGY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 300 or LING 311
Description: Morphology is the study of word formation and the relationship between form, meaning, and syntax. This course is an introduction to morphological theory. Topics covered include approaches to word formation, morphological change, and morphological phenomena in diverse languages. Graduate/Undergraduate Equivalency: LING 510. Mutually Exclusive: Credit cannot be earned for LING 310 and LING 510.
LING 311 - INTRODUCTION TO PHONOLOGY
Short Title: INTRODUCTION TO PHONOLOGY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 200 or LING 200
Description: Introduction to analysis techniques and theory concerning patterning of sounds in the world's languages. The course will involve extensive work with non-English data sets, and development of analytical techniques such as identification of sound alternations or restrictions, and formalization of abstract representations and rules to account for them. Cross-list: ANTH 323. Graduate/Undergraduate Equivalency: LING 511. Mutually Exclusive: Credit cannot be earned for LING 311 and LING 511.

LING 313 - LANGUAGE AND CULTURE
Short Title: LANGUAGE AND CULTURE
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Investigation of the relation between language and thought, language and worldview, and language and logic. Cross-list: ANTH 313. Graduate/Undergraduate Equivalency: LING 513. Mutually Exclusive: Credit cannot be earned for LING 313 and LING 513.

LING 315 - INTRODUCTION TO SEMANTICS
Short Title: INTRODUCTION TO SEMANTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to basic approaches to the study of meaning in linguistics and related fields. Includes the cognitive representation of meaning, lexical categorization, conceptual structures, metaphor/metonymy, meaning change, pragmatic inference, and the relation of language and mind. Cross-list: PSYC 315. Graduate/Undergraduate Equivalency: LING 515. Recommended Prerequisite(s): LING 200 or ANTH 200. Mutually Exclusive: Credit cannot be earned for LING 315 and LING 515.

LING 320 - ORIGINS AND EVOLUTION OF HUMAN LANGUAGE
Short Title: ORIGIN&EVOLUTION OF HUMAN LANG
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: How did Human Language arise, and what role did language play in the evolution of our species? This course introduces the basic sources of evidence (e.g., fossil remains, comparative primatology, neonatal development) for knowledge of human linguistic prehistory, including the spread of modern humans and human language throughout the world.

LING 322 - LANGUAGE AND ETHNICITY
Short Title: LANGUAGE AND ETHNICITY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 205
Description: This course explores the role that ethnicity plays in various language varieties used in the U.S., and the role that language varieties play in ethnic identity. We examine this from both speech production and speech perception perspectives.

LING 325 - LANGUAGE ACQUISITION
Short Title: LANGUAGE ACQUISITION
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101
Description: The aim of this course is to explore language development closely through a variety of theories and research findings. Students will become familiar with different theories concerning language development, and develop an understanding of relevant issues, theoretical positions and relevant methodologies in language development using critical thinking skills. Cross-list: PSYC 325.

LING 330 - CORPUS LINGUISTICS
Short Title: CORPUS LINGUISTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Investigation of the nature of linguistic representations from corpus-based analyses as compared to more traditional methodologies. Includes the collection of individual text data (or the exploration of existing text sources), the use of various text analysis programs (e.g., concordance software), and the production of lexical, syntactic, semantic, discourse, or cultural analyses of selected texts, using computer-based methods. Graduate/Undergraduate Equivalency: LING 530. Mutually Exclusive: Credit cannot be earned for LING 330 and LING 530.
LING 336 - INTRO TO INDO-EUROPEAN
Short Title: INTRO TO INDO-EUROPEAN
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will begin with a brief survey of the Indo-European languages, followed by a detailed reconstruction of Proto-Indo-European phonology, morphology, and syntax. The second half of the course will deal with Indo-European culture, laws, society and poetics, together with a consideration of advanced topics in the individual branches. Cross-list: CLAS 336.

LING 340 - THEORY AND METHODS OF TEACHING ESL AND FL
Short Title: TEACHING ESL/FL-THEORY&METHODS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to the theory and practice of teaching a second language. Includes the process of language learning viewed from social, psychological, and linguistic perspectives, as well as commonly used teaching "methods," such as the audio-lingual method, situational language teaching, the natural approach, and TPR, among others. Graduate/Undergraduate Equivalency: LING 540. Mutually Exclusive: Credit cannot be earned for LING 340 and LING 540.

LING 349 - THEORY AND METHODS OF TEACHING ESL AND FL
Short Title: TEACHING ESL/FL-THEORY&METHODS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (LING 200 or ANTH 200) and (ANTH 301 or LING 301)
Description: Introduction to the theory and practice of teaching a second language. Includes the process of language learning viewed from social, psychological, and linguistic perspectives, as well as commonly used teaching "methods," such as the audio-lingual method, situational language teaching, the natural approach, and TPR, among others. Graduate/Undergraduate Equivalency: LING 540. Mutually Exclusive: Credit cannot be earned for LING 340 and LING 540.

LING 397 - SPEECH AND HEARING SCIENCE
Short Title: SPEECH AND HEARING SCIENCE
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (LING 200 or ANTH 200) and (ANTH 301 or LING 301)
Description: This course will describe the basics of speech and hearing science, including but not limited to: anatomy and physiology of speech and hearing mechanisms, neural pathways involved in speech and hearing, speech pathology and audiology, types of speech and hearing disorders, their causes, and types of therapies available for the remediation of these disorders. Mutually Exclusive: Credit cannot be earned for LING 397 and LING 212.

LING 400 - LINGUISTIC ANALYSIS II
Short Title: LINGUISTIC ANALYSIS II
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 300 or ANTH 300
Description: Analysis of language beyond the clausal level. Grammatical and semantic analyses using corpora and concordance queries. Recording, transcription, and analysis of natural spoken discourse. The intricate relation between meaning, grammar, and discourse (i.e. the 'usage-based model'). The socially contextualized nature of language. The complex relationship between discourse and ideology.

LING 401 - ANALYSIS OF SOUND PATTERNS
Short Title: ANALYSIS OF SOUND PATTERNS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 301 or LING 301
Description: Introduction to various theories of phonological knowledge. Course involves extensive work in the collection and analysis of empirical data, in both English and other languages, including corpora analysis, and acoustic and experimental analysis. Attention is paid to the way phonetic data informs phonological theory.

LING 404 - RESEARCH METHODOLOGY AND LINGUISTIC THEORIES
Short Title: RSRCH METHOD & LINGUISTIC THEO
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 300 or ANTH 300 or (LING 500 or ANTH 500)
Description: Compares and explores the nature of data, argumentation, goals, and assumptions of current theoretical approaches to language and linguistics. Centers on the discussion of general readings and source articles from cognitive, generative, typological, discourse-functional, and sociolinguistic orientations. Emphasizes critical thinking and awareness of the potential benefits and drawbacks of each approach.
LING 405 - DISCOURSE
Short Title: DISCOURSE
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 300 or ANTH 300 or LING 500 or ANTH 500
Description: An overview of features and organization of language-in-use. Examination of the macro-structure of different genres of discourse, the interplay between language and social/cultural interaction, and the role of discourse and communication in motivating and shaping grammatical form.

LING 406 - COGNITIVE STUDIES
Short Title: COGNITIVE STUDIES
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Relations between thought, language, and culture. Special emphasis given to natural systems of classification and their underlying logical principles. Cross-list: ANTH 406.

LING 407 - LINGUISTIC FIELD METHODS
Short Title: LINGUISTIC FIELD METHODS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 5
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (LING 300 or ANTH 300) and (LING 301 or ANTH 301) and (LING 304 or ANTH 304) and (LING 311 or ANTH 323) or (LING 500 or ANTH 500) and (LING 501 or ANTH 501) and (LING 504 or ANTH 504) and (LING 511 or ANTH 523)
Description: Techniques and practice in the observation, analysis, and recording of a human language. Cross-list: ANTH 407. Repeatable for Credit.

LING 408 - LINGUISTIC FIELD METHODS
Short Title: LINGUISTIC FIELD METHODS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 5
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ANTH 407 or LING 407
Description: Observation, analysis and recording of a human language. Focus on morphosyntactic description. Cross-list: ANTH 408. Repeatable for Credit.

LING 409 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: Special Topics in linguistics. Please contact the department for details on offered topics. FALL 2017 TOPIC: RESEARCH ON BRAILLE. This semester's Special Topics course introduces students to the linguistic, cognitive, and social aspects of braille. Students will gain a basic understanding and appreciation of braille, its relevance to the reading sciences (and vice versa) and thorough grounding in the research literature. Students will also have a chance to help design experiments and studies for future research. Repeatable for Credit.

LING 410 - RHETORIC
Short Title: RHETORIC
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Overview of classical series of rhetoric and followed by more intensive discussions both of contemporary theories and applications in a wide variety of disciplines. Cross-list: ANTH 412.

LING 411 - NEUROLINGUISTICS
Short Title: NEUROLINGUISTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of language and the brain. Includes localization of speech, language, and memory functions, hemispheric dominance, pathologies of speech and language associated with brain damage, and hypotheses of the representation and operation of linguistic information in the cortex. Cross-list: ANTH 411, NEUR 411.

LING 414 - HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY
Short Title: HERMENEUTICS &LINGUISTIC ANTH
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
LING 415 - SOCIOLINGUISTICS
Short Title: SOCIOLINGUISTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 301 or ANTH 301 or LING 311 or ANTH 323 or LING 501 or ANTH 501 or LING 511 or ANTH 523
Description: This course covers contemporary sociolinguistic theory and methodologies. We examine the linguistic consequences to speakers of their group memberships such as gender, race, class and sexuality. Cross-list: SWGS 415.

LING 416 - LANGUAGE UNIVERSALS AND TYPOLOGY
Short Title: LANGUAGE UNIVERSALS & TYPOLOGY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 300 or ANTH 300 or LING 500 or ANTH 500
Description: Investigation of what human languages have in common and a range of ways in which they can differ. Includes marking patterns in particular linguistic domains (e.g., case marking, animacy, and passives) and theoretical and methodological issues.

LING 419 - MULTILINGUALISM
Short Title: MULTILINGUALISM
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): LING 200 or ANTH 200
Description: This course analyzes multilingualism from a variety of perspectives including cognitive linguistic and socio-cultural viewpoints. Topics to be covered include neural activation, conceptual representations of the lexicon, lexical, phonological, syntactic and pragmatic interference, code switching, cultural identity, etc.

LING 427 - ADVANCED PHONOLOGY
Short Title: ADVANCED PHONOLOGY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (LING 301 or ANTH 301) and (LING 311 or ANTH 323) or (LING 501 or ANTH 501) and (LING 511 or ANTH 523)
Description: Examination of issues in contemporary phonological theory. Special attention will be given to more advanced representational theories (feature geometry, moraic phonology) and phonetically motivated phonological analysis, especially within the framework of optimality theory.

LING 428 - LABORATORY PHONOLOGY
Short Title: LABORATORY PHONOLOGY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (LING 301 or ANTH 301) and (LING 311 or ANTH 323) or (LING 501 or ANTH 501) and (LING 511 or ANTH 523)
Description: This course will examine phonetic and phonological phenomena from an empirical point of view, placing priority on first-hand acoustic or experimental data. The primary goal will be the investigation of theoretical issues in the areas of phonetic processing, lexical representation, and phonological patterning. A secondary goal is familiarity with laboratory techniques.

LING 480 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

LING 481 - UNDERGRADUATE RESEARCH
Short Title: UNDERGRADUATE RESEARCH
Department: Linguistics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

LING 482 - HONORS PROJECT
Short Title: HONORS PROJECT
Department: Linguistics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent directed research toward preparation of an undergraduate honors project or thesis. Instructor Permission Required. Repeatable for Credit.

LING 499 - RESEARCH SEMINAR
Short Title: RESEARCH SEMINAR
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (LING 300 or ANTH 300) and (LING 301 or ANTH 301) and LING 400 and LING 401
Description: A topics research course with different issues investigated every semester, and it is repeatable for credit. The range of topics explored follows the research interests of the students and faculty. Repeatable for Credit.
LING 500 - LINGUISTIC ANALYSIS
Short Title: LINGUISTIC ANALYSIS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A hands-on, data-oriented approach to how different languages construct words and sentences. Students will develop skills in linguistic problem solving and the foundations for pursuing grammatical description. Topics: word classes, morphology, tense-aspect-modality, clause structure, word order, grammatical relations, existentials/possessives/locatives, voice/valence, questions, negation, relative clauses, complements causatives. Without Permission of Instructor, must have Graduate Standing. Cross-list: ANTH 500. Graduate/Undergraduate Equivalency: LING 300. Mutually Exclusive: Credit cannot be earned for LING 500 and LING 300.

LING 501 - PHONETICS
Short Title: PHONETICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introductory study of sound as it relates to speech and sound systems in the world's languages. Speech sounds are examined in terms of production mechanisms (articulatory phonetics), propagation mechanisms (acoustic phonetics), and perception mechanisms (auditory phonetics). Includes a basic introduction to Digital Signal Processing. Without Permission of Instructor, must have Graduate Standing. Cross-list: ANTH 501. Graduate/Undergraduate Equivalency: LING 301. Mutually Exclusive: Credit cannot be earned for LING 501 and LING 301.

LING 504 - INTRODUCTION TO SYNTAX
Short Title: INTRODUCTION TO SYNTAX
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): LING 500
Description: An introduction to syntactic theory and analysis. Functional and formal approaches to both universal and language specific aspects of various syntactic phenomena are compared and evaluated in the light of the data drawn from typologically and geographically diverse languages. LING 300/500 is an absolute prerequisite to this course. Graduate/Undergraduate Equivalency: LING 304. Mutually Exclusive: Credit cannot be earned for LING 504 and LING 304.

LING 505 - HISTORICAL LINGUISTICS
Short Title: HISTORICAL LINGUISTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Exploration of the nature of language change. Topics covered include sound change, syntactic and semantic change, modeling language splits, the sociolinguistics of language change, and the history of European languages. Without Permission of Instructor, must have Graduate Standing. Cross-list: ANTH 505. Graduate/Undergraduate Equivalency: LING 305. Mutually Exclusive: Credit cannot be earned for LING 505 and LING 305.

LING 506 - LANGUAGE, THOUGHT, AND MIND
Short Title: LANGUAGE, THOUGHT, AND MIND
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of language as a cognitive system. Linguistic data as evidence for the cognitive structures and processes that enable people to learn and use language; how linguistic structure influences concept formation and patterns of thinking. Without Permission of Instructor, must have Graduate Standing. Graduate/Undergraduate Equivalency: LING 306. Mutually Exclusive: Credit cannot be earned for LING 506 and LING 306.

LING 510 - MORPHOLOGY
Short Title: MORPHOLOGY
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): LING 500 or ANTH 500 or LING 511 or ANTH 523
Description: Morphology is the study of word formation and the relationship between form, meaning, and syntax. This course is an introduction to morphological theory. Topics covered include approaches to word formation, morphological change, and morphological phenomena in diverse languages. Without Permission of Instructor, must have Graduate Standing. Graduate/Undergraduate Equivalency: LING 310. Mutually Exclusive: Credit cannot be earned for LING 510 and LING 310.
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<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
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<th>Course Level</th>
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<tr>
<td>LING 511 - INTRODUCTION TO PHONOLOGY</td>
<td>Linguistics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Introduction to analysis techniques and theory concerning patternings of sounds in the world's languages. The course will involve extensive work with non-English data sets, and development of analytical techniques such as identification of sound alternations or restrictions, and formalization of abstract representations and rules to account for them. Without Permission of Instructor, must have Graduate Standing. Cross-list: ANTH 523. Graduate/Undergraduate Equivalency: LING 311. Mutually Exclusive: Credit cannot be earned for LING 511 and LING 311.</td>
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<td>LING 513 - LANGUAGE AND CULTURE</td>
<td>Linguistics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Investigates the relation between language and thought, language and world view, language and logic. Without Permission of Instructor, must have Graduate Standing. Cross-list: ANTH 513. Graduate/Undergraduate Equivalency: LING 313. Mutually Exclusive: Credit cannot be earned for LING 513 and LING 313.</td>
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<td>LING 515 - INTRODUCTION TO SEMANTICS</td>
<td>Linguistics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Introduction to basic approaches to the study of meaning in linguistics and related fields. Includes the cognitive representation of meaning, lexical categorization, conceptual structures, metaphor/metonymy, meaning change, pragmatic inference, and the relation of language and mind. Without Permission of Instructor, must have Graduate Standing. Graduate/Undergraduate Equivalency: LING 315. Mutually Exclusive: Credit cannot be earned for LING 515 and LING 315.</td>
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<td>LING 530 - CORPUS LINGUISTICS</td>
<td>Linguistics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Investigation of the nature of linguistic representations from corpus-based analyses as compared to more traditional methodologies. Includes the collection of individual text data (or the exploration of existing text sources), the use of various text analysis programs (e.g. concordance software), and the production of lexical, syntactic, semantic, discourse, or cultural analyses of selected texts, using computer-based methods. Without Permission of Instructor, must have Graduate Standing. Graduate/Undergraduate Equivalency: LING 330. Mutually Exclusive: Credit cannot be earned for LING 530 and LING 330.</td>
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<td>LING 550 - DEPARTMENTAL COLLOQUIUM</td>
<td>Linguistics</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Seminar</td>
<td>1</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.</td>
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<td>LING 551 - SEMINAR IN LINGUISTIC THEORY</td>
<td>Linguistics</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.</td>
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LING 552 - SEMINAR IN SYNTAX AND SEMANTICS
Short Title: SEMINAR IN SYNTAX & SEMANTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.

LING 553 - SEMINAR IN LINGUISTIC STRUCTURE
Short Title: SEMINAR IN LINGUISTIC STRUCTURE
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.

LING 554 - SEMINAR IN COGNITIVE LINGUISTICS
Short Title: COGNITIVE LINGUISTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.

LING 555 - SEMINAR IN PHONETICS
Short Title: SEMINAR IN PHONETICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): LING 301 or LING 501 or ANTH 301 or ANTH 501
Description: Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.

LING 556 - SEMINAR IN SOCIOLINGUISTICS
Short Title: SEMINAR IN SOCIOLINGUISTICS
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine the concepts of social class and community of practice in depth as they relate to sociolinguistic variation. Specific attention will be paid to how these concepts are treated in the field of linguistics, as well as complimentary fields such as sociolinguistics and anthropology. Cross-list: SWGS 556.

LING 557 - SEMINAR IN DISCOURSE
Short Title: SEMINAR IN DISCOURSE
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.

LING 558 - SEMINAR IN LANGUAGE CHANGE
Short Title: SEMINAR IN LANGUAGE CHANGE
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): LING 505
Description: Topics vary from year to year. Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.

LING 561 - SEMINAR IN LANGUAGE DOCUMENTATION AND DESCRIPTION
Short Title: SEMINAR IN LG. DOC. & DESCRIPT.
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Without Permission of Instructor, must have Graduate Standing. Repeatable for Credit.

LING 562 - SECOND LANGUAGE ACQUISITION
Short Title: SECOND LANGUAGE ACQUISITION
Department: Linguistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course presents the major issues in Second Language Acquisition in natural and formal settings (classrooms). Particular attention will be placed on less commonly taught languages, as well as community-based efforts of language revitalization. Students must be second-year graduate students or have permission of the instructor to enroll. Without Permission of Instructor, must have Graduate Standing. Instructor Permission Required.

LING 581 - GRADUATE RESEARCH
Short Title: GRADUATE RESEARCH
Department: Linguistics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Without Permission of Instructor, must have Graduate Standing. Instructor Permission Required. Repeatable for Credit.
**Management (MGMT)**

**MGMT 500 - BCM HEALTH SERVICES ADMINISTRATION**
Short Title: BCM HEALTH SERVICES ADMIN.
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: Introduces the core techniques of health services management.

**MGMT 501 - FINANCIAL ACCOUNTING**
Short Title: FINANCIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: Introduces the core techniques of financial accounting.

**MGMT 502 - MANAGERIAL ACCOUNTING**
Short Title: MANAGERIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Introduces the core techniques of managerial accounting.

**MGMT 503 - MANAGEMENT CONTROL**
Short Title: MANAGEMENT CONTROL
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Introduces the core techniques of management control.

**MGMT 510 - ORGANIZATIONAL BEHAVIOR**
Short Title: ORGANIZATIONAL BEHAVIOR
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: Introduces the core techniques of organizational behavior.

**MGMT 512 - LEADING CHANGE**
Short Title: LEADING CHANGE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: Introduces the core techniques of leading change.

**LING 800 - DISSERTATION RESEARCH**
Short Title: DISSERTATION RESEARCH
Department: Linguistics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

**LING 590 - TEACHING LINGUISTICS**
Short Title: TEACHING LINGUISTICS
Department: Linguistics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Without Permission of Instructor, must have Graduate Standing. Instructor Permission Required. Repeatable for Credit.
MGMT 541 - ECONOMIC ENVIRONMENT OF BUSINESS
Short Title: ECONOMIC ENVIRONMENT OF BUS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examination of the global economic environment that serves as a backdrop for business decision making, with emphasis on the key macroeconomic policy goals and tools and how they affect exchange rates, interest rates, business cycles, and long-term economic growth. Required for MBA.

MGMT 543 - FINANCE
Short Title: FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the theory and practice of corporate finance, with emphasis on topics such as valuation, capital budgeting, risk and return, and capital structure. Required for MBA.

MGMT 560 - CORPORATE RESPONSIBILITY
Short Title: CORPORATE RESPONSIBILITY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An exploration of the ethical and legal bases of managerial decision making and the social dimension of the business firm. Required for MBA.

MGMT 561 - BUSINESS-GOVERNMENT RELATIONS
Short Title: BUSINESS-GOVERNMENT RELATIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of how public policy influences the private competitive environment of the firm. Examines the major political institutions and actors--Congress, the President, interest groups, the media, and administrative agencies--that shape U.S. public policy. Students analyze business political strategies and formulate several of their own. Required for MBA.

MGMT 570 - COMPETITIVE AND INDUSTRY ANALYSIS
Short Title: COMPETITIVE STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Systematic examination of models and techniques used to analyze a competitive situation within an industry from a strategic perspective. Examines the roles of key players in competitive situations and the fundamentals of analytical and fact-oriented strategic reasoning. Examples of applied competitive and industry analysis are emphasized. Required for MBA.

MGMT 571 - STRATEGY FORMULATION AND IMPLEMENTATION
Short Title: STRATEGY FORMULATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on formulating and implementing effective organizational strategy, including competitive positioning, core competencies and competitive advantage, cooperative arrangements, and tools for implementation.

MGMT 574 - OPERATIONS MANAGEMENT
Short Title: OPERATIONS MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the principles of production management and process improvement. Required for MBA.

MGMT 580 - MARKETING
Short Title: MARKETING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the key concepts underlying the function of marketing and its interaction with other functions in a business enterprise. Explores marketing's role in defining, creating, and communicating value to customers. Primarily case-based with capstone simulation exercise, providing a foundation for advanced course work in marketing. Required for MBA.
MGMT 591 - ACCOUNTING THEORY
Short Title: ACCOUNTING THEORY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MGMT 601
Description: The aim of this seminar is to impart an understanding of the historical evolution of the literature on financial accounting theory and accounting principles, as well as emerging developments in accounting research. A companion objective is to come to understand the evolving dynamic of the standard-setting process for financial reporting in the United States and at the international level, including consideration of the "political" intrusions into this process. Readings will be drawn from the periodical literature, books and monographs, and reports. A term paper will be required. The prerequisite for undergraduates is BUSI 405, but the course will also be open also to a small number of other students who have taken just BUSI 305. MBA students: Prerequisite is MGMT 601. PhD students: no prerequisites. All students must obtain the prior permission of the instructor. Course may not be taken pass/fail and may not be audited. Enrollment will be limited. Mutually Exclusive: Credit cannot be earned for MGMT 591 and BUSI 491/MACC 591.

 MGMT 594 - STRATEGIC BUSINESS COMMUNICATION
Short Title: STRATEGIC BUSINESS COMMUNICATION
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: Introduction to the strategy and practice of business presentations. Includes frequent oral presentations (both individual and team) and feedback.

MGMT 595 - DATA ANALYSIS I
Short Title: DATA ANALYSIS I
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: The ever-increasing capacity of computers to analyze data and the explosion of the amount of data available have resulted in an increased role for data analysis as an aid to business decision-making. This course exposes the student to the most important ideas and methods relevant for data analysis in a business context. Emphasizing practical applications to real problems, the course covering the following topics: sampling, descriptive statistics, probability distributions, and regression analysis. Required for MBA.

MGMT 596 - STRATEGIC BUSINESS COMMUNICATIONS II
Short Title: STRATEGIC BUSINESS COMM II
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: Introduction to the strategy and practice of management communication. Assignments are based on core courses integrated across the curriculum. Includes individual communication skills assessment and development and team-based oral and written communication instruction. Required for M.B.A.

MGMT 597 - DATA ANALYSIS II
Short Title: DATA ANALYSIS II
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The ever-increasing capacity of computers to analyze data and the explosion of the amount of data available have resulted in an increased role for data analysis as an aid to business decision-making. This course exposes the student to the most important ideas and methods relevant for data analysis in a business context. Emphasizing practical applications to real problems, the course covering the following topics: sampling, descriptive statistics, probability distributions, and regression analysis. Required for MBA.

MGMT 599 - ACTION LEARNING PROJECT
Short Title: ACTION LEARNING PROJECT
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: Group project in which students, under the guidance of faculty and a corporate liaison, study the scope of improvements needed, examine a company's processes, and then provide written recommendations and present findings to senior management. Required for MBA.
MGMT 600 - INTERNATIONAL ENERGY SIMULATION
Short Title: INTL ENERGY SIMULATION
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Jones Graduate School of Business International Energy Simulation is designed to create a real world environment in which multiple actors align and compete to achieve their distinct objectives. This year we focus on Discordia, a fictitious West African nation. You will be assigned to one of about 15 teams including government, energy companies, media, villagers, public policy institutions and others. Critical success factors include strategic thinking, the ability to build alliances, and a deep understanding of the perspectives of multiple stakeholders. Expect the unexpected. Repeatable for Credit.

MGMT 601 - FINANCIAL STATEMENT ANALYSIS
Short Title: FINANCIAL STATEMENT ANALYSIS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of how investors, financial analysts, creditors, and managers use financial statement information in evaluating firm performance and in valuing firms. Emphasizes industry and firm-level analysis of accounting information using financial accounting concepts and finance theory.

MGMT 603 - FEDERAL TAXATION
Short Title: FEDERAL TAXATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of the basic federal tax law concepts of business income and deductions, proceeding to tax aspects of different forms of business organizations, emphasizing corporations. Includes sections of tax planning for mergers and acquisitions, compensation planning, and international tax effects. Introduces tax research.

MGMT 604 - MINDFULNESS AND PERFORMANCE IN HIGH RELIABILITY ORGANIZATIONS
Short Title: MINDFULNESS AND PERFORMANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: While organizations frequently discuss the importance of safety, safety incidents are both commonplace and costly across a number of industries. This course is designed to equip you with tools and insights that will help you and your organization prevent costly, safety-related errors and achieve higher and more reliable performance.

MGMT 606 - CORPORATE FINANCIAL REPORTING: US GAAP & IFRS
PART I
Short Title: CORP FIN REPUS GAAP & IFRS I
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: Course covers aspects of interest to corporate finance officers and financial statement readers on a number of critical financial reporting issues, including those related to merchandise inventories, fixed and intangible assets, business combinations, intercorporate investments, consolidated financial statements and segment reporting, and the effects of changing prices on net income and rate of return. The strategic role of the newly restructured International Accounting Standards Board, especially as viewed by the Securities and Exchange Commission and the European Commission, will be explored. Students will be apprised of the sweeping and fundamental changes that are occurring today in the milieu of international financial reporting. Repeatable for Credit.

MGMT 609 - MANAGING ENERGY TRANSITIONS
Short Title: MANAGING ENERGY TRANSITIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: “Managing in a Carbon-Constrained World” focuses on the business challenges and opportunities presented by the fast-changing dynamics of climate change and renewable/alternative sources of energy - at the international, federal, and state levels. Consideration will be given to successes and failures of “first movers.” We will consider how to reconcile conflicts between the goal of a lower carbon future and the priorities of energy security and restoring a strong, sustainable, economy. The course will close with corporate responses to the challenge. The course is intended to benefit students who intend to pursue careers as leaders in industry, finance, government, diplomacy, international agencies, non-government organizations (NGO’s), media, or in academia. The course will challenge you to understand diverse points of view. A background in economics, finance, management, engineering, or public policy will provide a strong foundation, but other disciplines may also apply. Repeatable for Credit.
MGMT 610 - FUNDAMENTALS OF THE ENERGY INDUSTRY
Short Title: FUNDAMENTALS OF THE ENERGY IND
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course is based on the principle that one cannot understand commodity markets without a good grasp of the technology and physical infrastructure behind production, transportation, and distribution of energy commodities and linkages between different segments of the energy complex. The review of the industry infrastructure will be followed by discussion of the institutional framework of the energy markets in the US and other developed economies, including discussion of the different types of participating business entities, types of transactions and regulatory infrastructure. The course will be divided into three groups of lectures, covering the natural gas industry, power and coal business and oil / refined products markets, with an additional shorter lecture on regulatory issues.

MGMT 611 - GEOPOLITICS OF ENERGY
Short Title: GEOPOLITICS OF ENERGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Geopolitics of Energy builds on critical thinking developed in core courses such as Strategy, Finance and Ethics. The modules deal with historical themes, access to resources, operational issues occurring during the life of an investment, and decisions at the end of investment life (at expected maturity or prematurely). Scenario Planning is used - not to predict the future but to consider the viability of strategies under alternate future directions. The course uses the case method to a significant extent and deals with diverse regions and levels of economic development. Class participation, individual and group exercises, along with a final examination account for grading. Repeatable for Credit.

MGMT 612 - COMPETITION, CARBON AND ELECTRICITY POLICY
Short Title: COMP/CARBON & ELECT POLICY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.
Course Level: Graduate
Description: MGMT 612 covers the changes that have occurred over the last twenty years in the electric power industry and the challenges and profit potential of efforts to reduce the industry’s emissions of carbon dioxide. The course will use original source materials to explore the impacts of policy choices on companies and consumers. We will cover economics, finance, engineering, and public policy, and a background in those disciplines will prove useful. Repeatable for Credit.

MGMT 613 - HUMAN AND SOCIAL CONTEXT AND QUESTIONS IN TECHNOLOGY ENTREPRENEURSHIP
Short Title: SOCIAL & HUMAN CONTEXT IN TECH
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores the human and social dynamics critical to the evolving world of technology innovation and entrepreneurship. Topics include: social systems; entrepreneurial mindset; the future of work and organizations; understanding new fields and data; the changing relationship between humans and technology; and questions in privacy, security, and regulation.

MGMT 614 - CORPORATE FINANCIAL REPORTING: US GAAP & IFRS PART I
Short Title: CORP FIN REP US GAAP & IFRS I
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: This course can be taken without having taken Part I. We take up revenue recognition, bonds and leases for lessees, income tax reporting, shareholders’ equity (including earnings per share), and marketable securities, long-term investments and consolidated financial statements. Throughout, comparisons will be made between US GAAP and IFRS. The same textbook will be used for Parts I and II. Repeatable for Credit.

MGMT 615 - BARGAINING
Short Title: BARGAINING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Strategic Problem Solving examines theories, concepts and techniques used by highly effective managers and executives to solve challenging strategic problems facing their organizations. Strategic problems of two major types are addressed—problems as threats and problems as opportunities. The course integrates relevant ideas from decision sciences and strategic decision making and presents a coherent framework managers can use to become more effective strategic problem solvers. Focus is on analyzing and learning how to solve strategic problems course participants have faced or are likely to deal with in their future careers. Requires second year Jones School standing or permission of the instructor. Repeatable for Credit.
MGMT 616 - ENERGY MARKET ORGANIZATION
Short Title: ENERGY MARKET ORGANIZATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 617 - INFORMATION GOVERNANCE
Short Title: INFORMATION GOVERNANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.
Course Level: Graduate
Description: A seminar focused on contemporary issues on organizational behavior. Potential topics include the changing nature of work and organizations, the meaning of work in people’s lives, the intersection of work and family, and functions and dysfunctions of alternative ways of organizing, managing, and leading people in complex organizations.

MGMT 618 - COMPLEXITIES OF PEOPLE AND ORGANIZATIONS
Short Title: COMPLEXITIES OF PEOPLE & ORG
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.
Course Level: Graduate
Description: A seminar focused on contemporary issues on organizational behavior. Potential topics include the changing nature of work and organizations, the meaning of work in people’s lives, the intersection of work and family, and functions and dysfunctions of alternative ways of organizing, managing, and leading people in complex organizations.

MGMT 619 - CORPORATE GOVERNANCE
Short Title: CORPORATE GOVERNANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: The aim of this course is to gain an in-depth understanding of corporate governance and how it influences a firm’s strategy and performance. The course covers the theory and mechanisms of corporate governance and comparative systems of governance and how they relate to contemporary trends. We focus on problems in listed firms, how they can be mitigated by regulation, ownership, boards, incentives, and other mechanisms, and how alternative governance models handle their problems. The course will enable students to undertake a corporate governance review of an individual company including an assessment of how ownership, board structure, managerial incentives and system characteristics influence company strategy and performance. We use a combination of readings, conventional cases, and real-time cases and the variety of governance issues and solutions around the globe. The course is appropriate for those who desire to run their own companies, those who are interested in investment portfolio management, and those who aspire to be senior corporate managers. Repeatable for Credit.

MGMT 620 - THE ENTREPRENEURIAL TOOLKIT
Short Title: THE ENTREPRENEURIAL TOOLKIT
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: Evaluating opportunities and developing a business concept; analyzing new ventures; pricing, selling, and cost control; attracting stakeholders and bootstrap finance; the legal form of business and taxation; financing, deal structure and venture capital; harvesting value; developing a business plan.

MGMT 621 - THE NEW ENTERPRISE
Short Title: THE NEW ENTERPRISE
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores strategic operations and supply chain management. It provides content and pragmatic executive perspectives on overall operations/supply chain strategies as well as delve into four major capabilities (supply & demand management, sourcing & procurement, manufacturing/service delivery, and performance improvement/quality). The concepts are applicable to manufacturing and service industries; and, they are applicable to large corporations and small businesses. Course activities provide the opportunity to build content knowledge, apply their expertise to operations and supply chain management situations, and explore cutting-edge topics in operations and supply chain management. They will benefit students who may be relatively new to operations and supply chain management, as well as students who may bring real-world experience. The course environment will be collegial, collaborative, and highly interactive with a mixture of team-based and individual activities. Class sessions include multiple activities and student preparation will be critical to maximize the value of the class to themselves, as well as their classmates. Repeatable for Credit.
MGMT 623 - COMMERCIALIZATION IN PHARMA/BIOTECH
Short Title: COMMERCIALIZATION IN PHARMA
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Provides an insider's perspective on workings and challenges of an early to mid-stage pharmaceutical company. Current company issues and case studies are used to discuss topics including pre-clinical & clinical development, licensing & business development and intellectual property and patent strategies. Intended for students considering a career in an entrepreneurial biotechnology company. Previous coursework in entrepreneurship or healthcare is preferred.

MGMT 624 - REAL ESTATE
Short Title: REAL ESTATE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Designed for those wishing to form their own business. It takes the prospective entrepreneur from the conception stage through the opening of the doors on the first day of business. Students will form teams to make final presentations of their business plans. The winning team of the final presentation will be eligible to participate in the Southwest Business Plan Competition at Rice University. Numerous invited speakers. Repeatable for Credit.

MGMT 625 - CREATIVE ENTREPRENEURSHIP
Short Title: CREATIVE ENTREPRENEURSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.
Course Level: Graduate
Description: Overview of the venture capital industry; the organization and operation of venture capital funds; investment methodology; monitoring and portfolio liquidation; leveraged investing; and specialized investments.

MGMT 626 - VENTURE CAPITAL
Short Title: VENTURE CAPITAL
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of the venture capital industry; the organization and operation of venture capital funds; investment methodology; monitoring and portfolio liquidation; leveraged investing; and specialized investments.

MGMT 627 - ENTERPRISE ACQUISITION
Short Title: ENTERPRISE ACQUISITION
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The needs approach to buying and selling businesses; enterprise valuation; deal and contract structuring; mergers and acquisitions; leveraged buyouts; consolidating fragmented industries.

MGMT 628 - ENTREPRENEURSHIP IN THE ENERGY INDUSTRY
Short Title: ENTREPRENEURSHIP ENERGY INDUST
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: The goal of Entrepreneurship In the Energy Industry is to examine the process by which entrepreneurial ideas are formed and how they obtain the technical, financial and managerial support to become viable businesses. We will use current examples of companies going through the process, cases which highlight key elements of the process, meet entrepreneurs who are living the journey and share the experiences of the classroom team, both students and teacher. Repeatable for Credit.

MGMT 629 - BUSINESS PLAN DEVELOPMENT
Short Title: BUSINESS PLAN DEVELOPMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.
Course Level: Graduate
Description: This course is based on reading, analyzing and discussing business plans of actual companies in motion. Class participation is important for this course. Reading the material, discussing the business plans, and interacting with company management will also make the course more enjoyable and meaningful. During the course, we will have entrepreneurs and founders as guest lecturers. SalvageSale, BizSupplies and SimDesk are examples of business plans we will discuss.
MGMT 630 - FINANCIAL MARKETS AND INSTRUMENTS
Short Title: FINANCIAL MARKETS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The content of this course is a microeconomic focus on the functioning and structure of financial markets and financial institutions. By the end of the course students will be able to describe how information asymmetry problems affect financial transactions and market outcomes, analyze different financial market structures, and understand how no-arbitrage concepts apply to valuation tasks. We will study how firms raise external capital to fund investment in real assets and how markets and financial intermediaries assist in this. We will learn many of the details that are assumed away in other core courses, and this class will help you see how corporate finance and investments fit together as a cohesive whole. Repeatable for Credit.

MGMT 631 - HEALTH INSURANCE IN THE U.S.: THE ESSENTIALS
Short Title: HEALTH INSURANCE IN THE U.S.
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: The basics that all executives, especially those working in the health care industry, need to know about health insurance programs, public and private markets, pricing, risk management and how insurance companies think about their business. After covering the basics, the course examines the rapid shifts occurring as a result of the Affordable Care Act and other environmental and legislative changes. Department Permission Required.

MGMT 632 - FINANCIAL REPORTING AND GOVERNANCE
Short Title: FINANCIAL REPORT & GOVERNANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: The focus of the course is on the economics of financial reporting. Specifically, the course will emphasize the role of financial reporting as an important control system in corporate governance. In light of the major corporate scandals such as Enron, Tyco, WorldCom, Xerox, and Société Générale as well as the recent global financial crisis, there have been increased concerns over the failure of financial reporting as a control system. As a result, many voluntary and mandatory changes to the corporate governance structure have been proposed or implemented. Within this context of the sea of governance changes, the course will examine corporate governance functions, including top management, boards of directors and audit committees, internal control and risk assessment, external auditors and independence, fraud detection, and SEC reviews of filings and enforcement activities. We will evaluate how these functions have performed historically as well as identify and evaluate the financial reporting policies, procedures, and controls that can be employed to promote good corporate governance and ethical decisions. Special attention will be paid to the rapidly changing environment affecting corporate management as they respond to the requirements of the Sarbanes-Oxley Act and various followup reforms. The course will combine leading edge academic thought with contemporary real-life cases to examine these issues. Repeatable for Credit.
MGMT 633 - LIFE SCIENCE ENTREPRENEURSHIP & ROLES OF FOUNDERS & VENTURE CAPITAL IN HIGH-TECH STARTUPS

Short Title: LIFE SCIENCE ENTREPRENEURSHIP

Department: Management

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 1.5

Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: The roles of physicians, scientists, engineers, and MBA's in biotech, medical device, and other life science companies will be described and characterized. The major trends and innovations driving the creation of new products in large established companies and venture-capital-backed startup companies are discussed. This pragmatic, experienced-based course describes the venture capital process, formation, and capitalization of high-tech companies, sources of technologies, role of tech transfer at universities and medical schools, startup operational issues, role of VCs and board members, execution time frames, liquidity process, IPOs and mergers, and payout prospects for founders and investors. Live, ongoing case studies are presented by guest entrepreneurs. These case studies of ongoing biotech, medical device, and healthcare informatics companies are presented by many notable M.D. and Ph.D. founders and CEOs. Rules of professional and ethical conduct of M.D.s, Ph.D.s, scientific advisory boards, clinical advisory boards, and boards of directors are reviewed. In the final classes, a high-tech, career-planning guide is discussed, plus a special lecture on leadership, intelligence, and entrepreneurship will be presented. Insider secrets and success stories from decades of highly successful VC practice in medical, biotech and infotech companies will be shared.

Cross-list: BIOE 633.

MGMT 634 - COMMERCIALIZING TECHNOLOGY IN DEVELOPING COUNTRIES

Short Title: TECH IN DEVELOPING COUNTRIES

Department: Management

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 1.5

Restrictions: Enrollment limited to students in the MBA or PMBA programs.

Course Level: Graduate

Description: This course provides a unique opportunity for students to 1) apply their business school knowledge, 2) learn about business in developing countries and 3) learn about entrepreneurship. The course includes lectures, cases, and discussions around needs, opportunities, challenges, delivery mechanisms, manufacturing, and selling in developing countries for both large and small companies and for start ups. Students taking this course may also be able to participate in a once-in-a-lifetime trip to Africa that tourism can never duplicate. All students will be on project teams and will participate in the development of business plans for commercializing new technologies. Repeatable for Credit.

MGMT 635 - EMERGING TECHNOLOGIES

Short Title: SOCIAL ENT. IN DEV. COUNTRIES

Department: Management

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 1.5

Restrictions: Enrollment limited to students in the MBA program.

Course Level: Graduate

Description: This course provides a unique opportunity for students to 1) apply their business school knowledge, 2) learn about business in developing countries, 3) learn about social entrepreneurship 4) and help the poor. . The course includes lectures, cases, and discussions around needs, opportunities, and challenges of operating social enterprises (including both for-profits and non-profits) in developing countries. Students taking this course may also be able to participate in a once-in-a-lifetime trip to Africa that tourism can never duplicate. All students will be on project teams and will participate in the development of business plans for commercializing new technologies in developing countries. Repeatable for Credit.

MGMT 636 - MARKETING FOR SMALL BUSINESS

Short Title: MARKETING FOR SMALL BUSINESS

Department: Management

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 1.5

Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.

Course Level: Graduate

Description: This course is designed to help students develop and manage a creative and economical marketing strategy for a small business. We will use real world examples to learn how to effectively market through the use of web sites, search engine optimization (SEO), social media, online and local advertising. Students will experience a balance of theory and practical learning to apply these tools in harmony which will intensify awareness and profitability. Repeatable for Credit.

MGMT 637 - DILEMMAS IN FOUNDING NEW VENTURES

Short Title: DILEMMAS IN FOUNDING VENTURES

Department: Management

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 1.5

Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.

Course Level: Graduate

Description: Frameworks for making informed decisions about human capital when founding a new venture, including co-founders, early hires, advisors, board members, and investors.

MGMT 638 - QUANTITATIVE INVESTMENT STRATEGIES

Short Title: QUANTITATIVE INVESTMENT STRATEGIES

Department: Management

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 1.5

Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.

Course Level: Graduate

Corequisite: MGMT 645

Description: Repeatable for Credit.
MGMT 639 - MARKETING OF PROFESSIONAL SERVICES IN THE GLOBAL ECONOMY
Short Title: MKTING OF PROF SERVICES
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: This fast-paced, highly interactive and energetic course will explore the fundamental concepts, strategies and best practices of marketing professional services in today's global economy—and how this marketing differs from marketing tangible goods and non-professional services. Students will learn the importance of branding, public relations, crisis communications and Web 2.0 to promoting professional services today, and how to successfully integrate those vehicles with traditional marketing strategies. Repeatable for Credit.

MGMT 640 - THE ENTREPRENEURIAL EXPERIENCE
Short Title: THE ENTREPRENEURIAL EXPERIENCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: The class will answer the question "What does it take to lead and manage a New Enterprise?" Once a New Enterprise is launched, the challenges facing an entrepreneur are unique, dynamic and require a much different skillset than managing an established business. This class will explore how to manage an uncertain environment with extremely limited resources, develop an "entrepreneurial" mindset, find the right support resources and advisors, appease investors, maintain a work life balance and manage everting that will be thrown at the entrepreneur. This class will pull from the Instructor 30+ years as an entrepreneur and advisor including starting and exiting two Inc. 500 companies and will include practical input from a number of guest speakers. Repeatable for Credit.

MGMT 641 - ENTREPRENEURIAL STRATEGY
Short Title: ENTREPRENEURIAL STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.
Course Level: Graduate

MGMT 642 - FUTURES AND OPTIONS I
Short Title: FUTURES AND OPTIONS I
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to forward, futures, option, and swap contracts, including the basic valuation principles, the use of these contracts for hedging financial risk, and an analysis of option-like investment decisions. Recommended for finance students.

MGMT 643 - EQUITY PRACTICUM I - WRIGHT FUND
Short Title: EQUITY PRACTICUM I WRIGHT FUND
Department: Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 2
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MGMT 543
Description: Students will gain hands on exposure to many aspects of investment management by managing 'live' portfolio (the M.A. Wright Fund) of endowed assets. The first semester's work (students must continue to MGMT 644) is predominately focused on stock analysis and valuation. Admission is by application and interview only. Department Permission Required.

MGMT 644 - EQUITY PRACTICUM II - WRIGHT FUND
Short Title: EQUITY PRACTICUM II WRIGHT FND
Department: Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 2
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MGMT 643 and MGMT 648
Description: Recommended Prerequisite(s): MGMT 645 (may taken the same semester).

MGMT 645 - PORTFOLIO MANAGEMENT
Short Title: PORTFOLIO MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of classic investment theory, with emphasis on measuring and managing investment risk and return. Includes the development of modern portfolio theory and asset pricing models, an introduction to option and futures contracts, market efficiency, and stock valuation. Recommended for most finance students.
MGMT 646 - CORPORATE INVESTMENT POLICY
Short Title: CORPORATE INVESTMENT POLICY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the investment decisions faced by corporate financial managers. We begin by developing a general framework for corporate valuation, and then use this framework to review and expand on the capital budgeting issues developed in the core finance course. For example, we review the foundations of option valuation, and then apply these tools to value real options. We also cover new material on estimating the cost of capital and the effects of leverage. In this course, you will learn the state of the art in the analysis of corporate investment decisions. The course format is a mixture of theory, empirical evidence, and practical application. The theory provides the framework for our analysis. The empirical evidence provides a core of stylized facts to support our theoretical intuition. And, the practical applications put to use the theoretical foundations and empirical evidence in real world decision making.

MGMT 647 - CORPORATE FINANCIAL POLICY
Short Title: CORPORATE FINANCIAL POLICY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examination of corporate investment and financing, with emphasis on valuation methods and how financial policy impacts corporate value. Includes the implications of agency costs, asymmetric information and signaling, taxes, mergers and acquisitions, corporate restructuring, real and embedded options, and financial risk management. Recommended for finance students.

MGMT 648 - APPLIED FINANCE
Short Title: APPLIED FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the theory and practice of the fundamental principles in finance emphasizing hands-on experience with a wide range of corporate finance and investments applications. The course provides extensive opportunity to implement finance theory at a practical level and to develop advanced analytical spreadsheet expertise.

MGMT 649 - DATA MINING FOR BUSINESS ANALYTICS
Short Title: DATA MINING FOR BUS ANALYTICS
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MGMT 595 or MGMP 595 or MGMW 595
Description: This course covers fundamental principles behind data mining applications, introduces popular data mining algorithms and techniques, examine how data mining technology can be used in decision making, work on real-world data "hands-on" with open-source software, explore Deep Learning and their impact. Repeatable for Credit.

MGMT 650 - FUTURES AND OPTIONS II
Short Title: FUTURES AND OPTIONS II
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MGMT 543 and MGMT 642
Description: In-depth analysis of the theory and practice of derivative securities. Develops a general set of valuation, hedging, and risk management techniques which are then applied to the equity, interest rate, currency, and commodity markets.

MGMT 651 - FIXED INCOME MANAGEMENT
Short Title: FIXED INCOME MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of fixed income securities and markets in the U.S. and abroad, with an emphasis on the term structure of interest rates and the pricing of fixed income securities, derivatives, and portfolios. Include Treasury, Corporate Debt, and Mortgage-Backed Securities.

MGMT 652 - MERGERS AND ACQUISITIONS
Short Title: MERGERS & ACQUISITIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course examines the merger and acquisition process from the perspectives of buyers and sellers. Attention is paid to the internal (make) versus external (buy) growth opportunities and their value consequences. The course also analyzes the M&A transaction process through the study of cases. An additional focus will be in the interaction of strategic planning, value planning, financial strategies, and investment decisions.

Rice University
MGMT 653 - CROSS-BORDER INVESTMENTS
Short Title: CROSS-BORDER INVESTMENTS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Cross-Border Investments builds on critical thinking developed in Core courses such as Strategy, Finance and Ethics. The course examines the strategic rationale and valuation of international investments in various real-world scenarios including corporate acquisitions, leveraged buyouts, and public equities. While the primary focus is on fundamental analysis and return on investment, students will also deepen their understanding of the international economy, political risk, corporate governance and other non-financial considerations. The approach is case-oriented and class participation will be a critical determinant of grades. Repeatable for Credit.

MGMT 654 - REAL ESTATE CAPITAL MARKETS: PUBLIC & PRIVATE
Short Title: RE CAP MARKETS: PUBLIC & PRIV
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course has two major objectives: First, to provide an overview of topics related to real estate capital markets. Specifically, this course will focus on how to raise capital for private real estate development, construction, acquisition, and investment; and, Public Companies, more specifically, REITs. It will build on your real estate and finance knowledge and interest; and provide depth and breadth of the financial markets and its players, on Wall Street, and outside of Wall Street. This course will devote time to understand the working of the Capital Markets, considered by most industry leaders to be the source of the “lubricant” necessary to turn the wheels towards the creation of value; and, by others, to be source of the “leverage” necessary to profit from a “Zero Sum Game.” Second, this course is an elective related to real estate in a series available to prepare Rice MBA students interested in career opportunities in the Real Estate Industry in finance, and more specifically in Banking, and Investment banking, Private Real Estate Companies, and REITs. You need to have a reasonably good understanding of the creation of value through the workings of various asset classes of real estate, and be able to build on that knowledge by learning the sources of Capital and how Capital can accessed. You will be challenged to determined what came first the “chicken” or the “egg” (i.e. Does having control of the “real estate,” give you access to capital; or, alternatively by having control of the “capital” give you the opportunity to acquire real estate? You will also need to have an understanding of financial analysis to evaluate the Capital needs of an investment, and to determine alternative financial strategies. Repeatable for Credit.

MGMT 655 - ENERGY DERIVATIVES
Short Title: ENERGY DERIVATIVES
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examines the physical energy markets, common financial instruments, and their applications, including cross-commodity hedges, dual variable assets, synthetic options, and swaps. Decision criteria for both outright and risk management trading are covered with respect to both fundamental and technical analysis. Eight guest speakers from various companies throughout the industry will participate.

MGMT 656 - INTERNATIONAL FINANCE
Short Title: INTERNATIONAL FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Exploration of special problems encountered by financial officers in international arenas. Includes the economics of the foreign exchange market, exchange rate risk management, international portfolio management, capital budgeting for international projects, and international financing strategies.

MGMT 657 - APPLIED RISK MANAGEMENT
Short Title: APPLIED RISK MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MGMT 642
Description: This course focuses on applied risk management projects. The hands-on experience allows in-depth analysis and understanding of practical risk management issues and exposure to different risk management tools including Value at Risk and Monte Carlo simulations. The course emphasizes student development and application of skills rather than lectures.
MGMT 659 - REAL ESTATE FINANCE: ASSET VALUATION
Short Title: REAL ESTATE FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an introduction to the concepts and techniques used to analyze and commercial real estate assets and the instruments commonly used to finance these assets. The topics covered include financial analysis of income-generating real property, analysis of mortgage instruments, commercial mortgage-backed securities (CMBS), and real estate investment trusts (REITs). This course is designed for students who are interested in commercial real estate; topics pertaining to single-family residential real estate will be covered only in passing. The course will offer all students an opportunity to develop their business presentation skills through case discussions and a final project presentation. The final project involves the detailed analysis of a CMBS deal, including separate, linked analyses of the mortgage collateral pool, the mortgages, and the note structure. The final project will require the use of all of the tools developed in the course.

MGMT 660 - REAL ESTATE CONTRACT NEGOTIATIONS FOR BUSINESS PROFESSIONALS
Short Title: REAL ESTATE CONTRACT NEG
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Legal risk pervades business dealings. This course explores legal risk by educating the student on legal theories, then how to identify, quantify, reduce and accept legal risk, in the context of real estate transactions. Effective interaction with legal counsel will be emphasized. Repeatable for Credit.

MGMT 661 - INTERNATIONAL BUSINESS LAW
Short Title: INTERNATIONAL BUSINESS LAW
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Exploration of U.S. and foreign law as it relates to the law-business interface of importing-exporting trade problems, foreign operations, and foreign investments. Includes the extraterritorial impact of U.S. law, corporate organization, foreign exchange, joint ventures, withdrawal from foreign ventures, and third-country manufacturing.

MGMT 662 - ADVANCED OPERATIONS AND SUPPLY CHAIN
Short Title: ADV OPERATIONS & SUPPLY CHAIN
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: - Repeatable for Credit.

MGMT 663 - INVESTMENTS II
Short Title: INVESTMENTS II
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Prerequisite(s): MGMT 645
Description: This is a project-based course. The class will act as a team to construct a portfolio of large cap stocks designed to outperform the S&P 500 with minimal tracking error. Stock selection will be by quantitative methods. The basic approach will be to assume a factor model and use the Arbitrage Pricing Theory to find the mean-variance frontier for active weights. Other quantitative methods – for example, pairs trading – may be explored to improve portfolio selection. Alternative volatility and correlation estimation methods will be examined. The effects of model misspecification, estimation error, and parameter instability will be analyzed by evaluating performance out of sample. Initial analysis will be done industry by industry. Each student will be responsible for analyzing the returns of the stocks in one industry. When these analyses are complete, other tasks will be assigned as the team builds a portfolio and develops risk analysis methods. Students will present their results to the class via oral and written reports. Repeatable for Credit.

MGMT 664 - OPERATIONS LEADERSHIP LAB
Short Title: OPERATIONS LEADERSHIP LAB
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed to give students a close up and personal view of two private Houston companies whose owners have led successful change efforts in the operations of their businesses. Repeatable for Credit.

MGMT 665 - GLOBAL SUPPLY CHAIN MANAGEMENT
Short Title: GLOBAL SUPPLY CHAIN MGMT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Repeatable for Credit.
MGMT 667 - APPLIED CAPITAL MARKETS
Short Title: APPLIED CAPITAL MARKETS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.

Course Level: Graduate
Description: Focuses on essentials of corporate finance for students interested in capital markets, banking and investment banking. It builds on the basic principles of the structure of the banking system, capital market structures and functions, funding and solvency issues, and also looks at current regulatory, political and agency issues. The emphasis is on an overview of how the banking and investment banking businesses function, empirical evidence / industry speakers, and case studies and requires an understanding of the basic principles of capital markets and finance. Repeatable for Credit.

MGMT 668 - INTERNATIONAL TRADE
Short Title: INTERNATIONAL TRADE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program.

Course Level: Graduate
Description: An overview of the economic and political environment of international trade, foreign investment, and competitiveness, focusing on institutions that affect international commerce. Repeatable for Credit.

MGMT 669 - BUSINESS STRATEGY IN THE ENERGY INDUSTRY
Short Title: BUS STRATEGY IN THE ENERGY IND
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.

Course Level: Graduate
Description: This course is designed to examine business in the energy industry from a strategic standpoint, and provide students with a basic understanding of major business issues in the energy industry, including historical and current events. Emphasis will be on oil and gas, but may also touch on other energy subset such as utilities. Repeatable for Credit.

MGMT 670 - OPERATIONS STRATEGY
Short Title: OPERATIONS STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Examination of strategic planning approaches and methods for managing 21st Century organizations. Emphasizes design and implementation of planning systems that are highly responsive to the dynamic, competitive, stakeholder-influenced planning contexts facing modern organizations. Examples of excellent planning performed by a variety of actual companies and industries are analyzed. Repeatable for Credit.

MGMT 671 - CORPORATE CRISIS MANAGEMENT AND COMMUNICATION
Short Title: CORP CRISIS MGMT&COMMUNICATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Studies current methods of crisis communications with practical application utilizing numerous recent real-world case studies. Class will research and prepare strategies, make recommendations, then dissect and analyze each crisis situation, the processes, policies and results. This process will enhance strategic thinking, allow the consideration of pros and cons of alternative courses of action and provide a better understanding of the management decision making process. Class time will be interactive with individual and small group participation. Repeatable for Credit.

MGMT 672 - INTRODUCTION TO SUPPLY CHAIN MANAGEMENT
Short Title: INTRO TO SUPPLY CHAIN MGMT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.

Course Level: Graduate
Description: Repeatable for Credit.

MGMT 673 - COST ANALYSIS IN HEALTHCARE
Short Title: COST ANALYSIS IN HEALTHCARE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program.

Course Level: Graduate
Prerequisite(s): MGM 502 or MGMP 502 or MGMW 502

MGMT 674 - REAL ESTATE FINANCE: SECURITIES
Short Title: REAL ESTATE FINANCE:SECURITIES
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Repeatable for Credit.

MGMT 675 - CORPORATE REAL ESTATE
Short Title: CORPORATE REAL ESTATE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.

Course Level: Graduate
Description: Repeatable for Credit.
MGMT 676 - SOCIAL ENTERPRISE
Short Title: SOCIAL ENTERPRISE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: What might constitute social responsibility in a market setting? If social responsibility connotes a connection between a person and a social problem say between you and a poor person in Bangladesh or Houston how might it be exercised in a market transaction of buying or selling? Is there a role of private enterprise or of private consumption for alleviating some of the social problems (e.g., health, education, pollution, poverty, etc.) that we observe and experience in communities across the world? Social Enterprise explores these and related questions in the context of business.

MGMT 678 - U.S. HEALTH CARE MANAGEMENT
Short Title: U.S. HEALTH CARE MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Sequence of offerings that provides an introduction to the business of health care in the U.S. Topics include health care systems, health service organizations, and issues relating to the aging problem and the technology explosion in health care. Required elective for MD/MBA’s dual degree students. Repeatable for Credit.

MGMT 679 - COST AND QUALITY IN HEALTH CARE
Short Title: COST & QUALITY IN HEALTH CARE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5-3
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Sequence of offerings that provides further analysis of the business of health care in the U.S. Topics include issues of cost and quality, health care financial management, and national and international solutions to the challenge of providing health care to a population. This class is designed to stand-alone, yet build upon MGMT 678. Required elective for MD/MBA dual degree students. Repeatable for Credit.

MGMT 680 - CUSTOMER ANALYTICS FOR SATISFACTION AND LOYALTY
Short Title: CUSTOMER ANALYTICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Prerequisite(s): (MGMT 580 or MGMP 580 or MGMW 580) and (MGMT 595 or MGMP 596 or MGMW 596)
Description: Introduction to major concepts in the analysis of customer satisfaction and loyalty, with emphasis on managerial applications. Also examines related consumption and post-purchase phenomena related to customer satisfaction and loyalty. Open only to second-year MBA students.

MGMT 681 - MARKETING COMMUNICATIONS
Short Title: MARKETING COMMUNICATIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Marketing Communications is the Promotion “P” of the traditional 4 Ps of the Marketing Mix (Product, Price, Place, Promotion) as taught in marketing courses. In Services Marketing courses, they sometimes add three additional Ps (People, Processes and Physical Evidence) to the Marketing Mix (becoming 7 Ps) due to the intangible characteristics of services that add to the marketing challenges. In this course, we will focus on the concept of Integrated Marketing Communications. We will consider the unique situations of various organizations and the implications for the Integrated Marketing Communications (IMC) program. And we will discuss the IMC processes, media and tools and their roles in contributing to the success of the program. The tools available include Advertising, Direct Marketing, Interactive/Internet Marketing, Sales Promotion, PR/publicity, and Personal Selling. We will look at the various tools/media available and the strengths and weaknesses of each when applied to a given organization and its situation. Some organizations leverage all of these tools in their IMC programs while some will emphasize as few as one or two. That is because each organization’s situation (internally and environmentally) is unique.

MGMT 682 - PRICING STRATEGIES
Short Title: PRICING STRATEGIES
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the paradigm that success of a product lies not only in its acceptance by the end consumer but also in how it is priced and how it reaches the intended consumer, with emphasis on understanding and analyzing the issues, problems, and opportunities characteristic of the channel relationship and of the various faces of pricing. Repeatable for Credit.
MGMT 683 - GLOBAL BUSINESS TO BUSINESS MARKETING
Short Title: GLOBAL B2B MARKETING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Course Level: Graduate
Description: The course introduces the process of global marketing and the associated methodological issues in consumer analysis. Implications for strategy and guides students through each step in the development process. Students will gain understanding of the importance of customer-focused channel design, how to build channel power (and use it responsibly), and create a performance-driven channel culture.

MGMT 684 - BRAND STRATEGY
Short Title: BRAND STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Brand Management short course addresses important branding decisions faced by an organization. The focus of the course is on understanding how consumers, develop brand attitudes and behaviors and on developing a framework for planning and evaluating brand strategies.

MGMT 685 - GO-TO-MARKET STRATEGY
Short Title: GO-TO-MARKET STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An effective “Go-to-Market” strategy is a critical component of commercial success and building customer preference. This course is designed to build capability in the design and management of route-to-market channels. Students will gain understanding of the importance of customer-focused channel design, how to build channel power (and use it responsibly), and create a performance-driven channel culture.

MGMT 686 - MARKETING RESEARCH
Short Title: MARKETING RESEARCH
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The objective of the course is to provide a comprehensive look at the marketing research process and the associated data collection techniques that can be used to collect information to better manage the marketing mix. Qualitative, survey-based, and experimental research designs will be discussed.

MGMT 687 - APPLIED MARKETING STRATEGY
Short Title: APPLIED MARKETING STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course lays out a framework for marketing strategy and guides students through each step in the development process. While business challenges are inevitable, developing and following a well-structured marketing strategy, as laid out in this course, will help avoid many of the pitfalls that can lead businesses into trouble. Case studies, together with examples from the professor's lengthy business career, will be used to illustrate the principles and identify pathways out of trouble should it occur. Repeatable for Credit.

MGMT 688 - BUYER BEHAVIOR
Short Title: BUYER BEHAVIOR
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Drawing on established theoretical frameworks of cognitive and social psychology, this course examines three aspects of consumer behavior: (1) individual, social and cultural influences on consumers, (2) psychological mechanisms of pre- and post-consumption processes such as decision-making and attitude formation and change, and (3) methodological issues in consumer analysis. Implications for strategy as well as marketing program design, measurement and execution are discussed. These topics will be studied through discussion of academic articles, cases and projects.

MGMT 689 - DECISION MODELS
Short Title: DECISION MODELS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Successful management requires the ability to recognize a decision situation, understand its essential features, and make a choice. However, many of these situations - particularly those involving uncertainty and/or complex interactions - may be too difficult to grasp intuitively, and the stakes may be too high to learn by experience. This course introduces spreadsheet modeling, simulation, decision analysis and optimization to represent and analyze such complex problems. The skills learned in this course are applicable in almost all aspects of business and should be helpful in future courses. The course is divided into two parts. In the first part, we discuss the use of decision trees for structuring decision problems under uncertainty. In the second part of the course, we discuss Monte Carlo simulation, a technique for simulating complex, uncertain systems. Throughout the course, we will use Microsoft Excel as a modeling environment, using add-in programs as necessary. Familiarity with Excel is an important prerequisite for this course. Repeatable for Credit.
MGMT 690 - HEALTHCARE STRATEGY
Short Title: HEALTHCARE STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Healthcare sector, which includes areas such as health care delivery, payment, pharmaceuticals, medical equipment, etc., is an important part of any economy and society in all countries of the world including the US. This sector presents an exciting platform for upcoming business leaders in pursuit of a promising and transformational professional career. This elective course offers students interested in this sector the opportunity to study and review core strategy concepts, analytical techniques, and frameworks relevant to developing, evaluating, and implementing value-creating strategies for organizations operating in various sectors of the healthcare space. Repeatable for Credit.

MGMT 691 - BREAKTHROUGH NEGOTIATIONS IN A HEALTH CARE CONTEXT
Short Title: BREAKTHROUGH NEGOTIATIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.
Course Level: Graduate
Description: This course is tailored for an audience interested in healthcare. We will talk about how the characteristics of the healthcare industry impinge on negotiations, and the exercises and simulations conducted are based in a healthcare context. Repeatable for Credit.

MGMT 692 - CUSTOMER RELATIONSHIP MANAGEMENT
Short Title: CUSTOMER RELATIONSHIP MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.
Course Level: Graduate
Description: Increasingly, firms want to enhance profitability by using strategies and tactics that fall under the broad domain of customer relationship management (CRM). In this course, students take a marketer’s perspective when assessing the strategic and operational impacts of CRM in a variety of industry/customer settings. Because CRM requires crossfunctional coordination, successful implementation often expands the role and impact of the marketing organization within the firm. Thus, students also will learn how customer-centricity, as an organizational mindset, changes expectations chief marketing officers, as well as other senior marketing managers, as they attempt engage others in CRM strategy development and execution. Three perspectives serve as a foundation for learning about CRM in this course: (1) CRM as a strategy that prioritizes the allocation of organizational resources toward serving customers profitably, (2) CRM as an organizational capability to gather and use customer intelligence to create value for both customers and the firm and 3) CRM as a technology-enabled process that supports customer-centric goals and tactics. Thus, students will gain an appreciation for the critical roles that information management and technology play in supporting CRM strategies but content of the course will focus on strategic and operational issues related to CRM success. Repeatable for Credit.

MGMT 693 - NEW PRODUCTS
Short Title: NEW PRODUCTS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Exploration of the critical role of new products within the corporation and in small businesses, focusing on consumer products. Discusses the critical steps in new product development from ideal generation to business analysis and cross-functional team management to product launch into the marketplace. Students will work in groups to develop their own new products and to prepare the key elements of a new product introduction. Repeatable for Credit.
MGMT 694 - INTERPERSONAL COMMUNICATION IN HEALTHCARE
Short Title: INTERPERSL COMM IN HEALTHCARE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How to listen well, converse productively, use body language, and communicate across different cultures – all these fundamentals are covered and customized to healthcare settings. The course integrates lecture, discussion, and in-class exercises every week, providing many opportunities to apply lessons and practice skills. Students often break into small teams to simulate typical healthcare interactions and receive feedback on what they are doing well and what can be improved. Repeatable for Credit.

MGMT 695 - STOCK ANALYSIS
Short Title: STOCK ANALYSIS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: This course brings together some of the topics from Accounting, Finance, Economics and Strategy to better make investment decisions in your personal or corporate portfolio, as an investment management professional or helping you analyze how equity markets view different management decisions. The course will consist of hands-on stock analysis and will touch upon various aspects of improving your odds in making good investment decisions through both quantitative and qualitative fundamental analysis. We will touch on analyzing a company's franchise, assessing the quality of the management, formulating your own investment thesis, and will use various valuation methods to assess the attractiveness of different stocks. We will also review how different political/regulatory, economic, and or sector-specific macro factors may affect your investment decision. The course will make use of current and historical events including touching upon the aspects of how the emerging markets secular growth impacts different stocks. Various other topics may include how the following affect stock valuation and prices: cash flow, leverage, mergers & acquisitions, spinoffs, corporate governance issues, currency and country exposures, new share offerings, restructuring, and competitive pressures. Repeatable for Credit.

MGMT 696 - SECURITIES VALUATION
Short Title: SECURITIES VALUATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: This new course will focus on valuing income streams from different types of securities. Below is a quick list of topics which build from very simple to increasingly complex variations on the theme. (1)Review net present value calculation under conditions of perfect certainty with respect to all inputs. Review broad application to many types of income streams. (2)Successively begin to relax assumptions: treasuries, agencies, corporates, and to be topical, sovereign debt. (3)Brief detour into the world of credit default swaps somewhere along the line. (4)Equity security valuation. (5)Blended securities, implied options. (6)Asset backed securities Repeatable for Credit.

MGMT 697 - STRATEGIC PROCESS MANAGEMENT IN HEALTHCARE
Short Title: STRATEGIC MGMT HEALTHCARE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.
Course Level: Graduate
Description: This quantitative class will tie concepts presented in core classes and available data to resolve real business issues. We will use various constrained optimization and simulation techniques to shed light on common operations issues such as the efficient frontier, production mix, optimal scheduling, supply chain and marketing channel coordination, revenue management and even waiting in lines.

MGMT 698 - APPLIED BUSINESS PROCESS OPTIMIZATION
Short Title: BUSINESS PROCESS OPTIMIZATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This quantitative class will tie concepts presented in core classes and available data to resolve real business issues. We will use various constrained optimization and simulation techniques to shed light on common operations issues such as the efficient frontier, production mix, optimal scheduling, supply chain and marketing channel coordination, revenue management and even waiting in lines.

MGMT 699 - STRATEGIC CONSIDERATIONS IN CAPITAL INVESTMENT: HEALTH CARE AND BEYOND
Short Title: STRAT CONS IN CAP INV:HLTHCARE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
**MGMT 700 - INDEPENDENT STUDY**
Short Title: INDEPENDENT STUDY  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 0.25-4  
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Independent study or directed reading on an approved project under faculty supervision. Contact MBA program office for application information. No more than 3 credit hours of independent study will count toward graduation unless approved by the Jones School Academic Standard Committee. Department Permission Required. Repeatable for Credit.

**MGMT 701 - MANAGEMENT CONSULTING**
Short Title: MANAGEMENT CONSULTING  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the MBA or PMBA programs.  
Course Level: Graduate  
Description: This course will introduce students to the basics of management consulting, with a focus on what it means to be a successful management consultant. The course will include instruction on managing client relations and projects, determining and controlling the scope of engagements, working effectively in, and leading client teams, and integrating strategic/analytic, organizational/process, and behavioral/anthropological disciplines into lasting impact for clients. Class work will include case studies, role-play, and interaction with real clients.  
Repeatable for Credit.

**MGMT 702 - JONES EDGE INTERNATIONAL STUDY**
Short Title: JONES EDGE INTERNATIONAL STUDY  
Department: Management  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Repeatable for Credit.

**MGMT 703 - FIELD STUDY IN AMERICAN BUSINESS I**
Short Title: FIELD STUDY - AMERICAN BUS I  
Department: Management  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hours: 1  
Restrictions: Enrollment limited to students in the MBA program.  
Course Level: Graduate  
Description: The purpose of this course is to expose students to the American business enterprise. This exposure is accomplished through two primary means: (1) readings about the drivers of success in U.S. firms; and (2) a summer internship with a firm in the United States. The readings are meant to complement much of your course work in the first year of the MBA program. A final paper is due at end of summer to summarize experience. Instructor Permission Required.

**MGMT 704 - FIELD STUDY IN AMERICAN BUSINESS II**
Short Title: FIELD STUDY - AMERICAN BUS II  
Department: Management  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Enrollment limited to students in the MBA program.  
Course Level: Graduate  
Description: The purpose of this course is to expose students to the American business enterprise. This exposure is accomplished through two primary means: (1) readings about the drivers of success in U.S. firms; and (2) a fall internship with a firm in the United States. The readings are meant to complement much of your course work in the second year of the MBA program. Report due at end of term summarizing work experience.

**MGMT 705 - FIELD STUDY IN AMERICAN BUSINESS III**
Short Title: FIELD STUDY - AMERICAN BUS III  
Department: Management  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The purpose of this course is to expose students to the American business enterprise. This exposure is accomplished through two primary means: (1) readings about the drivers of success in U.S. firms; and (2) a spring internship with a firm in the United States. The readings are meant to complement much of your course work in the second year of the MBA program. Department Permission Required.

**MGMT 706 - CORPORATE TALENT ACQUISITION AND MANAGEMENT**
Short Title: CORP TALENT ACQ & MGMT  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The course takes students through contrasting models of talent identification and sourcing. An emphasis is placed on talent attraction methodologies and theories among Fortune 500 companies, consulting and banking firms and entrepreneurial ventures. Talent sourcing utilizing on line and social networking is explored. Differences between management training programs and experienced hiring recruiting are discussed with global development programs within companies such as ExxonMobil and GE explored and contrasted. Finally, analytics measuring successful sourcing, attraction and retention strategies are reviewed. Repeatable for Credit.

**MGMT 707 - MARKETING ANALYTICS FOR MANAGERS AND CONSULTANTS**
Short Title: MARKETING ANALYTICS  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Repeatable for Credit.
MGMT 708 - PRICING STRATEGIES: OIL & GAS INDUSTRY
Short Title: PRICING STRATEGIES-OIL&GAS IND
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In rapidly changing business environments, with global competition and maturing markets, demonstrating in-market growth and competitive advantage is extremely important. This class explores how companies utilize existing information and custom data to create frameworks that facilitate strategic growth-oriented decisions. Class sessions will emphasize experimental learning and will include a combination of case studies, real-time business examples and hands-on fieldwork where applicable. Repeatable for Credit.

MGMT 709 - MARKETING IN THE ENERGY INDUSTRY
Short Title: MARKETING IN THE ENERGY IND.
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 710 - LEADERSHIP ILE
Short Title: LEADERSHIP ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Over two days, we will engage in an intensive learning experience. You will each get the chance to serve as the interim CEO of a sensor manufacturing company. Under your leadership, your management team will be responsible for strategy, marketing, financing, operations, research, and development. While keeping a company profitable (or even out of bankruptcy) will be a challenge itself, you will face some difficult situations throughout the simulation. These will test some of the skills you’ve learned during MGMT 510 as well as some communication skills necessary for good leadership. Accordingly, I will be assisted by members of the communications faculty during parts of the class.

MGMT 711 - NEGOTIATIONS ILE
Short Title: NEGOTIATIONS ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Development of analytical and behavioral skills for effective negotiation, including topics such as diagnosing conflict, decision making, adversarial versus cooperative strategies, ethical and cultural factors, and third-party intervention. Required for MBA.

MGMT 712 - PROCESS MANAGEMENT AND QUALITY IMPROVEMENT
Short Title: PROCESS MGMT & QUALITY IMPROV
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Management frameworks and concepts into the innovation management context in technology industries and help them understand that innovation is an essential and integral part of strategic management. Within this strategic perspective, this course draws upon strategic management, organization theory, product innovation, and technology management for analytical tools to address important challenges faced by managers in technology-based firms. Repeatable for Credit.

MGMT 713 - STRATEGIC ISSUES FOR GLOBAL BUSINESS
Short Title: STRAT ISSUES FOR GLOBAL BUS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seeks to provide students with the skills, knowledge and sensitivity required to attain and maintain sustainable competitive advantage within a global environment. Emphasizes a strategic perspective and highlights topics such as global environment analysis, global strategy, global strategic alliances, and the important role of organizational structure and strategic control.

MGMT 714 - CAREER STRATEGY
Short Title: CAREER STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: The course emphasizes active discussion of short case studies of people making career decisions. The course also includes readings from psychologists who have researched what it is that gives people satisfaction from their work Repeatable for Credit.

MGMT 715 - STATE INNOVATION AND COMPETITIVE ADVANTAGE IN TECHNOLOGY
Short Title: STAT INNOV & COMP ADV IN TECH
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will help students apply the key strategic management frameworks and concepts into the innovation management context in technology industries and help them understand that innovation is an essential and integral part of strategic management. Within this strategic perspective, this course draws upon strategic management, organization theory, product innovation, and technology management for analytical tools to address important challenges faced by managers in technology-based firms. Repeatable for Credit.
MGMT 716 - INNOVATION IN THE DESIGN AND CONSTRUCTION INDUSTRY
Short Title: INNOV.DESIGN & CONST. INDUSTRY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Process innovation in the design and construction industries is far too rare. Even with access to powerful tools such as CADD and the Internet, many opportunities for process improvement are overlooked and problems are repeatedly ignored. Within this course, cross-discipline project teams will use contemporary business tools to evaluate long-standing industry practices and develop ideas for process innovation. At the end of the semester, students will present innovation concepts to members of the Project Delivery Innovation Forum, a group of industry leaders that may select student ideas for further research on real projects. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Cross-list: ARCH 616.

MGMT 717 - GLOBAL LEADERSHIP
Short Title: INTERNATIONAL BUSINESS
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate

MGMT 718 - MARKETING BASED PROJECT ANALYSIS
Short Title: MARKETING BASED PROJ ANALYSIS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: This course provides an overview of the role of market research in real estate development. Students will learn the steps used to conduct a market study, the role of economic data in evaluating a market, the use of comparable properties in preparing financial projections for a real estate project and the importance of public/private financing options in making a project feasible. This course would be useful to students interested in pursuing a career in real estate development. Students interested in real estate investments may also benefit from this course. While the principals learned in the course are applicable to all real estate development, the examples used in the course will focus on hotel development. Repeatable for Credit.

MGMT 719 - SUPPLY CHAIN MANAGEMENT: AN INTEGRATED APPROACH
Short Title: SUPPLY CHAIN: INTEGRATED APP
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Developing sourcing strategies for materials or services that are based on a fact based approach that is driven by business needs. Topics explored include Operations to Commercial Translation, Stakeholder Engagement, Strategic Sourcing, Category Management, e-Commerce, Bid Formulation, Bid Evaluation, Actionable Market Intelligence, Cost Modeling, Total Cost of Ownership, Regulatory Impact, Sustainability, Ethics and communication.

MGMT 720 - STRATEGY AND MANAGING INTERNATIONAL STRATEGIC ALLIANCES
Short Title: STR & MNG INTL STRAT ALLIANCES
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course seeks to provide students with the skills, knowledge, and sensitivity required to structure and manage strategic alliances/joint ventures within a global environment. This course will discuss the following topics: motivations for joining strategic alliances/joint ventures, partner selection, structuring strategic alliances/joint ventures to meet firms’ strategic objectives, control and management of alliances/joint ventures, evaluation of performance of alliances/joint ventures, and exiting alliances/joint ventures. Case studies will also be used to develop students’ capacity to identify issues, to reason carefully through various options and improve students’ ability to manage the organizational process by which alliances/joint ventures get formed and executed. We will also read and discuss recent articles from the business press and academic journals.

MGMT 721 - BUSINESS LAW
Short Title: BUSINESS LAW
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the broad subject of law as it relates to business and is designed to help the student develop “legal astuteness.” That is, the ability to communicate effectively with counsel and to work together with counsel to solve complex problems and/or to protect and leverage the firm’s resources. It is designed to be a guide to understanding how the law impacts daily management decisions and business strategies, to spotting legal issues before they become legal problems, and to using laws and legal tools to marshal resources and manage risk. Repeatable for Credit.
MGMT 722 - SUPPLY CHAIN MANAGEMENT: MAINTAINING AND OPTIMIZING VALUE
Short Title: SUPPLY CHAIN: OPTIMIZING VALUE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Executing sourcing strategies for materials or services that sustain value, drives performance, encourages innovation and ethical behaviors. Topics explored include Operations to Commercial Translation, Contract Negotiation, Contracting, Performance Management, Risk Assessment, Risk Mitigation, Supplier Relationships, Stakeholder Engagement and Communication.

MGMT 723 - PROFESSIONAL SERVICE FIRMS
Short Title: PROFESSIONAL SERVICE FIRMS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.
Course Level: Graduate
Description: Professional service firms – consulting, money management, private equity, venture capital, advertising, medical service, and law firms – are confronted with significant challenges as they experience increased competition from boutique firms as well as global and international competitors. Clients are more demanding, and there are significant, strategic and organizational challenges which require different approaches from traditional approaches. One observer noted that this competition has moved from gentlemanly competition to a "blood sport". Interestingly, the service sector in the US furnishes 68 percent of the GDP and this is growing in emerging economies; for example, the service sector in India contributed 56 percent to the GDP during 2008-09. Additionally, many of these firms’ leaders are overwhelmed by the expectation of a dual role where they are not only managers but also high profile producers. As such, it is important for a course to examine the strategy and leadership challenges these firms face and likewise to expose students to the challenges they will face as professionals in one of these organizations, and ultimately as leaders in such professional service firms. The course will also include visits from managers associated with professional service firms. Repeatable for Credit.

MGMT 724 - SOCIAL ENTREPRENEURSHIP
Short Title: SOCIAL ENTREPRENEURSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Millennials are no longer satisfied with pursuing a career that allows them just to make money. They are driven as well to make a difference in the lives of others, and live a richer life themselves. This practical course will study social entrepreneurship and its ability to create social change by applying business principles and earned income strategies; it will explore the elements needed to start and grow a social enterprise, using as a real-life example the organization founded and led by the lecturer; and it will allow students to explore areas they feel passionate about and utilize the knowledge gained through their MBA to draft a business plan for a plausible social enterprise. Guest speakers for this course include nationally-renowned major philanthropists, who will share their view of what it takes to be a successful social entrepreneur. Repeatable for Credit.

MGMT 725 - INTELLECTUAL PROPERTY STRATEGY FOR ENTREPRENEURS: LEGAL AND STRATEGIC ASPECTS
Short Title: IP FOR ENTREPRENEURS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines: theory and logic of alliances in value creation, alliance evolution in various industries, the spectrum of alliance types from a low level of interdependence to a high. The course is discussion-based, focusing on reading material, case studies and problem sets. Repeatable for Credit.
MGMT 726 - FIXED INCOME PRACTICUM I - RICE FI FUND
Short Title: FIXED INCOME PRACTICUM I
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MGMT 648 and MGMT 645
Corequisite: MGMT 651
Description: In this course, students will gain hands-on experience in the challenges and excitement of managing a simulated Fixed Income portfolio (U.S. Treasuries, corporate bonds and mortgages). FIP Sim ‘student-managers’ will actively learn and utilize the resources of the El Paso Finance Center to set up, research, and manage/trade their simulated portfolios. Each portfolio will consist of securities selected by the ‘student manager’ from an index in conformance with pre-established investment guidelines - analogous to the real investment management world. Monthly portfolio performance will be calculated and benchmarked against the index. Classroom time will be used for a combination of lectures, speakers, interactive Finance Center activities, and professor/student consultation sessions on investment strategy. This course work will leverage off of material learned in MGMT 651, and to receive credit, you must simultaneously take MGMT 651. Instructor Permission Required. Repeatable for Credit.

MGMT 727 - FIXED INCOME PRACTICUM II - RICE FI FUND
Short Title: FIXED INCOME - PRACTICUM II
Department: Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate

MGMT 728 - REAL ESTATE DEVELOPMENT
Short Title: REAL ESTATE DEVELOPMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Real Estate Development course follows the development process from an entrepreneurial and “deal making” point-of-view. Course topics include market analysis, site selection, project budgeting/financial analysis, land acquisition, marketing and leasing, joint ventures, financing, design and construction management, and dispositions.

MGMT 729 - MANAGEMENT OF INNOVATION AND TECHNOLOGY
Short Title: MGMT OF INNOVATION AND TECH
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Companies that successfully select, adopt, and exploit IT will sooner or later open up large competitive gaps that are difficult to close. Business leaders, executives, strategists, innovators and line managers are the principal determinants of a company’s success with IT. But, as we shall see in this course, they don’t need to become technologists in order to get involved; they just need to master a set of concepts, frameworks, and models about IT’s impact. There are no technical prerequisites for this course. (You will complete an online course that will give you a sufficient introduction to the technology.) In the classroom, our focus will be on cases in which business leaders have tried to use IT to create enhance organizational development and support competitive strategy. Some succeeded and others failed. From our analysis of their experiences and ideas and principles I will present, we will develop some general guidelines for businesses seeking to exploit IT. Because we have only a short time to consider a number of complex matters, I will concentrate on industries in which IT has great potential to promote outcomes that are of interest to general managers.
MGMT 730 - LEGAL ASPECTS OF ENTREPRENEURSHIP
Short Title: LEGAL ASPECTS OF ENT.
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on the legal dimensions of entrepreneurship and is designed to help students develop the managerial capability to work effectively with legal counsel to solve complex problems and to protect and leverage firm resources. Like information technology, the legal dimensions of business should not be treated as an after-thought or add-on to the business strategy development process. Corporate leaders with an understanding of American law have a unique capacity to protect and enhance shareholder wealth. Conversely, managers who lack the ability to integrate law into the development of strategy can place the firm at a competitive disadvantage and imperil its economic viability. The overarching purpose of Legal Aspects of Entrepreneurship is to prepare students to meet the legal and regulatory challenges and opportunities they can expect to encounter as entrepreneurs, venture capitalists, and managers of private and public businesses. The course provides a conceptual framework for understanding both the societal context within which businesses are organized and operate, as well as the various legal tools available to managers engaged in evaluating and pursuing opportunities. Legal Aspects of Entrepreneurship will offer strategies and tactics for working with counsel to use the law as a positive force to increase realizable value while managing the attendant risks and keeping the legal costs under control. The objective is not to teach business students how to think like lawyers, but rather to teach students how to become more legally astute so they can handle with confidence the legal aspects of entrepreneurship and management. This includes developing legal literacy and learning what to look for when selecting an attorney and knowing when to call one. Repeatable for Credit.

MGMT 731 - REPUTATION AND CRISIS MANAGEMENT
Short Title: REPUTATION MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Companies with strong reputations gain competitive advantage. However, reputation is not a tangible attribute of a firm, but rather an intangible asset held in the minds of the firm’s constituents. The goal of this course is to provide students with analytical tools to assess how an organization can build, damage, and repair its reputation.

MGMT 732 - ANTITRUST FOR BUSINESS MANAGERS
Short Title: ANTITRUST - BUSINESS MANAGERS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 733 - STRATEGIES FOR GROWTH
Short Title: STRATEGIES FOR GROWTH
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (MGMW 570 or MGMP 570 or MGMT 570) and (MGMW 571 or MGMP 571 or MGMT 571)
Description: This course focuses on examining various strategies that companies can adopt to achieve sustainable and profitable growth. The course will use a variety of real-life cases of companies and supplement them with relevant readings, lectures, or other exercises, as necessary.

MGMT 734 - TECHNOLOGY ENTREPRENEURSHIP
Short Title: TECH ENTREPRENEURSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.
Course Level: Graduate
Description: The goal of this course is to provide the student with exposure to early stage technology entrepreneurship. Evaluation of opportunities, business model, capitalization, and early operations are covered. The focus is on the parts of entrepreneurship that are unique to dealing with the commercialization of research discoveries. A significant amount of time will be spent on university to business transitions and in thinking about how to take research discoveries and create a business. Repeatable for Credit.

MGMT 735 - MARKETING LAB
Short Title: MARKETING LAB
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5-3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (MGMW 580 or MGMP 580 or MGMW 580) and MGMT 684
Description: Provides students with an opportunity to build their marketing and management skills by applying their coursework to a hands-on, real-world project. Students who maximize their experiential/applied learning experiences in the program generally help maximize their career opportunities and “hit the ground running” in their new positions after graduation. Instructor Permission Required.

MGMT 736 - STRATEGIC AND MORAL LEADERSHIP
Short Title: STRATEGIC & MORAL LEADERSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: This elective course examines strategies of effective leaders, with emphasis on the roles of strategy and ethics in leadership effectiveness. The course emphasizes group discussion of cases, examples, and readings. Repeatable for Credit.
MGMT 737 - INVESTOR RELATIONS
Short Title: INVESTOR RELATIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Students learn theory and practice of investor relations, with emphasis on the role of investor relations/financial communications. Subjects covered include: history of the stock market, formation of the SEC, evolution of SEC regulations, dynamics of the equity markets, flow of investor information, planning and implementing an investor relations program, fitting investor relations into a corporation’s communications program. Students will be mentored by local investor relations practitioners who will serve as real world guides for course assignments. Students will learn specifics about filing with the SEC, the creation of annual reports, road shows, stockholder meetings, preparing financials, and more. Investor relations managers, analysts, and CEOs will serve as guest lecturers to talk about their challenges in today’s workplace.

MGMT 738 - CUSTOMER FOCUS IN HEALTH CARE AND SERVICE INDUSTRIES: A STRATEGIC APPROACH
Short Title: CUSTOMER FOCUS IN HEALTH CARE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Prerequisite(s): MGMT 683

MGMT 739 - CAPITAL FORMATION IN THE ENERGY INDUSTRY
Short Title: CAPITAL FORMATION IN ENERGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A capstone course for second year MBAs. Students form a private startup exploration and production company that grows to become a mid-cap ($10 billion) and then suffers a severe contraction. Students will learn the various forms of capital available depending on the size of the company and state of the capital market and the commodity markets.

MGMT 740 - MURPHREE VENTURES INTERNSHIP
Short Title: MURPHREE VENTURES INTERNSHIP
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 741 - MANAGING GROWTH
Short Title: MANAGING GROWTH
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.
Course Level: Graduate
Description: Companies are either thought of as small start-ups or large, mature businesses. The small start-up is considered to be the domain of the entrepreneur, where by force of personality, spark of creativity, or bold opportunism, a business is formed ex nihilo. On the other extreme, the large business is considered to be the domain of the manager, where by force of scale and scope, imposition of process, and careful analysis, an empire is sustained and expanded. In summary, the focus of the course will be how to create wealth by buying a small business, putting systems and processes in place to create a foundation for future growth, driving growth both internally and externally, and, finally, selling the business. Students will learn to apply those skills to small businesses with growth potential.

MGMT 742 - INTERNATIONAL PRIVATE EQUITY REAL ESTATE
Short Title: INTL PRIVATE EQTY REAL ESTATE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: - Repeatable for Credit.

MGMT 743 - MANAGING INNOVATION IN ENERGY TECHNOLOGIES
Short Title: INNOVATION IN ENERGY TECH
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Innovation is critical to the survival of the energy industry, both for traditional carbon-based energy and for renewable and “green” energy. Management of innovation requires a special set of skills beyond those of typical management. We will discuss the issues faced by energy managers in addressing innovation, and look at cases where these issues played a central role.
MGMT 744 - SERVICES OPERATIONS  
Short Title: SERVICES OPERATIONS  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MGMT 574 or MGMW 574 or MGMP 574  
Description: This course aims to provide students with a theoretical and practical understanding of current challenges faced by service organizations. It explores both highly quantitative and qualitative tools and meddles for the effective design, management, improvement and marketing of service operations.

MGMT 745 - INTERNATIONAL ENERGY DEVELOPMENT  
Short Title: INTL ENERGY DEVELOPMENT  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course examines how energy companies construct portfolios of international assets. The first half of the course focuses on the lifecycle of international energy projects, from the point at which a company decides it wishes to acquire an international project to the point at which the company divests that interest. These initial classes will discuss the business development processes companies employ to identify, analyze and acquire overseas assets; the typical commercial structures and contracts used to acquire rights and obligations in different types of energy projects; how companies build and manage relationships with host governments, including cultural difference, negotiation and corruption; issues related to joint ventures and joint operations with other companies; threats to international project cash flow such as renegotiation, expropriation and force majeure; and how companies structure exits and divestments from international energy projects. The last half of the course examines in detail a few specific projects that Professor Gaille has been involved in – including oil and gas exploration in Africa and a 2 billion cubic feet per day natural gas pipeline project in the Middle East. The course concludes with students being divided into teams or “companies” and then engaging in a dynamic bid round and petroleum exploration exercise, whereby students compete with one another to acquire acreage and then create (or destroy) net present value.

MGMT 746 - REAL PROPERTY  
Short Title: REAL PROPERTY  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Survey course providing a short but intensive overview of real estate and the real estate industry.

MGMT 747 - REGULATION OF BUSINESS AND FINANCIAL MARKETS  
Short Title: REGULATION OF BUS&FIN MARKETS  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course examines the broad subject of government regulation of business and financial markets and is designed to help the student develop what the authors of the text term “legal astuteness.” That is, the ability to exercise informed judgment based on context-specific knowledge of the law and the regulatory environment. To achieve this, we will apply the methodology of neoclassical economic analysis to understand the role and function of government and governmental decision-making; explore the intersection between economics and the law; and learn to spot legal issues before they become grounds for termination, lawsuits, or criminal indictments. Emphasis is placed on high impact regulatory programs, such as antitrust, security regulation, civil rights, and environmental laws. Repeatable for Credit.

MGMT 748 - INTERNATIONAL BUSINESS BRIEFING - AFRICA  
Short Title: INTL BUS BRIEFING - AFRICA  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the MBA or PMBA programs.  
Course Level: Graduate  
Description: This course provides a unique opportunity for students to travel to Africa during fall break and 1) apply their business school knowledge, 2) learn about business in developing countries, 3) learn about entrepreneurship 4) learn about social enterprise, and 5) help the poor. Students taking this course will also have a once-in-a-lifetime trip to Africa that tourism can never duplicate. The travel to Africa includes extensive on the ground field work and also includes visits with leaders in business, government, non-profits, and various social enterprises. All students will be on project teams and will participate in the development of business plans for commercializing new technologies in developing countries and preparing a written and oral public presentation to some faculty, students, potential donors and investors, and others. Instructor Permission Required. Repeatable for Credit.
MGMT 749 - TOPICS IN FAMILY BUSINESS MANAGEMENT
Short Title: TOPICS IN FAMILY BUSINESS MGMT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Family businesses present a more complicated decision-making environment due to the overlap of three distinct systems: family, ownership and control. This course is a case-based course that surveys key topic areas for owners and managers of family-owned businesses: overlap of family system with the business, governing the family business, conflicts in family relationships, entering the family business, succession, estate planning, special valuation issues and ownership transfer. All of the above will be covered in case analyses and supplemented with readings in the text (Gersick, et.al.) and related articles. Repeatable for Credit.

MGMT 750 - STRATEGIC CONSIDERATIONS IN HEALTH INFORMATICS
Short Title: HEALTH INFORMATICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate

MGMT 751 - ECONOMICS OF HEALTH CARE SECTORS
Short Title: ECON OF HEALTH CARE SECTORS
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate

MGMT 752 - OPERATIONS LAB: ENERGY
Short Title: OPERATIONS LAB: ENERGY
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hours: 0.75-3
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate

MGMT 753 - OPERATIONS LAB: HEALTH CARE
Short Title: OPERATIONS LAB: HEALTH CARE
Department: Management
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 0.75-3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate

MGMT 754 - REAL ESTATE: ULI LAB
Short Title: REAL ESTATE: ULI LAB
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate

MGMT 755 - HOSPITAL MANAGEMENT - THE BUILDING BLOCKS
Short Title: HOSPITAL MGMT BUILDING BLOCKS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 756 - MANAGEMENT OF HEALTHCARE ORGANIZATIONS
Short Title: MGMT OF HEALTHCARE ORGS.
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 757 - REAL ESTATE LAB: DEVELOP, DESIGN AND CONSTRUCTION
Short Title: RE LAB: DEVELOP DESIGN CONSTR.
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA, MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Cross-list: ARCH 691. Repeatable for Credit.

MGMT 758 - ECONOMIC FORECASTING
Short Title: ECONOMIC FORECASTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Covers forecasting techniques and time series analysis.
MGMT 759 - DIGITAL BUSINESS EXCELLENCE
Short Title: DIGITAL BUSINESS EXCELLENCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Organizational dysfunctions remain the norm despite decades of management attention. Year after year, management gurus take passionate positions that are mutually exclusive, contrast “IT doesn’t matter” with “IT savvy is critical.” Clever executives see opportunity amid this controversy. This course steps directly into the controversy. It is designed to equip future business leaders with knowledge needed to position their firms among the 30% that do succeed. This is a business class that will focus on the use of information technology to achieve business goals. While specific technologies are discussed, as are hot technology trends, the objective is always to clarify the underlying business principles that business and IT executives require for success. Repeatable for Credit.

MGMT 760 - E-LAB: VENTURE CAPITAL
Short Title: E-LAB: VENTURE CAPITAL
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hours: 0.75-3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 761 - E-LAB: ENTERPRISE ACQUISITION
Short Title: E-LAB: ENTERPRISE ACQUISITION
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 0.75-3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 762 - E-LAB: NEW ENTERPRISE
Short Title: E-LAB: NEW ENTERPRISE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hours: 0.75-3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 763 - E-LAB: TECHNOLOGY
Short Title: E-LAB: TECHNOLOGY
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hours: 0.75-3
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 764 - ENTREPRENEURSHIP LAB: ENERGY
Short Title: ENERGY E-LAB
Department: Management
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 765 - IGNITE ENTREPRENEURSHIP
Short Title: IGNITE ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate

MGMT 766 - E-LAB: HEALTH CARE
Short Title: E-LAB: HEALTH CARE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 0.75-3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate

MGMT 767 - QUANTITATIVE FINANCE LAB
Short Title: QUANTITATIVE FINANCE LAB
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MGMT 642 and MGMT 648
Description: Class focuses on fixed income, securitization, pricing and hedging of derivatives, banking regulation, and reserve requirements pre- and post-crisis. We consider issues of risk from perspectives across the capital structure, rigorously considering financial risk management and capital markets. The format of the class combines theory, case study and quantitative applications. Repeatable for Credit.
MGMT 768 - LEGAL ISSUES IN MERGERS & ACQUISITIONS
Short Title: LEGAL ISSUES IN M&A
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: This course will examine the deal from a legal perspective. The course will focus on what executives need to know to deal effectively with key legal issues in a transactional context and in general takeover defense. We will discuss contractual and strategic issues in structuring, negotiating, and protecting a deal. We will study deals between strategic partners as well as deals involving non-strategic investors such as private equity and will address discrete issues arising in each scenario. We will also explore the role of the board of directors in negotiated and hostile transactions and in addressing issues of shareholder activism. In that regard, we will discuss the underlying tension between the duties and authority of the board pursuant to state corporate law, on one hand, and the individual interests of shareholders, on the other.

MGMT 769 - WASTE MANAGEMENT INTERNSHIP
Short Title: WASTE MANAGEMENT INTERNSHIP
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Waste Management (WM) has established a formal internship program with the Jones Graduate School of Management (JGSM) at Rice University in order to give students more exposure to the emerging field of sustainable solutions. Students will gain valuable experience in the launch of new enterprises within WM and associated deal analysis. Instructor Permission Required. Repeatable for Credit.

MGMT 770 - CONSULTATIVE SELLING
Short Title: CONSULTATIVE SELLING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces students to the communications skills and behaviors required for success in the field of consultative selling, including effective questioning, active listening, client learning style and personality assessment, creating and delivering persuasive presentations, and proposal writing.

MGMT 771 - DIGITAL MARKETING
Short Title: DIGITAL MARKETING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course provides an introduction to digital marketing and examines ways it should be implemented. In addition to learning fundamental constructs and principles, students will focus on tools and skills needed for setting goals, implementing campaigns, and measuring success. Guest speakers and in-class exercises are used to provide insights and relevancy to this swiftly expanding area of marketing. Repeatable for Credit.

MGMT 772 - RICE ALLIANCE INTERNSHIP
Short Title: RICE ALLIANCE INTERNSHIP
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 773 - SURGE INTERNSHIP
Short Title: SURGE INTERNSHIP
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA program.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 774 - LEADERSHIP COACHING
Short Title: LEADERSHIP COACHING
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The best leaders understand the importance of developing the next generation - ensuring they have prepared successors and effective teams. This course will examine models and frameworks for coaching and development and is intended for those interested in practicing coaching as a manager or peer. Department Permission Required.
MGMT 775 - SUPPLY CHAIN ILE
Short Title: SUPPLY CHAIN ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA program.
Description: The Supply Chain for most companies is a very vital ingredient in their success, maybe even survival. Whether you are a company such as Apple, where your core competency is the design/styling of products, or your company designs, manufactures and distributes all of your products, the supply chain’s has to perform at a high level. In the face of increasing customer expectations and global competitions, companies have to become more efficient in controlling the flow of materials throughout the supply chain. This ILE is designed to provide an introduction to the major components important in the Supply Chain. Topics discussed will include: Strategies for the Supply Chain, Procurement & Global Financial Decisions Processes such as Sales and Operations Planning (S&OP), Negotiation, Supplier Selection Systems for Manufacturing Planning & Control, & MRP/ERP Management of Suppliers using Performance Assessments, Developing Capabilities Decisions affecting Inventory, and Logistics Jobs in the Supply Chain Corporate Social Responsibility in the Supply Chain The course will be a combination of lectures and some thought-provoking activities and discussions of current events from the Supply Chain affecting companies will be part of the class, and participants are encouraged to bring in relevant examples from their previous work experience to share. Repeatable for Credit.

MGMT 776 - INTRODUCTION TO REAL ESTATE INDUSTRY
Short Title: INTRO TO REAL ESTATE INDUSTRY
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: An introductory survey course intended to provide a foundational understanding of the real estate industry. This course aims to be useful to students interested in pursuing a career in the real estate industry who have no or limited experience in real estate. This course is open to MBA students in each program. Outside graduate students can enroll with instructor permission provided space is available.

MGMT 777 - INVESTMENT BANKING AND MARKETS ILE
Short Title: INVESTMENT BANKING & MARKETS
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 778 - CUSTOMER DRIVEN STRATEGY: METRICS AND IMPLEMENTATION
Short Title: CUSTOMER DRIVEN STRAT: METRICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 779 - BUSINESS AND URBAN ANALYTICS
Short Title: BUSINESS & URBAN ANALYTICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Course Level: Graduate
Description: The project based class offers the unique opportunity for students from distinct fields of business and engineering to solve a real world data driven problem in a collaborative way. The data and the problem statement will come from the Rice University’s Administrative Center for Sustainability and Energy Management (ACSEM) at the start of the semester. Instructor Permission Required. Cross-list: ENGI 779.

MGMT 781 - TEAM DYNAMICS I
Short Title: TEAM DYNAMICS I
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 0.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: During the Executive MBA program the students work in teams frequently to complete group assignments. This course provides them with concepts and methods to promote the learning of team members as well as the successful completion of assignments. Many of these concepts and methods can be used in work with team in other contexts.

MGMT 782 - TEAM DYNAMICS II
Short Title: TEAM DYNAMICS II
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Laboratory
Credit Hours: 0.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
MGMT 783 - CORPORATE FINANCIAL POLICY  
**Short Title:** CORPORATE FINANCIAL POLICY  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to students in the EMBA program.  
**Course Level:** Graduate  
**Description:** This course examines the investment decisions faced by corporate managers. It begins by developing a general framework for corporate valuation, and then uses this framework to review and expand on the capital budgeting issues introduced in the core finance course. The course will review the foundations of option valuation, and then apply those tools to value real investments. It will also cover new material on estimating the cost of capital, including the effects of leverage and taxes. The course format is a mixture of theory, empirical evidence, and practical application.

MGMT 786 - INTERNATIONAL BUSINESS BRIEFING - CHINA  
**Short Title:** JONES EDGE - ASIA  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** An overseas course trip involving intensive meetings with company and commercial bank executives, directors in consulting and investment banking firms, executives in public sector and health care enterprises, and government officials and academics. The objective is to enhance students’ appreciation of the opportunities and obstacles to doing business in different parts of the world and to heighten their interest in engaging in global ventures. Department Permission Required. Repeatable for Credit.

MGMT 789 - GLOBAL FIELD EXPERIENCE  
**Short Title:** GLOBAL FIELD EXPERIENCE  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to students in the EMBA program.  
**Course Level:** Graduate  
**Description:** This unique experiential learning opportunity requires students to apply what was learned in the first year of the program through consulting projects on the ground in a designated country. The course fosters a global mindset and further develops the ability to tackle business challenges in dynamic, diverse, and complex environments. Department Permission Required. Repeatable for Credit.

MGMT 790 - LEADERSHIP DEVELOPMENT  
**Short Title:** LEADERSHIP DEVELOPMENT  
**Department:** Management  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Laboratory  
**Credit Hours:** 0.5  
**Restrictions:** Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate

MGMT 792 - INVESTMENTS / PORTFOLIO MANAGEMENT  
**Short Title:** INVESTMENTS / PORTFOLIO MGMT  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to students in the EMBA program.  
**Course Level:** Graduate  
**Description:** This course examines the determinants and behavior of asset prices and provides a framework for portfolio management. We rely on both financial theory and analytical tools. Topics covered will include asset pricing models, market efficiency, asset allocation, portfolio management, and performance evaluation. The course is designed to provide a conceptual understanding of investment returns and portfolio management processes coupled with a strong quantitative focus that develops analytical tools and spreadsheet modeling techniques.

MGMT 796 - LEADERSHIP DEVELOPMENT II  
**Short Title:** LEADERSHIP DEVELOPMENT II  
**Department:** Management  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hours:** 0.5  
**Restrictions:** Enrollment limited to students in the EMBA program.  
**Course Level:** Graduate  
**Description:** Repeatable for Credit.

MGMT 797 - EDGE INTERSESSION ABROAD - SOUTH AMERICA  
**Short Title:** JONES EDGE - SOUTH AMERICA  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Repeatable for Credit.

MGMT 798 - PSYCHOLOGICAL FOUNDATIONS OF PROFESSIONAL LIVES  
**Short Title:** PSYCH FOUNDATIONS OF PROF LIFE  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Course draws from psychology and management research, exploring complexity of professional lives and identity dynamics, underlying career decisions, compromises, and regrets. Through exercises, cases, and discussions, students develop an understanding of the type of professional path they want and why, and how to get it and overcome setbacks and successes.
MGMT 799 - HEALTHCARE INNOVATION AND ENTREPRENEURSHIP
Short Title: HEALTHCARE INNOV & ENTREPRE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed for healthcare entrepreneurs who want to build innovative medical technologies. Students work in interdisciplinary teams comprised of engineering, business, and medical students. Key concepts include: how to validate and scope clinical needs, ideate solutions, draft a business model, and determine regulatory and reimbursement strategies. Instructor Permission Required.

MGMT 800 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Management
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1.5-3
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 801 - FINANCIAL ACCOUNTING
Short Title: FINANCIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: Introduction to the preparation, analysis, and use of corporate financial reports. Covers the basic techniques of financial reporting and analysis from the perspective of managers as well as external users of information such as investors. Repeatable for Credit.

MGMT 802 - MANAGERIAL ACCOUNTING
Short Title: MANAGERIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: Provides general managers with an understanding of the design and function of a firm’s management accounting system to enable them to become active consumers of accounting information. The course describes how accounting information can assist managers in making decisions about products, services, and customers; improving existing processes; and aligning organizational activities toward long-term strategic objectives.

MGMT 806 - EXECUTIVE 2ND YEAR CAPSTONE
Short Title: EXEC 2ND YEAR CAPSTONE
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: The second-year capstone is an applied management course in the program’s core curriculum, where student teams learn how to work through an end-to-end strategic assessment and planning effort on a current real-life strategic challenge faced by a Houston-based, socially-oriented community organization. It provides students the opportunity to apply their multi-functional (strategy, finance, marketing, organizational behavior, etc.) knowledge from the program and their own professional experience, as well as provides background on management of non-profit organizations. Repeatable for Credit.

MGMT 807 - LEADERSHIP
Short Title: LEADERSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: This course covers key elements of sound leadership theory and practice in various organizational settings. Emphasis is on readings concerning leadership skill development and cases concerning effective versus ineffective leadership practices. Applications range from team settings to business units to executive suites. Course emphasizes strategic, moral, and organizational dimensions of leadership.

MGMT 809 - ORGANIZATIONAL BEHAVIOR
Short Title: ORGANIZATIONAL BEHAVIOR
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: The purpose of this course is to help students become better decision makers, motivators, and leaders. Topics include perception, attribution, decision making, motivation, influence, leadership, culture, and innovation. Special attention is paid to the importance of managing based on evidence (evidence-based management).

MGMT 813 - LEADING FOR CREATIVITY AND INNOVATION
Short Title: LEADING FOR CREATIVITY & INNOV
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: Study of the nature of creativity, creative thinking skills and ways to encourage, promote, and effectively manage creativity and innovation in complex organizations.
MGMT 815 - BARGAINING
Short Title: BARGAINING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 817 - DECISION STRATEGIES
Short Title: DECISION STRATEGIES
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Decision analysis is the discipline that helps people choose wisely under conditions of uncertainty. Decision analysis provides the only logical, consistent way to incorporate judgments about risks and uncertainties into an analysis.

MGMT 820 - COMPLEXITIES OF PEOPLE AND ORGANIZATIONS
Short Title: COMPLEXITIES OF PEOPLE & ORGS
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: A seminar focused on contemporary issues in organizational behavior.

MGMT 821 - OPTIMIZING THE WORKFORCE OF THE FUTURE
Short Title: OPTIMIZING THE WORKFORCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students consider optimal ways to plan for, encourage, and manage diversity in organizations. We explore the data and analyze the business case for diversity and evaluate strategies to recruit and retain diverse talent. This active-learning course relies on the latest empirical research and provides practical skills for managing tomorrow's workforce.

MGMT 830 - STRATEGIC IT
Short Title: STRATEGIC IT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: Today, businesses spend several trillion dollars annually on information technology (IT). To gain the greatest benefit from this investment, managers need to understand the interaction of this technology with ways of working. Our focus will be on cases in which business leaders have tried to use IT to enhance organizational development and support competitive strategy. From our analysis of their experiences, we will develop some management guidelines for businesses seeking to exploit IT.

MGMT 833 - TECHNOLOGY, KNOWLEDGE AND BUSINESS
Short Title: TECH, KNOWLEDGE & BUSINESS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: Within companies, technology supports new ways to coordinate undertakings and share best practices across organizational boundaries. In this course, we will first consider the development of knowledge management and how it relates to improved performance. We will then consider how the pervasive use of digital technology is changing ideas about privacy, security, authority, social relations and knowledge itself.

MGMT 840 - ECONOMICS FOR BUSINESS
Short Title: ECONOMICS FOR BUSINESS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program.
Enrollment is limited to Graduate level students.
Course Level: Graduate

MGMT 841 - ECONOMIC ENVIRONMENT OF BUSINESS
Short Title: ECONOMIC ENVIR OF BUSINESS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: Examination of the global economic environment that serves as a backdrop for business decision making, with emphasis on the key macroeconomic policy goals and tools and how they affect exchange rates, interest rates, business cycles, and long-term economic growth.
MGMT 843 - CORPORATE FINANCIAL MANAGEMENT
Short Title: CORPORATE FINANCIAL MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course emphasizes concepts and skills related to valuation tasks in a corporate setting. Topics include financial market structure and efficiency, time value of money, net present value, internal rate of return, capital budgeting, risk and return, capital asset pricing model, cost of capital, capital structure, payout policy, and real options analysis.

MGMT 845 - CORPORATE FINANCIAL STRATEGY FOR EXECUTIVES
Short Title: CORP FIN STRATEGY FOR EXECVS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a case study course based on current corporate finance transactions and topics. The intent is to expose Executive MBA candidates to some of the practical challenges and opportunities within the primary financial decision governed by Corporate Financial policies (Capital Structure, Financial Risk Management, Liquidity, Funding/Financing, and Payout Policy).

MGMT 848 - APPLIED FINANCE
Short Title: APPLIED FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate

MGMT 860 - BUSINESS ETHICS
Short Title: BUSINESS ETHICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: This course addresses moral obligations of firms and managers. The focus is on preparing for moral leadership and professionalism. Emphasis is on readings concerning best business practices and cases concerning effective versus ineffective handling of ethical analysis and moral issues. Topics include relationship of business ethics and laws, corporate social responsibility, sustainability, and human rights.

MGMT 861 - BUSINESS-GOVERNMENT RELATIONS
Short Title: BUSINESS-GOVERNMENT RELATIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: The course exposes students to the governmental institutions that surround the business environment. Strategies for influencing and responding to governmental factors are explored as well as other issues related to business-government relations.

MGMT 865 - GLOBALIZATION OF BUSINESS
Short Title: GLOBALIZATION OF BUSINESS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: This course examines the increasing importance of trade and foreign direct investment and the global political-economy to U.S. business. We first study the historical roots of globalization and move forward to consider the impact on business of the global trade rules promulgated by the World Trade Organization. We also consider U.S. policies towards trade and foreign direct investment.

MGMT 866 - PUBLIC POLICY MANAGEMENT AND ADVOCACY
Short Title: PUBLIC POLICY MGMT & ADVOCACY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: This course demonstrates how organizations, especially corporations, set up processes for identifying and managing public policy issues. Then, to help achieve their public policy objectives, it discusses how corporations use best practices in engaging with stakeholders—governments, media, communities and non-profit NGOs. The course covers both good and bad practices in communications with these stakeholders, including in crisis situations. Finally, it illustrates how corporations can use social responsibility activities to enhance their reputation and help achieve success in the public policy arena.

MGMT 870 - COMPETITIVE STRATEGY
Short Title: STRATEGY THEORY & ACTION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: Systematic examination of models and techniques used to analyze a competitive situation within an industry from a strategic perspective. Examines the role of key players in competitive situations and the fundamentals of analytical and fact oriented strategic reasoning. Examples of applied competitive and industry analysis are emphasized.
MGMT 872 - STRATEGY THEORY AND ACTION II
Short Title: STRATEGY THEORY & ACTION II
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate

MGMT 874 - OPERATIONS MANAGEMENT
Short Title: OPERATIONS MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the design and improvement of operations, including manufacturing technologies, quality management and control, and organizational issues in operations. Understand, manage, and improve process/operations. Lean management and six sigma concepts.

MGMT 880 - STRATEGIC MARKETING
Short Title: STRATEGIC MARKETING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the key concepts and perspectives underlying the function of marketing in a business enterprise. Emphasis is placed on strategic marketing issues and the formulation of marketing strategies. Includes value proposition; customer & market analysis; segmentation & targeting, product strategy; branding; pricing strategy; marketing channels; marketing communication and selling. Lectures and extensive analysis of marketing management case studies.

MGMT 881 - CONSULTATIVE SELLING
Short Title: CONSULTATIVE SELLING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: This course introduces students to the knowledge, skills, and behaviors required for success in the field of consultative selling. Topics include effective questioning, active listening, client learning style and personality assessment, principles of influence, effective sales call planning and execution, and delivering persuasive presentations.

MGMT 884 - BRAND MANAGEMENT
Short Title: BRAND MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.

MGMT 885 - MARKETING CHANNELS
Short Title: MARKETING CHANNELS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Course Level: Graduate
Description: Repeatable for Credit.

MGMT 886 - DECISION MODELS
Short Title: DECISION MODELS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: Successful management requires the ability to recognize a decision situation, understand its essential features, and make a choice. However, many of these situations - particularly those involving uncertainty and/or complex interactions - may be too difficult to grasp intuitively, and the stakes may be too high to learn by experience. This course introduces spreadsheet modeling, simulation, decision analysis and optimization to represent and analyze such complex problems. The skills learned in this course are applicable in almost all aspects of business and should be helpful in future courses. The course is divided into two parts. In the first part, we discuss the use of decision trees for structuring decision problems under uncertainty. In the second part of the course, we discuss Monte Carlo simulation, a technique for simulating complex, uncertain systems. Throughout the course, we will use Microsoft Excel as a modeling environment, using add-in programs as necessary. Familiarity with Excel is an important prerequisite for this course.

MGMT 892 - CUSTOMER RELATIONSHIP MANAGEMENT STRATEGY
Short Title: CUSTOMER REL MGMT STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Course Level: Graduate
Description: Repeatable for Credit.
MGMT 895 - BUSINESS ANALYTICS
Short Title: BUSINESS ANALYTICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The ever-increasing capacity of computers to analyze data, and the explosion of the amount of data available, has resulted in an increased role for data analysis as an aid to business decision-making. This course exposes the student to the most important ideas and methods relevant for data analysis in a business context. Emphasizing practical applications to real problems, the course covers the following topics: Sampling, Descriptive Statistics, Probability Distributions, and Regression Analysis. Students are strongly encouraged to bring data from work; projects from previous years have returned significant monetary value to students' current employers and examples of these projects will be provided in class. Repeatable for Credit.

MGMT 896 - LEADERSHIP COMMUNICATION I
Short Title: LEADERSHIP COMMUNICATION I
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: This course is an introduction to corporate communication strategy, internal corporate communications, and interpersonal communications including listening and feedback. A separate, optional track allows students to practice and develop public speaking and writing skills.

MGMT 897 - LEADERSHIP COMMUNICATIONS II
Short Title: LEADERSHIP COMMUNICATIONS II
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Course Level: Graduate
Description: This course focuses on advanced communication topics including crisis communications, intercultural communications, and mastering difficult conversations. A separate, optional track allows students to continue practicing and developing public speaking and writing skills.

MGMT 901 - FINANCIAL STATEMENT ANALYSIS
Short Title: FINANCIAL STATEMENT ANALYSIS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Description: Examines the role of financial statements in the evaluation of a firm's financial condition and the prediction of its future prospects. Covers the strategic, financial, and accounting analysis of a firm's profitability and riskiness by means of financial statement data, and introduces the fundamentals of financial statement forecasting and building pro-forma financial statements.

MGMT 902 - FINANCIAL STATEMENT ANALYSIS II
Short Title: FINANCIAL STATEMENT ANALYSIS II
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Description: Repeatable for Credit.

MGMT 903 - TAXES AND MULTINATIONAL BUSINESS STRATEGY
Short Title: TAXES/MULTINATIONAL BUS STRAT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Students in the EMBA program may not enroll.
Description: Repeatable for Credit.

MGMT 904 - STRATEGIC COST ACCOUNTING
Short Title: STRATEGIC COST ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5

MGMT 906 - VALUATION APPLICATIONS IN ACCOUNTING
Short Title: VALUATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.

MGMT 908 - NEGOTIATION AND CONFLICT RESOLUTION II
Short Title: NEGOTIATIONS II
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.

MGMT 909 - NEGOTIATION AND CONFLICT RESOLUTION
Short Title: NEGOTIATION & CONFLICT RES
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 0
Restrictions: Enrollment limited to students in the EMBA program.
Description: Development of analytical and behavioral skills for resolving conflict and negotiating successfully in a business context. Topics include analysis of your negotiation counterpart, adversarial versus cooperative bargaining, influence tactics, and ethics.

MGMT 919 - CORPORATE GOVERNANCE
Short Title: CORPORATE GOVERNANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Description: Repeatable for Credit.
MGMT 922 - GLOBAL SUPPLY CHAIN MANAGEMENT
Short Title: GLOBAL SUPPLY CHAIN MGMT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment limited to students in the EMBA program.
Description: Repeatable for Credit.

MGMT 926 - VENTURE CAPITAL
Short Title: VENTURE CAPITAL
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Description: The course is an overview of the venture capital industry; the formation, organization and operation of a venture capital fund; monitoring the portfolio companies and mentoring their management teams; valuation methodology and term sheets; legal issues; problems that a VC faces; exiting a portfolio company; failure and how to deal with it. The class has guest speakers from the industry and utilizes several relevant cases to give students situational experience. The entire course is based on real-world situations.

MGMT 927 - THE NEW ENTERPRISE
Short Title: THE NEW ENTERPRISE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Description: Evaluating opportunities and developing a business concept; analyzing new ventures; pricing, selling, and cost control; attracting stakeholders and bootstrap finance; the legal form of business and taxation; financing, deal structure and venture capital; harvesting value; developing a business plan.

MGMT 928 - ENTERPRISE EXCHANGE
Short Title: ENTERPRISE EXCHANGE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment limited to students in the EMBA program.
Description: The needs approach to buying and selling businesses; enterprise valuation; deal and contract structuring; mergers and acquisitions; leveraged buyouts; consolidating fragmented industries.

MGMT 930 - FINANCIAL MARKETS
Short Title: FINANCIAL MARKETS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Description: Repeatable for Credit.

MGMT 932 - CORPORATE GOVERNANCE AND FINANCIAL REPORTING
Short Title: CORP GOV & FINANCIAL REPORTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment limited to students in the EMBA program.
Description: Critical study of the motivation, valuation, and integration of merging established businesses. While focusing on the application of M&A to further corporate strategy, the course also investigates the role of private equity, hostile transactions and asset restructurings in the M&A process.

MGMT 952 - MERGERS AND Acquisitions
Short Title: MERGERS AND ACQUISITIONS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment limited to students in the EMBA program.
Description: Repeatable for Credit.

MGMT 954 - CORPORATE FINANCIAL RESTRUCTURING
Short Title: CORP FINANCIAL RESTRUCTURING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Description: Critical study of the motivation, valuation, and integration of merging established businesses. While focusing on the application of M&A to further corporate strategy, the course also investigates the role of private equity, hostile transactions and asset restructurings in the M&A process.
MGMT 955 - ADVANCED FINANCIAL RESTRUCTURING
Short Title: ADV FINANCIAL RESTRUCTURING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA or MBA programs. Enrollment is limited to Graduate level students.
Prerequisite(s): MGMT 954
Description: Now that you have mastered the basics of corporate financial restructuring, advanced financial restructuring will focus on (1) investing in distressed debt, (2) energy sector bankruptcies, (3) complex reorganizations, (4) advanced credit default swaps, and (5) international insolvencies.

MGMT 957 - INTERNATIONAL FINANCE
Short Title: INTERNATIONAL FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Description: Exploration of issues encountered in international financial arenas, including foreign exchange rate risk management, capital budgeting for international projects, and international financing strategies.

MGMT 959 - STRATEGY AND MANAGING INTERNATIONAL STRATEGIC ALLIANCES
Short Title: STRAT & MANAGING INTL STRAT.
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Description: Examination of strategic planning approaches and methods for managing 21st Century organizations. Emphasizes design and implementation of planning systems that are highly responsive to the dynamic, competitive, stakeholder-influenced planning contexts facing modern organizations.

MGMT 960 - STRATEGIC INNOVATION MANAGEMENT
Short Title: STRATEGIC INNOVATION MGMT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.
Description: Innovation is critical for firms to achieve better performance and sustainable competitive advantage. However, the management of innovation is inherently difficult and risky because customer demand and preferences change quickly and technological changes are highly unpredictable and thus most new products and technologies are not a commercial success. This course is designed to help executives apply the key strategic management frameworks and concepts to address important challenges they face in innovation management: How to manage market uncertainty, technological uncertainty and competitive volatility? What are the enemies of innovation in both new ventures and successful established firms? How to build strategic alliances for technology/product innovation? And how to manage innovation in the global market?

MGMT 961 - BUSINESS LAW
Short Title: BUSINESS LAW
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.
Description: An overview of the legal system and survey of legal standards applicable to companies, including laws impacting corporate formation and governance, contracts, tort liability, employment law and unfair competition. The course is designed to help executives understand how to manage risk in light of applicable standards.

MGMT 962 - APPLIED CONTRACT LAW
Short Title: APPLIED CONTRACT LAW
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Description: Examination of strategic planning approaches and methods for managing 21st Century organizations. Emphasizes design and implementation of planning systems that are highly responsive to the dynamic, competitive, stakeholder-influenced planning contexts facing modern organizations.

MGMT 970 - OPERATIONS STRATEGY
Short Title: OPERATIONS STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Description: Examination of strategic planning approaches and methods for managing 21st Century organizations. Emphasizes design and implementation of planning systems that are highly responsive to the dynamic, competitive, stakeholder-influenced planning contexts facing modern organizations.

MGMT 973 - OPERATIONS LEADERSHIP
Short Title: OPERATIONS LEADERSHIP
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Description: This course is designed to be interactive, thought provoking and / or validate current methods of operating or managing within the supply chain. This course will explore the many working aspects and functions in plant and multi-plant system operations. Discussions and course content will delve into executive and managerial roles in maintaining efficient and effective plant and system wide operations. The course will also discuss the importance of establishing a system of early warning signs that identify and use critical success measures to be proactive towards emergent problems. Selected readings and exercises coupled with group presentations and discussions will examine functions in operations with a focus on manufacturing in the areas of: Strategy, Leadership, Execution, Operations Maintenance/Process Support systems for control, and General Discussions – Lessons Learned.
MGMT 985 - GLOBAL LEADERSHIP
Short Title: GLOBAL LEADERSHIP
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the EMBA program.
Description: Leadership challenges, skills and strategies in the global context. Cross-cultural differences in characteristics of followership, values, information-processing styles, interpersonal relationships, group dynamics and many other areas. Implications of these differences for employee attitudes and behavior, and for leadership effectiveness in the workplace. Scientifically-proven course material and dynamic, interactive teaching style.

MGMT 995 - BUSINESS ANALYTICS FOR EXECUTIVES
Short Title: BUSINESS ANALYTICS FOR EXECVS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Students will gain the basic tools to understand and interact with lawyers. Scientifically-proven course material and dynamic, interactive teaching style.

Managerial Studies (MANA)

MANA 404 - MANAGEMENT COMMUNICATIONS IN A CONSULTING SIMULATION
Short Title: MANAGEMENT COMMUNICATIONS
Department: Managerial Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Managerial Studies. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The capstone course for the MANA curriculum, students work on professional-level skills in communication sub-disciplines involving business strategy, writing in business and management contexts, intercultural communication challenges, and the presentation of business analysis. The class format combines elements of a workshop along with a lecture/discussion-oriented teaching environment. Students apply knowledge gained in Managerial Studies' previous courses - including economics, psychology, statistics, accounting, policy studies, and finance - to cases that require complex communications for multiple audiences. Recommended Prerequisite(s): Completion of eight Managerial Studies required courses.

MANA 498 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Managerial Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Managerial Studies. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent research project with a Faculty member in the Jones Graduate School of Management. Only for students in the Honors Program of Managerial Studies. Must have the approval of the Director of Managerial Studies and the participating Jones School Faculty Member. Instructor Permission Required.

MANA 499 - LEGAL THEMES IN ENGINEERING AND MANAGING PRACTICE
Short Title: LEGAL THEMES IN ENGI PRACTICES
Department: Managerial Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to fundamental legal concepts of the American legal system for upper level undergraduate students, primarily aimed at what engineers, scientists and other professionals could expect to encounter in their professional careers. The primary focus is to provide students with the basic tools to understand and interact with lawyers. Cross-list: MECH 456.

Master Accounting (MACC)

MACC 500 - INTERNSHIP IN ACCOUNTING
Short Title: INTERNSHIP IN ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 6
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised off-campus, non-group instruction, including field experiences, practica, or internships in applied accounting. Written and oral critique of activity required. Internship plan must be approved in advance by the MAcc Program Director. Instructor Permission Required.

MACC 501 - ACCOUNTING ETHICS AND PROFESSIONALISM
Short Title: ETHICS IN ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The purpose of the course is to prepare the future CPA for ethical judgement. Course materials emphasize ethical reasoning and giving voice to values; principles of integrity, objectivity, independence (in fact and appearance) and avoidance of intentional misrepresentation of facts; the role of core values in a dynamically changing global economy; and professional and ethical issues in accounting practice.

MACC 502 - BUSINESS LAW FOR ACCOUNTANTS
Short Title: BUSINESS LAW FOR ACCOUNTANTS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the broad subject of law as it relates to business and is designed to help the accounting student develop "legal astuteness." The course provides an initial exposure to contracts and crucial concepts of tort, crime, agency, and business organization, as well as federal legal and regulatory schemes.
MACC 503 - ACCOUNTING AND AUDITING REGULATION  
**Short Title:** ACCTING & AUDITING REGULATION  
**Department:** Management  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Students will travel to Washington, DC for an intensive, 5-day learning program. An accounting faculty member will oversee the course, and various officials involved in public policy will lead many presentations and discussions. The grade for this course will be 100% based on accounting and business writing.

MACC 504 - FINANCIAL FUTURES AND OPTIONS  
**Short Title:** FINANCIAL FUTURES & OPTIONS  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** An introduction to forward, futures, option, and swap contracts, including the basic valuation, principles, the use of these contracts for hedging financial risk, and an analysis of option-like investment decisions.

MACC 505 - ECONOMIC ENVIRONMENT OF BUSINESS  
**Short Title:** ECONOMIC ENVIRONMT OF BUSINESS  
**Department:** Management  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** EEB stresses an understanding of the major macroeconomic forces affecting business in today's global economy. Fluency in major macroeconomic concepts and forces enhances business decision-making in the globally competitive product, financial, and labor markets that characterize the modern business environment.

MACC 511 - ISSUES IN FINANCIAL REPORTING II  
**Short Title:** ISSUES IN FIN REPORTING II  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Topics include: accounting for dilutive securities and stock-based compensation; recognition and de-recognition of investments, leases, deferred taxes, and pension and other postretirement obligations; advanced topics on inter-corporate investment accounting. Codification research will be integrated throughout course. Comparison of U.S. GAAP and IFRS.

MACC 512 - FINANCIAL STATEMENT ANALYSIS AND VALUATION  
**Short Title:** FINANCIAL STATEMENT ANALYSIS  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** The first half of the course focuses on documenting and understanding a firm's profitability relative to past performance and comparable firms. The second half of the course covers: 1) forecasting financial statements and 2) deriving firm value under a variety of approaches, including DCF and residual income valuation (RIV).

MACC 513 - ISSUES IN FINANCIAL REPORTING III  
**Short Title:** ISSUES IN FIN REPORTING III  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course covers the advanced financial accounting topics of: preparation of consolidated statements, partnership accounting and reporting, accounting for bankruptcy and reorganization, segment disclosures, and interim reporting, and the role of the SEC in financial reporting for publically traded companies.

MACC 514 - FAIR VALUE ACCOUNTING  
**Short Title:** FAIR VALUE ACCOUNTING  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This course examines: fair value accounting, as outlined in Accounting Standard Codification section 820 and other U.S. accounting standards; use of 3rd party pricing services, credit risk considerations, and recent accounting updates impacting the valuation of various financial instruments, such as loans, equities, department securities, alternative investments, real estate investments and liabilities.

MACC 530 - INTRODUCTION TO MANAGERIAL ACCOUNTING  
**Short Title:** INTRO TO MGMT ACCOUNTING  
**Department:** Management  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Lecture  
**Credit Hours:** 0.5  
**Restrictions:** Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Course introduces the vocabulary and mechanics of cost accounting. Basic managerial accounting topics will be covered, including cost-volume analysis, cost behavior, relevant costs, and the use of cost information for decision making.
MACC 531 - ADVANCED MANAGEMENT ACCOUNTING  
**Short Title:** ADVANCED MGMT ACCOUNTING  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** The use of management accounting information to serve management decision making; review of cost concepts; standards and variances; relevance and decision making; role of cost allocations; different costs for different purposes; product costing systems; and managing customers.

MACC 541 - ACCOUNTING CONTROL SYSTEMS  
**Short Title:** ACCOUNTING CONTROL SYSTEMS  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Examines the concepts of the integrated audit of internal control over financial reporting in accordance with PCAOB Audit Standard 5. Also covers fundamental procedures used in financial statement audits, specifically in the client acceptance and continuance, planning and risk assessment, and audit comfort cycle phases of the engagement.

MACC 561 - ACCOUNTING INFORMATION SYSTEMS  
**Short Title:** ACCOUNTING INFORMATION SYSTEMS  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** A study of automated systems of processing data for accounting information. The accounting system is discussed from the perspective of developing and maintaining systems capable of producing information for internal decision-making and external reporting. Hands-on experience may include general ledger, ERP, flowcharting software and other relevant computer technology.

MACC 562 - ACCOUNTING AND DATA ANALYTICS  
**Short Title:** ACCOUNTING & DATA ANALYTICS  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This capstone course applies accounting and critical thinking skills to real-world data analytics examples from auditing and forensics. The focus is on (1) the methodologies of transforming raw and unstructured data into workable data sets, (2) how to interpret data sets, and (3) the presentation of data to decision makers.

MACC 571 - FEDERAL TAXATION I  
**Short Title:** FEDERAL TAXATION I  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Introduction to federal income tax principles. Emphasis on general skills in identifying and resolving tax issues, understanding the administrative and public policy and reasoning underlying tax law choices and integrating the tax laws into business and personal decisions and planning. Coverage of taxation of C-corporations, S-corporations, and partnerships.

MACC 572 - FEDERAL TAXATION II  
**Short Title:** FEDERAL TAXATION II  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** MACC 571  
**Description:** Building on the subject matter covered in MACC 571, this course provides further knowledge of the federal tax structure and fundamental skills for decision-making regarding tax compliance and tax planning.

MACC 581 - GOVERNMENT AND NOT-FOR-PROFIT ACCOUNTING  
**Short Title:** GOVT AND NFP ACCOUNTING  
**Department:** Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 1.5  
**Restrictions:** Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Financial reporting, managerial, auditing, taxation, and information systems issues in governmental and nonprofit entities; ethics and professional standards; fund accounting concepts and practices, as well as government-wide financial reporting similar to private business consolidated reporting and the relationships between the two; not-for-profit budgeting, accounting, and reporting standards.
MACC 591 - ACCOUNTING THEORY
Short Title: ACCOUNTING THEORY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MACC program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The aim of this seminar is to impart an understanding of the historical evolution of the literature on financial accounting theory and accounting principles, as well as emerging developments in accounting research. A companion objective is to come to understand the evolving dynamic of the standard-setting process for financial reporting in the United States and at the international level, including consideration of the “political” intrusions into this process. Readings will be drawn from the periodical literature, books and monographs, and reports. A term paper will be required. The prerequisite for undergraduates is BUSI 405, but the course will also be open also to a small number of other students who have taken just BUSI 305. MBA students: Prerequisite is MGMT 601. PhD students: no prerequisites. All students must obtain the prior permission of the instructor. Course may not be taken pass/fail and may not be audited. Enrollment will be limited. Mutually Exclusive: Credit cannot be earned for MACC 591 and BUSI 491/MGMT 591.

MACC 599 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Management
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Specialized aspect or topic in an area directly related to public accounting that is chosen by student and an appropriate faculty member. Department Permission Required. Repeatable for Credit.

Materials Science & NanoEng (MSNE)

MSNE 210 - WILD TOPICS IN CHEMISTRY AND NANOTECHNOLOGY
Short Title: WILDS TOPICS CHEM AND NANO TECH
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A variety of topics related to chemistry and nanotechnology will be discussed. Some topics are classical while others are current. Topics may include nanocars, molecular electronics, how to form a startup company. Grades will be based upon attendance and quizzes. Cross-list: CEVE 210, CHEM 210. Repeatable for Credit.

MSNE 301 - MATERIALS SCIENCE
Short Title: MATERIALS SCIENCE
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to the science of solid materials. Includes metals, ceramics, plastics, and semiconductors, as well as the properties of solid materials from atomic and macroscopic points of view. Required for materials science and engineering majors.

MSNE 302 - MATERIALS PROCESSING AND NANOMANUFACTURING
Short Title: MATERIALS PROCESSING
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and MATH 212
Corequisite: MSNE 303
Description: An overview of mass, momentum, and heat transport with applications in materials processing and nanomanufacturing. Emphasis is on analytical modeling of processing techniques with a view towards improving their efficiency and yield.

MSNE 303 - MATERIALS SCIENCE JUNIOR LAB
Short Title: MATERIALS SCIENCE JUNIOR LAB
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Corequisite: MSNE 302
Description: Selected lab experiments in materials science. Open only to junior materials science and engineering majors. Required for materials science and engineering majors. At the start of the semester, please check with the Department of Mechanical Engineering and Materials Science for the time and location of the organizational meeting for the course. Instructor Permission Required.
MSNE 311 - MATERIALS SELECTION AND DESIGN

Short Title: MATERIALS SELECTION & DESIGN
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to students with a major in Materials Science & NanoEng. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MSNE 301
Description: Polymers, metals, ceramics, glass, and composite materials are considered for various applications such as containers, refractories, medical devices, electronics, machine components, etc. based on their many diverse and useful material properties. For non-majors with permission of instructor. Required for Materials Science and NanoEngineering.

MSNE 365 - NANOMATERIALS FOR ENERGY

Short Title: NANOMATERIALS FOR ENERGY
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will introduce students to the fundamental science of nanomaterials. Many of the concepts will be explained by drawing from applications in sustainability (photovoltaics, solar-to-fuel conversion thermionic, thermoelectric, fuel cells). Students will design a lab demo from scratch using amongst others the infrastructure provided by the photonics measurement lab. Cross-list: ELEC 365.

MSNE 401 - THERMODYNAMICS IN MATERIALS SCIENCE

Short Title: THERMODYNAMICS IN MAT SCIENCE
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 122 and MATH 212
Description: Unified presentation of the kinetics and thermodynamics of mass and energy transport. Includes heterogeneous equilibrium, diffusion in solids, and heat transfer, as well as their application to engineering design. Required for materials science and engineering majors. Graduate/Undergraduate Equivalency: MSNE 503. Mutually Exclusive: Credit cannot be earned for MSNE 401 and MSNE 503.

MSNE 402 - MECH PROPERTIES OF MATERIALS

Short Title: MECH PROPERTIES OF MATERIALS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and MSNE 301
Description: Survey of the mechanical properties of solid materials. Includes basic mechanics, elasticity, plasticity, fracture, fatigue, creep, hardening mechanisms, mechanical testing, and structure-property relationships. Required for materials science and engineering majors. Graduate/Undergraduate Equivalency: MSNE 502. Mutually Exclusive: Credit cannot be earned for MSNE 402 and MSNE 502.

MSNE 406 - PHYSICAL PROPERTIES OF SOLIDS

Short Title: PHYSICAL PROPERTIES OF SOLIDS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211
Description: Survey of the electrical, magnetic, and optical properties of metals, semiconductors, and dielectrics based upon elementary band theory concepts. Required for materials science and engineering majors. Graduate/Undergraduate Equivalency: MSNE 506. Mutually Exclusive: Credit cannot be earned for MSNE 406 and MSNE 506.

MSNE 407 - CAPSTONE DESIGN PROJECT I

Short Title: CAPSTONE DESIGN PROJECT I
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MSNE 303 and MSNE 311
Description: An interdisciplinary capstone design experience in materials science and nanoengineering. This course provides an opportunity for students to apply knowledge and skills acquired in previous courses to the solution of a realistic engineering problem. Teams of students will specify, design, and build an engineering system/device to meet a prescribed set of requirements. Must complete MSNE 408 to receive credit for MSNE 407 and both courses must be taken the same academic year. Required for MSNE majors in B.S. program. Instructor Permission Required.

MSNE 408 - CAPSTONE DESIGN PROJECT II

Short Title: CAPSTONE DESIGN PROJECT II
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An interdisciplinary capstone design experience in materials science and nanoengineering. This course provides an opportunity for students to apply knowledge and skills acquired in previous courses to the solution of a realistic engineering problem. Teams of students will specify, design, and build an engineering system/device to meet a prescribed set of requirements. Must complete MSNE 407 to receive credit for MSNE 408 and both courses must be taken the same academic year. Required for MSNE majors in B.S. program. Instructor Permission Required.
MSNE 409 - PHYSICAL METALLURGY
Short Title: PHYSICAL METALLURGY
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Fundamentals of metallic materials, with a focus on defect engineering, microstructure design, and alloy design. The course will provide students with the understanding needed to develop alloys with specific desirable properties. Examples will be drawn from the processing of both ferrous and non-ferrous (e.g., Cu-, Al-, and Ti based) alloys. Graduate/Undergraduate Equivalency: MSNE 509. Recommended Prerequisite(s): MSNE 435 and MSNE 411. Mutually Exclusive: Credit cannot be earned for MSNE 409 and MSNE 509.

MSNE 411 - METALLOGRAPHY AND PHASE RELATIONS
Short Title: METALLOGRAPHY & PHASE RELATION
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MSCI 301 or MSNE 301
Description: Study of microstructures that may be observed in metals and alloys, optical metallography (in addition to more sophisticated techniques), and the relationships between structural properties and failures. Required for materials science and engineering majors.

MSNE 415 - CERAMICS AND GLASSES
Short Title: CERAMICS AND GLASSES
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MSNE 301 or MSCI 301
Description: Fundamentals of ceramic and glassy materials, including phase relations, theoretical properties, structure, bonding, and design.

MSNE 416 - STRUCTURE AND PROPERTIES OF POLYMERS AND SOFT MATERIALS
Short Title: PROPERTIES OF SOFT MATERIALS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MSNE 301 and MSNE 302 (may be taken concurrently) and MSNE 401 (may be taken concurrently) and MSNE 402 (may be taken concurrently) and MSNE 406 (may be taken concurrently)
Description: This graduate level course addresses the fundamental structures and properties of polymers and other forms of soft matter (gels, colloids, nanoparticles, etc.) and their many roles as technologically important materials. The electrical, optical, transport, acoustic and mechanical properties are presented with respect to the underlying physics and engineering. Prerequisites are concurrent except for MSNE 301. Mutually Exclusive: Credit cannot be earned for MSNE 416 and MSNE 516.

MSNE 417 - ELECTRONIC, OPTICAL AND MAGNETIC PROPERTIES OF POLYMERS
Short Title: POLYMER ELECTRONICS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CHEM 211 or MSNE 301
Description: Covers physical and material concepts and engineering applications of electronic polymers. Examines the structural origins of the diverse electronic, optoelectronic, photonic and magnetic properties of conjugated polymers. Topics include synthesis, electronic structure, physico-chemical characterization, applications in LEDs, solar cells, transistors, spintronics, and bioelectronics. Mutually Exclusive: Credit cannot be earned for MSNE 417 and MSNE 517.

MSNE 433 - COMPUTATIONAL MATERIALS MODELING
Short Title: COMPUTATIONAL MATERIALS MODEL
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Physico-chemical principles augmented by ever-advancing computation technology have become a tool for explaining rich materials properties, designing nano-structures and their possible functionality. This course overviews basic quantum principles of materials structure, and a hierarchy of approximations broadly used in computational models. This includes classical multi-body potentials, tight-binding approximations, electronic density functional theory methods, etc. Graduate/Undergraduate Equivalency: MSNE 533. Mutually Exclusive: Credit cannot be earned for MSNE 433 and MSNE 533.

MSNE 435 - CRYSTALLOGRAPHY & DIFFRACTION
Short Title: CRYSTALLOGRAPHY & DIFFRACTION
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MSNE 301 or MSCI 301
Description: Study of crystals by diffraction techniques, focusing on x-ray, with an overview of electron and neutron diffraction as well as complementary techniques. Provides mathematical foundations and nomenclature for diffraction and related phenomena. Includes basics of crystallographic analysis and surface/point/group symmetry, experiment design (sources, geometry, detectors), and data analysis and interpretation. Required for undergraduate MSNE major. Meets with MSNE 535 (less course work for the undergraduate class). Graduate/Undergraduate Equivalency: MSNE 535. Mutually Exclusive: Credit cannot be earned for MSNE 435 and MSNE 535.
MSNE 437 - CRYSTALLOGRAPHY & DIFFRAC LAB
Short Title: CRYSTALLOGRAPHY & DIFFRAC LAB
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MSNE 435 (may be taken concurrently)
Description: Selected laboratory experiments in materials science, focusing on lattice symmetry, crystallography, phase identification, and metallurgy. Required for undergraduate MSNE major. Prerequisite MSNE 435 may be taken concurrently. Instructor Permission Required. Graduate/Undergraduate Equivalency: MSNE 537. Mutually Exclusive: Credit cannot be earned for MSNE 437 and MSNE 537.

MSNE 450 - MATERIALS SCIENCE SEMINAR
Short Title: MATERIALS SCIENCE SEMINAR
Department: Materials Science & NanoEng
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A series of seminars on selected topics in Materials Science. Recommended for Materials Science and NanoEngineering majors.

MSNE 451 - MATERIALS SCIENCE SEMINAR
Short Title: MATERIALS SCIENCE SEMINAR
Department: Materials Science & NanoEng
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A series of seminars on selected topics in Materials Science. Recommended for Materials Science and NanoEngineering majors.

MSNE 499 - CURRENT TOPICS
Short Title: CURRENT TOPICS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-9
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Designed for undergraduate materials science students. Topics vary from term to term. Please consult with the department for additional information.

MSNE 500 - MATERIALS SCIENCE SEMINAR
Short Title: MATERIALS SCIENCE SEMINAR
Department: Materials Science & NanoEng
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A series of seminars on selected topics in Materials Science. Required for Materials Science and Engineering majors. Repeatable for Credit.

MSNE 501 - GRADUATE STUDENT SEMINAR
Short Title: GRADUATE STUDENT SEMINAR
Department: Materials Science & NanoEng
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Two graduate students will present every week, except for 1st year graduate students who will present 3 per class. Every week, students will be encouraged to fill out peer evaluation forms and include anonymous comments/suggestions for improving the presentation. The results of these comments will not be shared, but given to the presenter for their reference. Repeatable for Credit.

MSNE 502 - MECH PROPERTIES OF MATERIALS
Short Title: MECH PROPERTIES OF MATERIALS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of the mechanical properties of solid materials. Includes basic mechanics, elasticity, plasticity, fracture, fatigue, creep, hardening mechanisms, mechanical testing, and structure-property relationships. Required for Materials Science and Engineering majors. Additional work required. Graduate/Undergraduate Equivalency: MSNE 402. Mutually Exclusive: Credit cannot be earned for MSNE 502 and MSNE 402.
MSNE 503 - THERMODYNAMICS IN MATERIALS SCIENCE
Short Title: THERMODYNAMICS IN MAT SCIENCE
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Unified presentation of the kinetics and thermodynamics of mass and energy transfer. Includes heterogeneous equilibrium, diffusion in solids, and heat transfer, as well as their application to engineering design. Required for Materials Science and Engineering majors. Graduate/Undergraduate Equivalency: MSNE 401. Mutually Exclusive: Credit cannot be earned for MSNE 503 and MSNE 401.

MSNE 505 - MICROSTRUCTURE AND NANOSTRUCTURE EVOLUTION
Short Title: MICRO/NANO-STRUCTURE EVOLUTION
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the thermodynamic and kinetic principles underlying structural evolution in materials at micro- and nanoscales. Includes atomic diffusion, phase transformations and morphological evolution of surfaces and interfaces under capillary and mechanical forces. Elucidation of atomistic mechanisms and mathematical treatment are emphasized. Undergraduates may register with instructor permission. Recommended Prerequisite(s): MSNE 503.

MSNE 506 - PHYSICAL PROPERTIES OF SOLIDS
Short Title: PHYSICAL PROPERTIES OF SOLIDS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of the electrical, magnetic, and optical properties of metals, semiconductors, and dielectrics based upon elementary band theory concepts. Required for Materials Science and Engineering majors. Graduate/Undergraduate Equivalency: MSNE 406. Mutually Exclusive: Credit cannot be earned for MSNE 506 and MSNE 406.

MSNE 509 - PHYSICAL METALLURGY
Short Title: PHYSICAL METALLURGY
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Fundamentals of metallic materials, with a focus on defect engineering, microstructure design, and alloy design. The course will provide students with the understanding needed to develop alloys with specific desirable properties. Examples will be drawn from the processing of both ferrous and non-ferrous (e.g., Cu, Al, and Ti based) alloys. Graduate/Undergraduate Equivalency: MSNE 409. Recommended Prerequisite(s): MSNE 435 and MSNE 411. Mutually Exclusive: Credit cannot be earned for MSNE 509 and MSNE 409.

MSNE 510 - SCALING CONCEPTS IN 2D MATERIALS AND POLYMER PHYSICS
Short Title: SCALING CONCEPTS IN MATERIALS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course is an introduction to symmetry breaking, scaling and universality in low dimensional materials and polymers. Using simple models as examples, the course addresses 2D crystals and melting, surface roughening, scaling properties of polymers, phase transitions and the mean field approach. It then goes over to explain how renormalization works in condensed matter, and how it gives rise to universality. Recommended Prerequisite(s): MSNE 401

MSNE 516 - STRUCTURE AND PROPERTIES OF POLYMERS AND SOFT MATERIALS
Short Title: PROPERTIES OF SOFT MATERIALS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This graduate level course addresses the fundamental structures and properties of polymers and other forms of soft matter (gels, colloids, nanoparticles, etc.) and their many roles as technologically important materials. The electrical, optical, transport, acoustic and mechanical properties are presented with respect to the underlying physics and engineering. Mutually Exclusive: Credit cannot be earned for MSNE 516 and MSNE 416.

MSNE 517 - ELECTRONIC, OPTICAL AND MAGNETIC PROPERTIES OF POLYMERS
Short Title: POLYMER ELECTRONICS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Covers physical and material concepts and engineering applications of electronic polymers. Examines the structural origins of the diverse electronic, optoelectronic, photonic and magnetic properties of conjugated polymers. Topics include synthesis, electronic structure, physico-chemical characterization, applications in LEDs, solar cells, transistors, spintronics, and bioelectronics. Mutually Exclusive: Credit cannot be earned for MSNE 517 and MSNE 417.
MSNE 523 - PROPERTIES, SYNTHESIS AND DESIGN OF COMPOSITE MATERIALS
Short Title: DESIGN OF COMPOSITE MATERIALS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the science of interfaces and the properties that govern their use in composite materials. Not offered every year. The study of composite processing and methods for synthesis polymer, metal and ceramic matrix composition.

MSNE 533 - COMPUTATIONAL MATERIALS MODELING
Short Title: COMPUTATIONAL MATERIALS MODEL
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Physico-chemical principles augmented by ever-advancing computation technology have become a tool for explaining rich materials properties, designing nano-structures and their possible functionality. This course overviews basic quantum principles of materials structure, and a hierarchy of approximations broadly used in computational models. This includes classical multi-body potentials, tight-binding approximations, electronic density functional theory methods, etc. MSNE 533 requires additional work. Graduate/Undergraduate Equivalency: MSNE 433. Mutually Exclusive: Credit cannot be earned for MSNE 533 and MSNE 433.

MSNE 534 - NANO SCIENCE AND NANOTECHNOLOGY I
Short Title: NANO SCIENCE & NANOTECHNOLOGY
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Course Level: Graduate
Description: Enrollment is open to all students. Undergraduate enrollment requires instructor permission via special registration form. An introduction to the basic principles of nanoscience and nanotechnology. Size dependent physical properties of nanoscopic solids will be described using solid state physics and molecular orbital theory as a foundation. Wet chemical techniques that produce nanoscale materials (e.g. carbon nanotubes, semiconductor and metallic nanocrystals, dendrimers...) will be introduced in the second half of the semester. Expected to be taught Spring 2019. Cross-list: CEVE 533, CHEM 533.

MSNE 535 - CRYSTALLOGRAPHY & DIFFRACTION
Short Title: CRYSTALLOGRAPHY & DIFFRACTION
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of crystals by diffraction techniques, focusing on x-ray, with an overview of electron and neutron diffraction as well as complementary techniques. Provides mathematical foundations and nomenclature for diffraction and related phenomena. Includes basics of crystallographic analysis and surface/point/group symmetry, experiment design (sources, geometry, detectors), and data analysis and interpretation. Required for undergraduate MSNE major. Meets with MSNE 435 (additional work for the graduate version). Cross-list: PHYS 535. Graduate/Undergraduate Equivalency: MSNE 435. Mutually Exclusive: Credit cannot be earned for MSNE 535 and MSNE 435.

MSNE 537 - CRYSTALLOGRAPHY & DIFFRACTION LAB
Short Title: CRYSTALLOGRAPHY & DIFFRACTION LAB
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Selected laboratory experiments in materials science, focusing on lattice symmetry, crystallography, phase identification, and metallurgy. Required for undergraduate MSNE major. Credit may be given for only one, MSNE 537 or MSNE 437. Instructor Permission Required. Graduate/Undergraduate Equivalency: MSNE 437. Mutually Exclusive: Credit cannot be earned for MSNE 537 and MSNE 437.

MSNE 538 - COMPUTATIONAL NANOSCIENCE FOR GREEN INFRASTRUCTURE
Short Title: COMPUTATIONAL NANOSCIENCE
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Computational methods such as first principles, kinetic Monte Carlo (KMC), classical MC (in Canonical, Grand Canonical, and isobaric-isothermal ensembles), and classic MD in predicting materials formation and properties. Case studies include cementitious materials, metals, and thermoelectric materials. Other case studies are possible depending on the student's background and instructor's approval. Cross-list: CEVE 538.
MSNE 545 - THIN FILMS
Short Title: THIN FILMS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Deposition methods, structure, properties, performance and failure mechanisms of thin solid films for various applications. Deposition methods include sputtering, plating, evaporation and chemical vapor deposition. Material types include crystalline and amorphous metals as well as semiconductors and insulators. Applications are primarily in microelectronics; data storage; micro-electro-mechanical systems, wear and corrosion prevention and thermal barriers. NOTE: Not offered every year. Cross-list: ELEC 545.

MSNE 555 - MATERIALS IN NATURE AND BIO-MIMETIC STRATEGIES
Short Title: BIO-MIMETIC STRATEGIES
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: This graduate level course will discuss the origin of several materials that exists in nature from a technology perspective and strategies to replicate them using synthetic materials processing protocols. Silicates, carbon based materials, abalone shell, bone etc. will be used to discuss the fascinating architecture developed by nature. Similarly several functional structures designed by nature such as Gecko tape and IR sensors will be discussed for designing bio-medic structure and devices. NOTE: Not offered every year.

MSNE 560 - COLLOIDAL AND INTERFACIAL PHENOMENA
Short Title: COLLOIDAL & INTERFACIAL PHENOM
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: The course will provide knowledge into the fundamentals of colloidal interactions (e.g., stabilisation, adsorption, self-assembly) and the techniques currently applied for their assessment. Apart from the theoretical background, the course will also provide applicable knowledge by covering current and emerging applications involving these phenomena. Interfacial tension, wetting and spreading, contact angle hysteresis, interaction between colloid particles, stability of interfaces, flow and transport near interfaces will be covered. NOTE: Offered in alternative year with MSNE 594/CHBE 594. Cross-list: CHBE 560.

MSNE 569 - SCIENCE AND APPLICATIONS OF CORROSION SCIENCE AND ENGINEERING
Short Title: CORROSION SCIENCE& ENGINEERING
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Prerequisite(s): MSCS 301 or MSNE 301
Description: Students will learn basics of corrosion science of metals and alloys exposed to different classes of conditions, prevalent forms of corrosion, consequences of corrosion and corrosion mitigation approaches in a range of industries. Discussion of nano science aspects related to corrosion control in industry will be included.

MSNE 570 - SENIOR DESIGN THESIS PROJECT
Short Title: SENIOR DESIGN THESIS PROJECT
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Description: A design project in the materials science field will be undertaken by the student in close collaboration with at least one materials science faculty member.

MSNE 571 - SENIOR DESIGN THESIS PROJECT
Short Title: SENIOR DESIGN THESIS PROJECT
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Description: A design project in the materials science field will be undertaken by the student in close collaboration with at least one materials science faculty member. Instructor Permission Required.

MSNE 580 - MICROSCOPY METHODS IN MATERIALS SCIENCE
Short Title: MICROSCOPY METHODS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: This course covers theory and applications of electron microscopy techniques with an emphasis on transmission and scanning transmission electron microscopy (TEM, STEM). Topics include modern instrumentation and hardware, electron diffraction, imaging modes, tomography, and spectroscopy (energy dispersive x-ray spectroscopy (EDS), electron-energy loss spectroscopy (EELS), cathodoluminescence (CL)). Previous experience with electron microscopes recommended. Can be taken alone or concurrently with lab course MSNE 582. Instructor Permission Required. Cross-list: CHEM 580.
MSNE 581 - MICRO AND NANO HEAT TRANSPORT METHODOLOGIES AND DESIGN
Short Title: MICRO & NANO HEAT TRANSPORT
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate or Senior. Enrollment is limited to students with a major in Mechanical Engineering or Materials Science & NanoEng. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MECH 481

MSNE 582 - ELECTRON MICROSCOPY CENTER LAB
Short Title: ELECTRON MICROSCOPY CENTER LAB
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Corequisite: MSNE 580
Description: Hands-on laboratory using the instruments in the electron microscopy center. The students will gain the knowledge necessary to operate the instruments and analyze data independently. Must be taken concurrently with MSNE 580. Instructor Permission Required. Cross-list: CHEM 582.

MSNE 593 - INTRODUCTION TO POLYMER PHYSICS AND ENGINEERING
Short Title: POLYMER PHYSICS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHEM 211 and CHEM 212
Description: The course focuses on demonstrating how the physical properties of polymers can be understood from simple models. Students will be introduced to the terminology and mathematics involved in the physical understanding of polymer systems. The course is intended for students who would like to gain an understanding of modern approaches to polymer physics. NOTE: Not offered every year. Cross-list: CHBE 593.

MSNE 594 - PROPERTIES OF POLYMERS
Short Title: PROPERTIES OF POLYMERS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (CHEM 211 or CHEM 251) and (MATH 211 or MATH 221)
Description: The course will introduce basic concepts in polymer science including the synthesis and chemical modification of polymers as well as physical properties of polymers. Topics include approaches to polymer synthesis, processing and characterization of polymer materials, and an introduction to mathematical models applied to describe the structure and dynamics of polymeric materials. NOTE: Offered in alternative year with MSNE 560/CHBE 560. Cross-list: CHBE 594. Repeatable for Credit.

MSNE 609 - RISK ASSESSMENT AND ASSET INTEGRITY IN OIL AND GAS PRODUCTION AND REFINING OPERATIONS I
Short Title: OIL AND GAS ASSET INTEGRITY I
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course integrates risk assessment and mitigation, asset integrity management, corrosion control and materials selection across the oil and gas value chain, from production to refining and retail. The full course covers 2 semesters. Session "I," to be delivered in the Spring 2017 semester. Session "II" will be delivered in the Fall 2017 semester. Instructor Permission Required. Cross-list: CHBE 609.

MSNE 613 - SPECIAL TOPICS I
Short Title: SPECIAL TOPICS I
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Fall 2017: Engineered Nanomaterials for Sustainable Energy provides a working knowledge of the synthesis, processing and applications of nanomaterials for generation (solar cells and fuel cells), transmission (superconductors and smart grids) and storage of energy (hydrogen storage, batteries and supercapacitors). The health and safety aspects of nanomaterials will also be discussed. This will be a 2 credit hour course. Senior UG students can register via special registration forms. Repeatable for Credit.
MSNE 614 - SPECIAL TOPICS II
Short Title: SPECIAL TOPICS II
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course gives an overview of micro and nanoelectronics technologies. The primary aim is to learn the main concepts and underlying principles of various lithography techniques and clean room practices, as well as the ways materials development has been contributing to the continuous improvement of electronic components and devices. This will be a 3-credit hour course. UG students can register via special registration form. Repeatable for Credit.

MSNE 615 - SPECIAL TOPICS III
Short Title: SPECIAL TOPICS III
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course will introduce the most important process plant safety concepts and design techniques for the early identification and minimization of operational hazards. A broad selection of historical and recent industrial accident cases will be discussed and analyzed. What can we learn, what are the best practices for loss prevention? This will be a 2 credit hour course. UG students can register via special registration form. Repeatable for Credit.

MSNE 616 - AUTOMOTIVE ENGINEERING: MATERIALS AND DYNAMICS
Short Title: AUTOMOTIVE ENGINEERING
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion of the engineering and materials technology that is involved in modern automotive design. Topics include: chassis design and construction, composite design and fabrication, aerodynamics and ground effects, suspension dynamics, performance technology. External expert speakers will provide a real-world perspective. Course will only be offered with sufficient demand. Check with the instructor. Instructor Permission Required. Repeatable for Credit.

MSNE 617 - AUTOMOTIVE ENGINEERING: LAB
Short Title: AUTOMOTIVE ENGINEERING: LAB
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Laboratory application of engineering skills towards the materials technology and dynamics of chassis design, composite design, and fabrication, aerodynamics, and performance technology. Not offered every year. Instructor Permission Required. Recommended Prerequisite(s): MSCI 616 or MSNE 616. Repeatable for Credit.

MSNE 618 - RISK ASSESSMENT AND ASSET INTEGRITY IN OIL AND GAS PRODUCTION AND REFINING OPERATIONS II
Short Title: OIL AND GAS ASSET INTEGRITY II
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course integrates risk assessment and mitigation, asset integrity management, corrosion control and materials selection across the oil and gas value chain, from production to refining and retail. The full course covers 2 semesters. Session "I," to be delivered in the Spring 2017 semester. Session "II" will be delivered in the Fall 2017 semester. Instructor Permission Required. Cross-list: CHBE 618.

MSNE 621 - M.M.S. RESEARCH PROJECT I
Short Title: M.M.S. RESEARCH PROJECT I
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is the first part of the M.M.E. research project course. The faculty advisor, taking into account the background and research interests of the student as well as the research interests of the faculty advisor, will determine the contents. Course requirements will include a final report. Instructor Permission Required. Repeatable for Credit.

MSNE 622 - M.M.S. RESEARCH PROJECT II
Short Title: M.M.S. RESEARCH PROJECT II
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is the second part of the M.M.E. research project and continuation of MSNE 621. Course requirements will include a final report. Instructor Permission Required. Repeatable for Credit.

MSNE 650 - NANOMATERIALS AND NANOMECHANICS
Short Title: NANOMATERIALS & NANOMECHANICS
Department: Materials Science & NanoEng
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The primary goal of this course is to introduce important current developments in the field of nanomaterials and nanomechanics. The course will discuss synthesis and characterization of nanomaterials, the behaviors especially mechanical behaviors in the broad sense of such materials, and their technological applications. The basic physics and fundamental mechanisms responsible for nanoscale induced changes in properties will be stressed.
MSNE 800 - RESEARCH AND THESIS
Short Title: RESEARCH AND THESIS
Department: Materials Science & NanoEng
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment is limited to students with a major in Materials Science & NanoEng. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

Mathematics (MATH)

MATH 101 - SINGLE VARIABLE CALCULUS I
Short Title: SINGLE VARIABLE CALCULUS I
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Limits, continuity, differentiation, integration, and the Fundamental Theorem of Calculus. Mutually Exclusive courses may only be taken with instructor permission. May substitute MATH 111-112 or take MATH 101 after completing MATH 111. Should not be taken if student already has credit for MATH 102, MATH 211, MATH 212, or MATH 221, without permission. Mutually Exclusive: Credit cannot be earned for MATH 101 and MATH 112.
Course URL: math.rice.edu

MATH 102 - SINGLE VARIABLE CALCULUS II
Short Title: SINGLE VARIABLE CALCULUS II
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Continuation of the study of calculus from MATH 101. Integration, the Fundamental Theorem of Calculus, techniques of integration and applications. Should not be taken if student already has credit for MATH 102, MATH 211, MATH 212, or MATH 221, without permission. Mutually Exclusive: Credit cannot be earned for MATH 112 and MATH 101.
Course URL: math.rice.edu

MATH 111 - CALCULUS: DIFFERENTIATION
Short Title: CALCULUS: DIFFERENTIATION
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Study of calculus, forming with MATH 112 a version of MATH 101/102 that does not cover infinite series. MATH 111 covers functions, limits, continuity, and derivatives and their applications. Mutually Exclusive courses may only be taken with instructor permission. Should not be taken if student already has credit for MATH 101, MATH 102, MATH 211, MATH 212, or MATH 221 without permission.
Course URL: math.rice.edu

MATH 112 - CALCULUS: INTEGRATION
Short Title: CALCULUS: INTEGRATION
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Continuation of the study of calculus from MATH 111. Integration, the Fundamental Theorem of Calculus, techniques of integration and applications. Should not be taken if student already has credit for MATH 102, MATH 211, MATH 212, MATH 221, without permission. Mutually Exclusive: Credit cannot be earned for MATH 112 and MATH 101.
Course URL: math.rice.edu

MATH 211 - ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA
Short Title: ORD DIFFERENTIAL EQUATIONS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Study of ordinary differential equations (e.g., solutions to separable and linear first-order equations and to higher-order linear equations with constant coefficients, the properties of solutions to differential equations, and numerical solution methods) and linear algebra (e.g., vector spaces and solutions to algebraic linear equations, dimension, eigenvalues, and eigenvectors of a matrix), as well as the application of linear algebra to first-order systems of differential equations and the qualitative theory of nonlinear systems and phase portraits.
MATH 212 - MULTIVARIABLE CALCULUS  
**Short Title:** MULTIVARIABLE CALCULUS  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Calculus of multiple variables. Vectors, partial derivatives and gradients, double and triple integrals, vector fields, line and surface integrals, Green's theorem, Stokes's theorem, and Gauss's theorem. May substitute Math 221 and 222. Mutually Exclusive: Credit cannot be earned for MATH 212 and MATH 222.  
**Course URL:** math.rice.edu

MATH 221 - HONORS CALCULUS III  
**Short Title:** HONORS CALCULUS III  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** This course and MATH 222 include the material of MATH 212 and much more. Topology of R^n, calculus for functions of several variables, linear and multilinear algebra, theory of determinants, inner product spaces, integration on manifolds.  
**Course URL:** math.rice.edu

MATH 222 - HONORS CALCULUS IV  
**Short Title:** HONORS CALCULUS IV  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** See MATH 221. A student may not receive credit for both MATH 222 and MATH 212. Mutually Exclusive: Credit cannot be earned for MATH 222 and MATH 212.  
**Course URL:** math.rice.edu

MATH 238 - SPECIAL TOPICS  
**Short Title:** SPECIAL TOPICS  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum, Lecture, Laboratory, Seminar  
**Credit Hours:** 1-4  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Lower-Level  
**Description:** Topics and credit hours may vary each semester. Contact Department for current semester’s topic(s). Repeatable for Credit.

MATH 300 - TOPICS IN UNDERGRADUATE MATH  
**Short Title:** TOPICS IN UNDERGRADUATE MATH  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MATH 102  
**Description:** Treatment of topics in undergraduate mathematics. Topics vary by year. May be repeated for credit with permission of department.  
**Course URL:** math.rice.edu

MATH 302 - ELEMENTS OF ANALYSIS  
**Short Title:** ELEMENTS OF ANALYSIS  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MATH 102  
**Description:** Introductory treatment of topics in analysis and topology, with the real line as a central example. Techniques include connected and compact sets, sequences and subsequences, continuity, and uniform approximation. Clear, cogent, and complete mathematical arguments are emphasized.  
**Course URL:** math.rice.edu

MATH 304 - ELEMENTS OF KNOT THEORY  
**Short Title:** ELEMENTS OF KNOT THEORY  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MATH 221 or MATH 354 or MATH 355  
**Description:** Introduction to the mathematical theory of knots. Techniques to distinguish knots from one another, Reidemeister moves, mod-p colorings, knot determinants, knot polynomials, Seifert surfaces, Euler characteristic, knot groups, and untying knots in four dimensions. We will also discuss open problems in knot theory.  
**Course URL:** math.rice.edu

MATH 306 - ELEMENTS OF ABSTRACT ALGEBRA  
**Short Title:** ELEMENTS OF ABSTRACT ALGEBRA  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (MATH 354 or MATH 355) and (MATH 302 or MATH 354 or MATH 221)  
**Description:** Introductory treatment of the basic structures of abstract algebra: groups, rings, and fields. Clear, cogent, and complete mathematical arguments are emphasized. A student may not receive credit for both MATH 306 and MATH 356. Mutually Exclusive: Credit cannot be earned for MATH 306 and MATH 356.  
**Course URL:** math.rice.edu
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Distribution Group</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Prerequisite(s)</th>
<th>Description</th>
<th>Course URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 321</td>
<td>INTRODUCTION TO ANALYSIS I</td>
<td>INTRODUCTION TO ANALYSIS I</td>
<td>Mathematics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Distribution Group III</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>MATH 221 or MATH 354 or MATH 302</td>
<td>A thorough treatment of the foundations of real analysis such as metric spaces, compactness, sequences and series of functions, differentiation, Riemann integration. Mutually Exclusive: Credit cannot be earned for MATH 321 and MATH 331.</td>
<td>math.rice.edu</td>
</tr>
<tr>
<td>MATH 322</td>
<td>INTRODUCTION TO ANALYSIS II</td>
<td>INTRODUCTION TO ANALYSIS II</td>
<td>Mathematics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Distribution Group III</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>MATH 321 or MATH 331</td>
<td>Further study in real analysis. Possible topics include analysis in higher dimensions, Hilbert spaces, Fourier series, Sturm-Liouville theory. Repeatable for Credit.</td>
<td>math.rice.edu</td>
</tr>
<tr>
<td>MATH 331</td>
<td>HONORS ANALYSIS</td>
<td>HONORS ANALYSIS</td>
<td>Mathematics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Distribution Group III</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>MATH 221 or MATH 354 or MATH 302</td>
<td>A careful treatment of basic topics in real analysis, including metric spaces and their topology, sequences and series, continuity, and differentiation. The content of this course is similar to that of MATH 321, but the intensity and conceptual level will be higher. Mutually Exclusive: Credit cannot be earned for MATH 331 and MATH 321.</td>
<td>math.rice.edu</td>
</tr>
<tr>
<td>MATH 354</td>
<td>HONORS LINEAR ALGEBRA</td>
<td>HONORS LINEAR ALGEBRA</td>
<td>Mathematics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Distribution Group III</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td></td>
<td>Vector spaces, linear transformations and matrices, theory of systems of linear equations, determinants, eigenvalues and diagonalizability, inner product spaces; and optional material chosen from: dual vector spaces, spectral theorem for self-adjoint operators, Jordan canonical form. Content is similar to that of MATH 355, but with more emphasis on theory. The course will include instruction on how to construct mathematical proofs. This course is appropriate for potential Mathematics majors and others interested in learning how to construct rigorous mathematical arguments. Recommended Prerequisite(s): A 200-level math class. Mutually Exclusive: Credit cannot be earned for MATH 354 and MATH 355.</td>
<td>math.rice.edu</td>
</tr>
<tr>
<td>MATH 355</td>
<td>LINEAR ALGEBRA</td>
<td>LINEAR ALGEBRA</td>
<td>Mathematics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Distribution Group III</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td></td>
<td>Linear transformations and matrices, solution of linear equations, inner products eigenvalues and eigenvectors, the spectral theorem for real symmetric matrices, applications of Jordan canonical form. Mutually Exclusive: Credit cannot be earned for MATH 355 and MATH 354.</td>
<td>math.rice.edu</td>
</tr>
<tr>
<td>MATH 356</td>
<td>ABSTRACT ALGEBRA I</td>
<td>ABSTRACT ALGEBRA I</td>
<td>Mathematics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>Distribution Group III</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>(MATH 354 or MATH 355) and (MATH 302 or MATH 354 or MATH 221)</td>
<td>Group theory: normal subgroups, factor groups, Abelian groups, permutations, matrix groups, and group action. Recommended Prerequisite(s): MATH 354 or MATH 355; and some proof-based course such as MATH 302, MATH 354, or MATH 365. Mutually Exclusive: Credit cannot be earned for MATH 356 and MATH 306.</td>
<td>math.rice.edu</td>
</tr>
</tbody>
</table>
MATH 365 - NUMBER THEORY  
Short Title: NUMBER THEORY  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Course URL: math.rice.edu

MATH 366 - GEOMETRY  
Short Title: GEOMETRY  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): MATH 221 or MATH 302 or MATH 354  
Description: Prime numbers and factorization, modular arithmetic, Diophantine equations, quadratic reciprocity, and other topics such as cryptography or continued fractions.

MATH 368 - TOPICS IN COMBINATORICS  
Short Title: TOPICS IN COMBINATORICS  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Topics chosen from Euclidean, spherical, hyperbolic, and projective geometry, with emphasis on the similarities and differences found in various geometries. Isometries and other transformations are studied and used throughout. The history of the development of geometric ideas is discussed. This course is strongly recommended for prospective high school teachers.

MATH 370 - CALCULUS ON MANIFOLDS  
Short Title: CALCULUS ON MANIFOLDS  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): Linear Algebra (MATH 221, MATH 354, or MATH 355) and (MATH 354 or MATH 356)  
Description: Differentiation and integration on manifolds: calculus on Rn, exterior differentiation, differentiation forms, vector fields, Stokes' theorem.

MATH 371 - LIE THEORY  
Short Title: LIE THEORY  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Course URL: math.rice.edu

MATH 373 - ELLIPTIC CURVES  
Short Title: ELLIPTIC CURVES  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): MATH 306 or MATH 356  
Description: Study of classical groups as symmetries of Euclidean spaces. Geometry of complex numbers and quaternions, rotations and reflections of Rn, the orthogonal, unitary and sympletic groups. Tangent spaces to matrix groups, Lie algebras and the exponential map. If time permits: the structure of Lie algebras and the matrix logarithm. Recommended Prerequisite(s): MATH 354 or MATH 355 (may be taken the same semester).

MATH 374 - INTRODUCTION TO REPRESENTATION THEORY  
Short Title: INTRO TO REPRESENTATION THEORY  
Department: Mathematics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group III  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): MATH 306 or MATH 356  
Description: First course in representation theory, with an emphasis on concrete examples, especially the symmetric group. Topics include representations of finite groups, characters, classification, symmetric functions, Young symmetrizers, and Schur-Weyl duality. Prior experience with proofs is necessary; some familiarity with linear or abstract algebra would be helpful, but can be acquired along the way. Recommended Prerequisite(s): Linear Algebra (MATH 221, MATH 354, or MATH 356) and MATH 356.

Course URL: math.rice.edu

2017-2018 General Announcements
**MATH 376 - ALGEBRAIC GEOMETRY**  
**Short Title:** ALGEBRAIC GEOMETRY  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (MATH 354 or MATH 355) and (MATH 306 or MATH 356)  
**Description:** An introduction to algebraic geometry, with an emphasis on algorithms. Topics include: polynomial rings and ideals, Groebner bases and elimination theory, affine varieties, Hilbert's Nullstellensatz, and the Algebra-Geometry correspondence. Projective varieties; Bezout's Theorem.

**MATH 381 - INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS**  
**Short Title:** INTRO PARTIAL DIFF EQUATIONS  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MATH 211.  
**Description:** Laplace transform: inverse transform, applications to constant coefficient differential equations. Boundary value problems: Fourier series, Bessel functions, Legendre polynomials. Recommended Prerequisite(s): MATH 211.

**MATH 382 - COMPUTATIONAL COMPLEX ANALYSIS**  
**Short Title:** COMPUTATIONAL COMPLEX ANALYSIS  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Study of the Cauchy integral theorem, Taylor series, residues, as well as the evaluation of integrals by means of residues, conformal mapping, and application to two-dimensional fluid flow. Graduate/Undergraduate Equivalency: MATH 427, MATH 517. Recommended Prerequisite(s): MATH 212 OR 221. Mutually Exclusive: Credit cannot be earned for MATH 382 and MATH 427/MATH 517.  
**Course URL:** math.rice.edu

**MATH 390 - UNDERGRADUATE COLLOQUIUM**  
**Short Title:** UNDERGRADUATE COLLOQUIUM  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Lectures by undergraduate students on mathematical topics not usually covered in other courses. Presentation of one lecture and attendance at all sessions required. Repeatable for Credit.

**MATH 401 - DIFFERENTIAL GEOMETRY OF CURVES AND SURFACES**  
**Short Title:** DIFF GEOM OF CURVES/SURFACES  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group III  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MATH 321 or MATH 331  
**Description:** Introduction to Riemannian geometry. Content varies from year to year. Graduate/Undergraduate Equivalency: MATH 500. Recommended Prerequisite(s): MATH 401 and MATH 321 or MATH 443. Mutually Exclusive: Credit cannot be earned for MATH 402 and MATH 500.  
**Course URL:** math.rice.edu

**MATH 402 - DIFFERENTIAL GEOMETRY**  
**Short Title:** DIFFERENTIAL GEOMETRY  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MATH 101 and MATH 102 and (MATH 211 or MATH 212 or MATH 221 or MATH 222)  
**Description:** Study of classical and modern theories about functions having some integral expression which is maximal, minimal, or critical. Geodesics, brachistochrone problem, minimal surfaces, and numerous applications to physics. Euler-Lagrange equations, 1st and 2nd variations, Hamilton's Principle.

**MATH 410 - CALCULUS OF VARIATIONS**  
**Short Title:** CALCULUS OF VARIATIONS  
**Department:** Mathematics  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** MATH 101 and MATH 102 and (MATH 211 or MATH 212 or MATH 221 or MATH 222)  
**Description:** Study of classical and modern theories about functions having some integral expression which is maximal, minimal, or critical. Geodesics, brachistochrone problem, minimal surfaces, and numerous applications to physics. Euler-Lagrange equations, 1st and 2nd variations, Hamilton's Principle.
MATH 423 - PARTIAL DIFFERENTIAL EQUATIONS I
Short Title: PARTIAL DIFFERENTIAL EQNS I
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level

MATH 424 - TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS
Short Title: TOPICS IN PARTIAL DIFF EQNS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 423
Description: Continuation of MATH 423. Repeatable for Credit.
Course URL: math.rice.edu

MATH 425 - INTEGRATION THEORY
Short Title: INTEGRATION THEORY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 321 or MATH 331
Description: Lebesgue theory of measure and integration. Graduate/Undergraduate Equivalency: MATH 515. Mutually Exclusive: Credit cannot be earned for MATH 425 and MATH 515.
Course URL: math.rice.edu

MATH 426 - TOPICS IN REAL ANALYSIS
Short Title: TOPICS IN REAL ANALYSIS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 423
Description: Content varies from year to year. May include Fourier series, harmonic analysis, probability theory, advanced topics in measure theory, ergodic theory, and elliptic integrals. Graduate/Undergraduate Equivalency: MATH 516. Mutually Exclusive: Credit cannot be earned for MATH 426 and MATH 516. Repeatable for Credit.

MATH 427 - COMPLEX ANALYSIS
Short Title: COMPLEX ANALYSIS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 354 or MATH 222 or MATH 302
Description: Study of the Cauchy-Riemann equation, power series, Cauchy’s integral formula, residue calculus, and conformal mappings. Emphasis on the theory. Graduate/Undergraduate Equivalency: MATH 382, MATH 517. Recommended Prerequisite(s): MATH 321 or MATH 331. Mutually Exclusive: Credit cannot be earned for MATH 427 and MATH 382/MATH 517.
Course URL: math.rice.edu

MATH 428 - TOPICS IN COMPLEX ANALYSIS
Short Title: TOPICS IN COMPLEX ANALYSIS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 382 or MATH 427
Description: Special topics include Riemann mapping theorem, Runge’s Theorem, elliptic function theory, prime number theorem, Riemann surfaces, et al. Graduate/Undergraduate Equivalency: MATH 518. Mutually Exclusive: Credit cannot be earned for MATH 428 and MATH 518. Repeatable for Credit.

MATH 435 - DYNAMICAL SYSTEMS
Short Title: DYNAMICAL SYSTEMS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 212 or MATH 221) and (CAAM 335 or MATH 355 or MATH 354) and (MATH 302 or MATH 321 or MATH 331)
Description: Existence and uniqueness for solutions of ordinary differential equations and difference equations, linear systems, nonlinear systems, stability, periodic solutions, bifurcation theory. Theory and theoretical examples are complemented by computational, model driven examples from biological and physical sciences. Cross-list: CAAM 435. Recommended Prerequisite(s): (MATH 212 or MATH 221) and (CAAM 335 or MATH 355 or MATH 354) and (MATH 302 or MATH 321 or MATH 331)
Course URL: math.rice.edu

2017-2018 General Announcements
MATH 443 - GENERAL TOPOLOGY
Short Title: GENERAL TOPOLOGY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 321 or MATH 331
Description: Study of basic point set topology. Includes a treatment of cardinality and well ordering, as well as metrization. Graduate/Undergraduate Equivalency: MATH 538. Mutually Exclusive: Credit cannot be earned for MATH 443 and MATH 538.
Course URL: math.rice.edu

MATH 444 - GEOMETRIC TOPOLOGY
Short Title: GEOMETRIC TOPOLOGY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 306 or MATH 356
Description: Introduction to algebraic methods in topology and differential topology. Elementary homotopy theory. Covering spaces. Graduate/Undergraduate Equivalency: MATH 539. Recommended Prerequisite(s): MATH 443. Mutually Exclusive: Credit cannot be earned for MATH 444 and MATH 539.
Course URL: math.rice.edu

MATH 445 - ALGEBRAIC TOPOLOGY
Short Title: ALGEBRAIC TOPOLOGY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 444
Description: Introduction to the theory of homology. Includes simplicial complexes, cell complexes and cellular homology and cohomology, as well as manifolds, and Poincare duality. Graduate/Undergraduate Equivalency: MATH 540. Mutually Exclusive: Credit cannot be earned for MATH 445 and MATH 540.

MATH 463 - ABSTRACT ALGEBRA II
Short Title: ABSTRACT ALGEBRA II
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 356

MATH 464 - ABSTRACT ALGEBRA III
Short Title: ABSTRACT ALGEBRA III
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 463
Description: Continuation of MATH 463. Tensor and exterior algebra, introductory commutative algebra, structure of modules, and elements of homological algebra. Additional advanced topics may include representations of finite groups and affine algebraic geometry. Graduate/Undergraduate Equivalency: MATH 564. Mutually Exclusive: Credit cannot be earned for MATH 464 and MATH 564.

MATH 465 - TOPICS IN ALGEBRA: INTRODUCTION TO ALGEBRAIC GEOMETRY
Short Title: TOPICS IN ALGEBRA
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 463
Description: Varieties as solution sets of systems of polynomial equations, varieties in projective space, rational and regular functions, maps of varieties, local properties and singularities. Graduate/Undergraduate Equivalency: MATH 565. Mutually Exclusive: Credit cannot be earned for MATH 465 and MATH 565. Repeatable for Credit.

MATH 466 - TOPICS IN ALGEBRA II
Short Title: TOPICS IN ALGEBRA II
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Content varies from year to year. Graduate/Undergraduate Equivalency: MATH 566. Mutually Exclusive: Credit cannot be earned for MATH 466 and MATH 566.

MATH 468 - POTPOURRI
Short Title: POTPOURRI
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course deals with miscellaneous special topics not covered in other courses. Repeatable for Credit.
MATH 471 - MATHEMATICS OF APERIODIC ORDER
Short Title: MATHEMATICS OF APERIODIC ORDER
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 321 or MATH 354 or MATH 355
Description: Mathematical models of quasicrystals, whose discovery in the early 1980’s led to a paradigm shift in materials science. Topics include: classical theory of ordered structures (i.e., lattices modeling crystals), Delone subsets and tilings of Euclidean space, aperiodically ordered structures generated by inflation or cut-and-project schemes. Graduate/Undergraduate Equivalency: MATH 571. Recommended Prerequisite(s): MATH 356. Mutually Exclusive: Credit cannot be earned for MATH 471 and MATH 571.

MATH 479 - MATHEMATICS UNDERGRADUATE RESEARCH
Short Title: MATH UNDERGRADUATE RESEARCH
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In depth investigation of a particular area of mathematics of mutual interest to the student and the faculty adviser. Instructor Permission Required. Repeatable for Credit.
Course URL: math.rice.edu

MATH 490 - SUPERVISED READING
Short Title: SUPERVISED READING
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A seminar course that will cover selected theme of general research in the mathematical sciences from the perspectives of mathematics, computational and applied mathematics and statistics. The course may be repeated multiple times for credit. Cross-list: CAAM 498, STAT 498. Graduate/Undergraduate Equivalency: MATH 698. Mutually Exclusive: Credit cannot be earned for MATH 498 and MATH 698. Repeatable for Credit.

MATH 499 - MATHEMATICAL SCIENCES VIGRE SEMINAR
Short Title: MATHEMATICAL SCIENCES VIGRE SEMINAR
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MATH 500 - DIFFERENTIAL GEOMETRY
Short Title: DIFFERENTIAL GEOMETRY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topic to be announced. Repeatable for Credit.

MATH 501 - TOPICS IN DIFFERENTIAL GEOMETRY
Short Title: TOPICS DIFFERENTIAL GEOMETRY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topic to be announced. Repeatable for Credit.

MATH 502 - TOPICS IN DIFFERENTIAL GEOMETRY
Short Title: TOPICS DIFFERENTIAL GEOMETRY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topic to be announced. Repeatable for Credit.

MATH 503 - PARTIAL DIFFERENTIAL EQUATIONS I
Short Title: PARTIAL DIFFERENTIAL EQNS I
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: First order of partial differential equations. The method of characteristics. Analysis of the solutions of the wave equation, heat equation and Laplace’s equation. Integral relations and Green’s functions. Potential theory, Dirichlet and Neumann problems. Asymptotic methods: the method of stationary phase, geometrical optics, regular and singular perturbation methods. Additional course work is required beyond the undergraduate course requirements. Cross-list: CAAM 523. Graduate/Undergraduate Equivalency: MATH 423. Recommended Prerequisite(s): MATH 321 AND MATH 322 Mutually Exclusive: Credit cannot be earned for MATH 513 and MATH 423.
MATH 515 - INTEGRATION THEORY
Short Title: INTEGRATION THEORY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: MATH 425. Mutually Exclusive: Credit cannot be earned for MATH 515 and MATH 425.

MATH 516 - TOPICS IN REAL ANALYSIS
Short Title: TOPICS IN REAL ANALYSIS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: MATH 426. Mutually Exclusive: Credit cannot be earned for MATH 516 and MATH 426. Repeatable for Credit.

MATH 517 - COMPLEX ANALYSIS
Short Title: COMPLEX ANALYSIS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: MATH 382, MATH 427. Mutually Exclusive: Credit cannot be earned for MATH 517 and MATH 382/MATH 427.

MATH 518 - TOPICS IN COMPLEX ANALYSIS
Short Title: TOPICS IN COMPLEX ANALYSIS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MATH 382 or MATH 427
Description: Graduate/Undergraduate Equivalency: MATH 428. Mutually Exclusive: Credit cannot be earned for MATH 518 and MATH 428. Repeatable for Credit.

MATH 521 - ADVANCED TOPICS IN REAL ANALYSIS
Short Title: ADV TOPIC: REAL ANALYSIS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topic to be announced. Repeatable for Credit.

MATH 522 - TOPICS IN ANALYSIS
Short Title: TOPICS IN ANALYSIS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topic to be announced. Repeatable for Credit.

MATH 523 - FUNCTIONAL ANALYSIS
Short Title: FUNCTIONAL ANALYSIS
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Banach spaces: review of L^p spaces, linear operators, dual space, Hahn-Banach theorem, weak topologies, Banach-Alaoglu theorem, compact and bounded operators, closed graph theorem; Hilbert spaces: self-adjoint and unitary operators (including spectral theorem), symmetric operators and self-adjoint extensions; if time allows, distributions and Sobolev spaces. Repeatable for Credit.

MATH 524 - TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS
Short Title: TOPICS IN PDE
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topic to be announced. Repeatable for Credit.

MATH 527 - ERGODIC THEORY AND TOPOLOGICAL DYNAMICS
Short Title: ERGODIC THRY&TOP DYN
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topic to be announced. Repeatable for Credit.

MATH 528 - ERGODIC THEORY AND TOPOLOGICAL DYNAMICS
Short Title: ERGODIC THRY&TOPOLOGICAL DYN
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topic to be announced. Repeatable for Credit.

MATH 538 - GENERAL TOPOLOGY
Short Title: GENERAL TOPOLOGY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: MATH 443. Mutually Exclusive: Credit cannot be earned for MATH 538 and MATH 443.
MATH 539 - GEOMETRIC TOPOLOGY
Short Title: GEOMETRIC TOPOLOGY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MATH 356 and MATH 443
Description: Graduate/Undergraduate Equivalency: MATH 444. Mutually Exclusive: Credit cannot be earned for MATH 539 and MATH 444.

MATH 540 - ALGEBRAIC TOPOLOGY
Short Title: ALGEBRAIC TOPOLOGY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MATH 539
Description: Graduate/Undergraduate Equivalency: MATH 445. Mutually Exclusive: Credit cannot be earned for MATH 540 and MATH 445.

MATH 541 - TOPICS IN TOPOLOGY
Short Title: TOPICS IN TOPOLOGY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topic to be announced. Repeatable for Credit.

MATH 542 - TOPICS IN ADVANCED TOPOLOGY
Short Title: TOPICS IN ADVANCED TOPOLOGY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topic to be announced. Repeatable for Credit.

MATH 543 - TOPICS IN LOW-DIMENSIONAL TOPOLOGY
Short Title: TOPICS IN L-D TOPOLOGY
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MATH 544 - ABSTRACT ALGEBRA III
Short Title: ABSTRACT ALGEBRA III
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MATH 563
Description: Varieties as solution sets of systems of polynomial equations, varieties in projective space, rational and regular functions, maps of varieties, local properties and singularities. Graduate/Undergraduate Equivalency: MATH 465. Mutually Exclusive: Credit cannot be earned for MATH 544 and MATH 464.

MATH 563 - ABSTRACT ALGEBRA II
Short Title: ABSTRACT ALGEBRA II
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MATH 356
Description: Graduate/Undergraduate Equivalency: MATH 463. Mutually Exclusive: Credit cannot be earned for MATH 563 and MATH 463.

MATH 564 - ABSTRACT ALGEBRA III
Short Title: ABSTRACT ALGEBRA III
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MATH 563
Description: Varieties as solution sets of systems of polynomial equations, varieties in projective space, rational and regular functions, maps of varieties, local properties and singularities. Graduate/Undergraduate Equivalency: MATH 465. Mutually Exclusive: Credit cannot be earned for MATH 564 and MATH 464.

MATH 565 - TOPICS IN ALGEBRA: INTRODUCTION TO ALGEBRAIC GEOMETRY
Short Title: TOPICS IN ALGEBRA
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MATH 463 and MATH 464
Description: Possible topics include rational points on algebraic varieties, moduli spaces, deformation theory, and Hodge structures. Recommended Prerequisite(s): MATH 463 and MATH 464. Repeatable for Credit.
MATH 571 - MATHEMATICS OF APERIODIC ORDER
Short Title: MATHEMATICS OF APERIODIC ORDER
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mathematical models of quasicrystals, whose discovery in the early 1980's led to a paradigm shift in materials science. Topics include: classical theory of ordered structures (i.e., lattices modeling crystals), Delone subsets and tilings of Euclidean space, aperiodically ordered structures generated by inflation or cut-and-project schemes. Graduate/Undergraduate Equivalency: MATH 471. Recommended Prerequisite(s): MATH 356 Mutually Exclusive: Credit cannot be earned for MATH 571 and MATH 471.

MATH 590 - CURRENT MATHEMATICS SEMINAR
Short Title: CURRENT MATHEMATICS SEMINAR
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Presentations of research in topology and related areas. Repeatable for Credit.

MATH 591 - GRADUATE TEACHING SEMINAR
Short Title: GRADUATE TEACHING SEMINAR
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion on teaching issues and practice lectures by participants as preparation for classroom teaching of mathematics. Repeatable for Credit.

MATH 592 - GRADUATE TEACHING SEMINAR
Short Title: GRADUATE TEACHING SEMINAR
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion on teaching issues and practice lectures by participants as preparation for classroom teaching of mathematics. Repeatable for Credit.

MATH 593 - GRADUATE TEACHING SEMINAR
Short Title: GRADUATE TEACHING SEMINAR
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion on teaching issues and practice lectures by participants as preparation for classroom teaching of mathematics. Repeatable for Credit.

MATH 594 - GRADUATE TEACHING SEMINAR
Short Title: GRADUATE TEACHING SEMINAR
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion on teaching issues and practice lectures by participants as preparation for classroom teaching of mathematics. Repeatable for Credit.

MATH 595 - GRADUATE TEACHING SEMINAR
Short Title: GRADUATE TEACHING SEMINAR
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion on teaching issues and practice lectures by participants as preparation for classroom teaching of mathematics. Repeatable for Credit.

MATH 596 - GRADUATE TEACHING SEMINAR
Short Title: GRADUATE TEACHING SEMINAR
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion on teaching issues and practice lectures by participants as preparation for classroom teaching of mathematics. Repeatable for Credit.

MATH 597 - GRADUATE TEACHING SEMINAR
Short Title: GRADUATE TEACHING SEMINAR
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion on teaching issues and practice lectures by participants as preparation for classroom teaching of mathematics. Repeatable for Credit.

MATH 598 - GRADUATE TEACHING SEMINAR
Short Title: GRADUATE TEACHING SEMINAR
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion on teaching issues and practice lectures by participants as preparation for classroom teaching of mathematics. Repeatable for Credit.

MATH 682 - ALGEBRAIC GEOMETRY SEMINAR
Short Title: ALGEBRAIC GEOMETRY SEMINAR
Department: Mathematics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Presentations of research in algebraic geometry and related areas. Repeatable for Credit.

MATH 683 - GEOMETRY AND ANALYSIS SEMINAR
Short Title: GEOMETRY AND ANALYSIS SEMINAR
Department: Mathematics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Presentations of research in geometric analysis, mathematical physics, dynamics and related areas. Repeatable for Credit.

MATH 690 - SUPERVISED READING
Short Title: SUPERVISED READING
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MATH 698 - RESEARCH THEMES IN THE MATHEMATICAL SCIENCES
Short Title: RESEARCH THEMES IN MATH. SCI.
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A seminar course that will cover selected theme of general research in the mathematical sciences from the perspectives of mathematics, computational and applied mathematics and statistics. The course may be repeated multiple times for credit. Cross-list: CAAM 698, STAT 698. Graduate/Undergraduate Equivalency: MATH 498. Mutually Exclusive: Credit cannot be earned for MATH 698 and MATH 498. Repeatable for Credit.

MATH 699 - MATHEMATICAL SCIENCES VIGRE SEMINAR
Short Title: MATHEMATICAL SCIENCES VIGRE SEMINAR
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
MATH 800 - GRADUATE THESIS AND RESEARCH
Short Title: GRADUATE THESIS AND RESEARCH
Department: Mathematics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MBA for Professionals-Evening (MGMP)

MGMP 500 - MBA-P IMMERSION
Short Title: MBA-P IMMERSION
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The Rice MBA Program Immersion is composed of a rigorous one week experience intended to help acclimate students to the Jones School Culture, as well as the rapid pace of a top-tier graduate business program. At the end of Immersion students will be better prepared academically, professionally, administratively, and culturally to reap the full benefits of the MBA experience. The Rice MBA Program Immersion is a mandatory activity for all incoming students.

MGMP 501 - FINANCIAL ACCOUNTING
Short Title: FINANCIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the preparation, analysis, and use of corporate financial reports. Covers the basic techniques of financial reporting analysis from the perspective of managers as well as external users of information such as investors. Required for MBA.

MGMP 502 - MANAGERIAL ACCOUNTING
Short Title: MANAGERIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the use of financial and cost information by managers in budgeting, resource allocation, pricing, quality control, and other contexts to help managers set goals and monitor and evaluate performance. Required for MBA.

MGMP 510 - ORGANIZATIONAL BEHAVIOR
Short Title: ORGANIZATIONAL BEHAVIOR
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the many factors, which influence how individuals, groups, and teams behave and function in complex organizations and how they can be effectively managed.

MGMP 511 - ORGANIZATIONAL CHANGE
Short Title: ORGANIZATIONAL CHANGE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Emphasizes understanding what constitutes effective organizational designs, considers both the macro designing initiatives and the micro execution of those initiatives. Required for MBA.

MGMP 540 - MANAGERIAL ECONOMICS
Short Title: MANAGERIAL ECONOMICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We study production and pricing decisions under different assumptions about firm market power. Emphasis is placed on understanding the relevant costs in firm decision-making. Examples are used from marketing and accounting areas. Required for MBA.

MGMP 543 - FINANCE
Short Title: FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the theory and practice of corporate finance, with emphasis on topics such as valuation, capital budgeting, risk and return, and capital structure. Required for MBA.
MGMP 560 - CORPORATE RESPONSIBILITY
Short Title: CORPORATE RESPONSIBILITY
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An exploration of the ethical and legal basis of managerial decision making and the social dimension of the business firm. Required for MBA. Repeatable for Credit.

MGMP 570 - COMPETITIVE STRATEGY
Short Title: COMPETITIVE STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Systematic examination of models and techniques used to analyze a competitive situation within an industry from a strategic perspective. Examines the roles of key players in competitive situations and the fundamentals of analytical and fact-oriented strategic reasoning. Examples of applied competitive and industry analysis are emphasized. Required for MBA.

MGMP 571 - STRATEGY FORMULATION AND IMPLEMENTATION
Short Title: STRATEGY FORMULATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on formulating and implementing effective organizational strategy, including competitive positioning, core competencies and competitive advantage, cooperative arrangements, and tools for implementation.

MGMP 574 - OPERATIONS MANAGEMENT
Short Title: OPERATIONS MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the principles of production management and process improvement. Required for MBA.

MGMP 580 - MARKETING
Short Title: MARKETING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course exposes the student to most important ideas and methods relevant for data analysis as an aid to business decision-making. This course exposes the student to most important ideas and methods relevant for data analysis as an aid to business decision-making. Includes individual communication skills assessment and development and team-based oral and written communication instruction. Required for MBA.

MGMP 581 - STRATEGY FORMULATION
Short Title: STRATEGY FORMULATION
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on formulating and implementing effective organizational strategy, including competitive positioning, core competencies and competitive advantage, cooperative arrangements, and tools for implementation.

MGMP 594 - STRATEGIC BUSINESS COMMUNICATION
Short Title: STRATEGIC BUSINESS COMMUNICATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the strategy and practice of business communication. Assignments are based on core courses integrated across the curriculum. Includes individual communication skills assessment and development and team-based oral and written communication instruction. Required for MBA.

MGMP 595 - DATA ANALYSIS
Short Title: DATA ANALYSIS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the strategy and practice of business communication. Assignments are based on core courses integrated across the curriculum. Includes individual communication skills assessment and development and team-based oral and written communication instruction. Required for MBA.
MGMP 597 - INTEGRATIVE COMPETITIVE EXERCISE ILE
Short Title: ILE
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: This course is designed with two major objectives in mind. First, to thoroughly understand, and be able to competently apply, those statistical methods typically used in the analysis of business data. Secondly, is to affect how you think about problems. If data can help you resolve a business problem, this course should enable you to: structure the problem in a way that facilitates its analysis; specify the data that needs to be analyzed; decide on the statistical technique(s) most appropriate for analyzing the data; apply the technique correctly; and, insightfully interpret the results in terms of their implications for the original problem.

MGMP 600 - EDUCATION LEADERSHIP INDEPENDENT STUDY
Short Title: EDUCATION LEADERSHIP IND STUDY
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hours: 1.5
Course Level: Graduate
Description: Repeatable for Credit.

MGMP 601 - USING FINANCIAL STATEMENTS TO EVALUATE FIRM PERFORMANCE
Short Title: USING FINANCIAL STATEMENTS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed to develop basic skills in financial statement analysis with special emphasis on understanding, organizing and summarizing financial data for decision making purposes related to valuation. The course focuses on financial and accounting analysis which consists of documenting and understanding a firm's profitability relative to past performance and comparable firms. Ratio analysis, accounting quality, and earnings management are the focal points of this portion of the course.

MGMP 602 - ACCOUNTING-BASED VALUATION
Short Title: ACCOUNTING-BASED VALUATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MGMP 601 (may be taken concurrently)
Description: This course covers two major topics: 1) Forecasting financial statements based on a complete historical analysis of the firm; 2) Deriving firm value under a variety of approaches including DCF and residual income valuation (RIV). The prerequisite MGMP 601 may be taken concurrently with MGMP 602.

MGMP 603 - FEDERAL TAXATION
Short Title: FEDERAL TAXATION
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Taxes affect most business decisions in the industrialized world. This course provides the body of tax knowledge that corporate executives and professionals need as a part of basic business decision making. The course is designed for those with no formal tax background and for those whose tax work is dated or has not included a focus on business entities. The course emphasizes corporate tax matters and questions to consider in choosing a business entity. Class members should be tax literate at the end of the course.

MGMP 626 - FINANCING THE STARTUP VENTURE
Short Title: FINANCING THE STARTUP VENTURE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The goal of this course is to provide students with an overview of financing options for startups. The course covers crowdfunding, angel investors, accelerators, and the venture capital industry; the organization and operation of venture capital funds; investment methodology; monitoring and portfolio liquidation.

MGMP 627 - ENTERPRISE EXCHANGE
Short Title: ENTERPRISE EXCHANGE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Repeatable for Credit.

MGMP 645 - INVESTMENTS / PORTFOLIO MANAGEMENT
Short Title: INVESTMENTS / PORTFOLIO MGMT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Review of classic investment theory, with emphasis on measuring & managing investment risk & return. Includes the development of modern portfolio theory & asset pricing models, an introduction to option & futures contracts, market efficiency, & stock evaluation. Repeatable for Credit.

2017-2018 General Announcements
MGMP 651 - FIXED INCOME MANAGEMENT
Short Title: FIXED INCOME MANAGEMENT
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Course Level: Graduate
Description: The course provides an in-depth analysis of the concepts that are most often encountered in the market for fixed income securities. The goals of the course are twofold: (i) to illustrate the fundamental concepts that are commonly used for analyzing fixed income instruments; (ii) to investigate how the fundamental concepts are related to the institutional structures that are most often encountered in practice. The course will focus on topics that are most likely to have practical relevance for students once they graduate. The goals are accomplished via a combination of case studies, lectures, problem sets (to be handed in). Some of the topics that will be covered include term structure of interest rate, duration-based analysis, inverse floater, corporate bond markets, mortgage-backed securities. Repeatable for Credit.

MGMP 659 - REAL ESTATE FINANCE
Short Title: REAL ESTATE FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: This course has two major objectives: First, this course provides an overview of topics related to real estate finance. Specifically, this course provides a detailed description of the Discounted Cash Flow (DCF) model applied to real estate. The DCF model is the main financial decision tool used in the real estate industry and we use it extensively in this course. In addition, this course also describes the connection between financial markets and real estate. A large part of this course is devoted to the study of public traded securities that have their cash flows tied to real property cash flows, such as commercial mortgage-backed securities and REITs. Second, this course is the first elective related to real estate in a series available to Rice MBA students, and hence it briefly overviews basic concepts commonly used in the Real Estate Industry. Repeatable for Credit.

MGMP 684 - BRAND STRATEGY
Short Title: BRAND STRATEGY
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Brand Management is an elective class that addresses important branding decisions faced by an organization. Its basic objectives are: 1) to provide students with a complete understanding of the consumer and of how consumers develop brand attitudes and behaviors; 2) to increase understanding of the important issues in planning and evaluating brand strategies; and 3) to provide a forum for students to apply branding strategies in a variety of domains. Particular emphasis is placed in the course on understanding psychological principles at the consumer or customer level that will improve managerial decision-making with respect to brands. One aim of the course is to make these concepts relevant for any type of organization (public or private, large or small, etc).

MGMP 689 - DECISION MODELS
Short Title: DECISION MODELS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Successful management requires the ability to recognize a decision situation, understand its essential features, and make a choice. However, many of these situations - particularly those involving uncertainty and/or complex interactions - may be too difficult to grasp intuitively, and the stakes may be too high to learn by experience. This course introduces spreadsheet modeling, simulation, decision analysis and optimization to represent and analyze such complex problems. The skills learned in this course are applicable in almost all aspects of business and should be helpful in future courses. The course is divided into two parts. In the first part, we discuss the use of decision trees for structuring decision problems under uncertainty. In the second part of the course, we discuss Monte Carlo simulation, a technique for simulating complex, uncertain systems. Throughout the course, we will use Microsoft Excel as a modeling environment, using add-in programs as necessary. Familiarity with Excel is an important prerequisite for this course. Repeatable for Credit.

MGMP 700 - REEP SUMMER INSTITUTE: EDUCATION ENTREPRENEURSHIP
Short Title: EDUCATION ENTREPRENEURSHIP
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
MGMP 701 - COMMUNICATION I ILE
Short Title: COMMUNICATION I ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Internal and Interpersonal Communications Students discuss and practice effective ways to communicate both to groups within and organization and one-on-one. Content includes analyzing pitfalls of hierarchical communication; listening skills; productive vs. unproductive feedback; etc. Repeatable for Credit.

MGMP 703 - CORPORATE RESPONSIBILITY II
Short Title: CORPORATE RESPONSIBILITY II
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: This ILE expands on the topics of the first ILE with three learning objectives in mind: 1. Heightened moral imagination defined as the ability to recognize ethical dilemmas / moral problems in business situations. 2. Increased skill at analyzing those dilemmas / problems in terms of economic outcomes, legal requirement, and moral duties through use of ethical decision-making frameworks. 3. Increased skill at ethical leadership as an executive / manager in presenting your moral point of view to others in order to best develop and maintain an ethical climate / culture in all our organizations, communities, and societies. Repeatable for Credit.

MGMP 704 - COMMUNICATION II ILE
Short Title: COMMUNICATION II ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Crisis Communications Students discuss and practice the methodology of managing crisis in business settings. Both proactive and reactive actions are reviewed; historic examples of both good and bad communication in a crisis are studied. Guest lecturer will discuss crisis communications. Repeatable for Credit.

MGMP 707 - COMMUNICATIONS ILE
Short Title: COMMUNICATIONS ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Intercultural Communications Students focus on understanding how to conduct business in cultures different from their own. Content includes cultural and emotional intelligence; cross-cultural exercises; and ways to approach and learn about foreign culture and its related business practices.

MGMP 708 - LEADERSHIP ILE
Short Title: LEADERSHIP ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The purpose of this course is to teach you some skills and give you some hands on practice around leading others in group settings. The course will focus on Fundamental Leadership Skills: Influence and Vision; Fundamental Leadership Skills: Leading a Key Decision; Fundamental Leadership Skills: Interpretive Leading under Crisis; Putting it Together: Climbing Mt. Everest.

MGMP 709 - NEGOTIATIONS ILE
Short Title: NEGOTIATIONS ILE
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Managers and professionals cannot be successful without possessing effective negotiation skills and strategies. The purpose of this ILE is to help one understand the processes of negotiation in a variety of settings. The ILE will cover a broad spectrum of negotiation problems faced by managers and professionals. This ILE helps students develop negotiation skills by tackling a series important topics central to effective negotiation.

MGMP 789 - GLOBAL FIELD EXPERIENCE
Short Title: GLOBAL FIELD EXPERIENCE
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students in the EMBA program. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This unique experiential learning opportunity requires students to apply what was learned in the first year of the program through consulting projects on the ground in a designated country. The course fosters a global mindset and further develops the ability to tackle business challenges in dynamic, diverse, and complex environments. Department Permission Required.
MGMP 798 - FIRST YEAR CAPSTONE
Short Title: FIRST YEAR CAPSTONE
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: This core course uses a capstone business strategy simulation conducted in close proximity to the required formulation/implementation course. Student teams operate simulated companies in a highly competitive industry. Emphasis is placed on integrating strategy, financial control, operational excellence, and team building. Teams make presentations at the end of the course.

MGMP 799 - MBA-P PROGRAM CAPSTONE
Short Title: MBA-P PROGRAM CAPSTONE
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The MBA-P Capstone course gives students the opportunity to apply their multi-functional (strategy, finance, marketing, organizational behavior, etc.) knowledge that they have gained in the program and their own professional experience to solve a complex, real-world managerial problem. However, this course will provide a unique twist to challenge the students - the real-world problem will be faced by a non-corporate, Houston-based, community organization. Students will work with senior executives at these organizations over the course of the semester to develop actionable solutions to strategic challenges facing these organizations.

MBA for Professionals-Weekend (MGMW)

MGMW 500 - MBAP-W IMMERSION
Short Title: MBAP-W IMMERSION
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate

MGMW 501 - FINANCIAL ACCOUNTING
Short Title: FINANCIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Financial statements are a key source of information about the economic activities of a firm. This course addresses the construction and interpretation of financial statements. The goal of the course is not to train you to become an accountant. Rather, the course should equip you to become an informed user of financial statement information. Because annual reports are somewhat formidable, we will study how firms present the information for various accounts in their financial statements, including the footnotes. By the end of the course, you should have a basic understanding of financial statements and the ability to use them for decision making. Fulfillment of these objectives involves acquiring several skills. The course will emphasize (i) gaining familiarity with the types of transaction firms engage in, (ii) the mapping of transactions into accounting numbers, (iii) understanding the accounting-related choices that managers have for transactions and the rationale behind the various methods, (iv) developing fluency in accounting terminology, and (v) appreciating the complexity of accounting due to the (often considerable) discretion and judgment involved in choosing among alternative accounting methods, making estimates, and disclosing information in financial statements.

MGMW 502 - MANAGERIAL ACCOUNTING
Short Title: MANAGERIAL ACCOUNTING
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course provides an introduction to accounting systems that managers use to support decision making and to align behaviors. The objective of cost management systems is to provide information about costs; including, but not limited to costs of products and services. While financial accounting requires that product cost information be accumulated in particular ways for external reporting, these approaches often provide inadequate information for managing the firm. Management accounting is distinct from financial accounting in its focus on internal (to the firm) uses of accounting and nonfinancial data and in the relative absence of external rules-making bodies such as the SEC or FASB and external monitors such as public accounting firms.
MGMW 510 - ORGANIZATIONAL BEHAVIOR
Short Title: ORG. BEHAVIOR
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Issues involving power and influence, norms and values, and incentives and rewards shape individual and group behavior in organizations. Throughout your work life, you have accrued a number of experiences and insights concerning the “human” side of management. In this course, we will discuss your experiences, evaluate and interpret them, and develop a toolkit that will further enhance your ability to make effective decisions, motivate and lead employees, and understand the processes underlying social interaction in organizations.

MGMW 511 - ORGANIZATIONAL CHANGE
Short Title: ORGANIZATIONAL CHANGE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Over the course of your life you have already encountered—and will continue to encounter—the need to lead change or, at a minimum, adapt to change. Chances are good that you already do an adequate job navigating change and may have experienced satisfactory or even better-than-expected results. However, by applying frameworks that elevate your abilities beyond the “common sense” level of performance, you can markedly improve the degree and/or frequency of your success. The primary goal of this course is to help you become an effective leader of organizational change. In this very brief class, you will learn, discuss and put into action an important framework for managing organizational change. Your participation in this course will: 1) provide you with an effective framework for managing organizational change. 2) improve your competencies as both a leader and participant in change. Repeatable for Credit.

MGMW 540 - MANAGERIAL ECONOMICS
Short Title: MANAGERIAL ECONOMICS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Managerial economics deals with the application of microeconomic analysis to managerial decision-making. It is therefore a very broad subject and serves as the foundation for making decisions in finance, accounting, marketing, and management/strategy.

MGMW 541 - ECONOMIC ENVIRONMENT OF BUSINESS
Short Title: ECONOMIC ENV. OF BUSINESS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: EEB stresses an understanding of the major macroeconomic forces affecting business in today’s global economy. Fluency in major macroeconomic concepts and forces enhances business decision making in the globally competitive product, financial, and labor markets that characterize the modern business environment. With this in mind, the learning objectives for the course include an understanding of 1) the key economic policy goals and how they are related: low unemployment, price stability and long-term sustainable growth; 2) the primary economic policy tools: fiscal policy and monetary policy; and 3) key economy-wide prices: inflation, interest rates, and exchange rates. Repeatable for Credit.

MGMW 543 - FINANCE
Short Title: FINANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The objective of this course is to introduce you to the theory and practice of corporate finance, and to provide you with a set of analytical tools necessary to answer the most important questions related to firms’ financing and investment policies. The theory of corporate finance consists of the following building blocks: Valuation, Investment Decisions, Risk and Return, Financing Decisions, Derivative Securities.

MGMW 560 - CORPORATE RESPONSIBILITY
Short Title: CORPORATE RESPONSIBILITY
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: MGMW 560 is an interdisciplinary, interactive study of business ethics and the social responsibility of business organizations. It is not designed to dictate individual values, but to show how values can be integrated effectively in successful business decision-making. It encompasses an in-depth examination of the sorts of ethical conflicts that arise in business and an exploration of the interplay between professional and applied ethics, law and management. Emphasis is placed on consideration of stakeholder concerns and the development of personal ethical decision-making skills. Repeatable for Credit.
MGMW 561 - BUSINESS - GOVERNMENT RELATIONS
Short Title: MGMW 561
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: MGMW 561 is a study of the relationship between business and government and its impact on the formation of public policy. The course examines how business issues are influenced by political structures and institutions, information, relationships, stakeholders, crisis, media and ethics. Students will participate in a Congressional simulation exercise and create an issue management plan that applies class lectures, readings and independent research to an issue of their choice.

MGMW 570 - COMPETITIVE STRATEGY
Short Title: MGMW 570
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The field of strategic management explores how firms achieve competitive advantage in a dynamic and complex environment from the general manager’s perspective. This course is organized around fundamental frameworks to assist you in analyzing a wide range of strategic issues facing a firm. It will: 1) Cover theories for in-depth industry analysis, for anticipating and predicting future industry developments; 2) Examine some of the firm specific underpinnings of competitive advantage and growth in both domestic and international settings; 3) Explore some of the challenges in implementing the strategy that has been formulated. Nevertheless, the best analysis in the world will have little effect if it cannot be communicated to others. Managers must be able to articulate their views coherently and persuasively, and they must be skilled at understanding and critiquing other points of view. Management is a "verbal sport," perhaps 90% of a typical manager’s day is consumed by oral communication. Time is often scarce. You must learn to make convincing arguments and to make them quickly, or the merits of your ideas are likely to become simply irrelevant. This skill takes practice, and we will place a great deal of emphasis on it in class.

MGMW 571 - STRATEGY FORMULATION AND IMPLEMENTATION
Short Title: MGMW 571
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: The central concern of strategic management is to help companies succeed in competitive environments. Hence, the purpose of the course is to expose students to core concepts, ideas and analytical techniques that can be used to create sustainable advantage and growth in difficult competitive environments. The perspective adopted is that of a general manager who has overall responsibility for the performance of the firm as whole. To this end, the course will attempt to build students’ ability to develop, evaluate, and implement value-creating strategies at the business and corporate level. In doing so, the course will not only introduce new or advanced concepts in strategy, but also review and build upon some of the concepts students have already studied in the first core course in strategy. Given the integrative nature of strategic management, we shall attempt to establish links with important concepts that students have been exposed to in other functional areas.

MGMW 574 - OPERATIONS
Short Title: MGMW 574
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course facilitates the development of ideas, concepts, analytic methods and skills needed to manage the effective integration of technology, people, and operations. The aim is to (a) familiarize you with problems and issues confronting operations managers, and (b) provide you with language, concepts, insights and tools to deal with these issues in order to gain competitive advantage through operations. The course will consider both the development and manufacture of products as well as the creation and delivery of services.

MGMW 580 - MARKETING
Short Title: MGMW 580
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is built around the premise that providing superior value to customers is a central means of creating value for the firm’s stakeholders. The course focuses on marketing strategy – the strategic decision of what value to provide, how to provide it, and to whom. You will lean the importance of balancing effectiveness and efficiency through formulation, implementation, evaluation, and control of marketing mix programs directed at target segments.
MGMW 594 - STRATEGIC BUSINESS COMMUNICATION
Short Title: STRAT BUSINESS COMMUNICATION
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 0.75
Restrictions: Students in the MBA or PMBA programs may not enroll. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to the strategy and practice of business presentations. Includes frequent oral presentations (both individual and team) and feedback.

MGMW 595 - DATA ANALYSIS
Short Title: DATA ANALYSIS
Department: Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The objective of this course is to help you learn to analyze data and use methods of statistical inference in making business decisions.

MGMW 596 - STRATEGIC BUSINESS COMMUNICATIONS II
Short Title: STRATEGIC BUSINESS COMM II
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The goal of the course is to ensure that students possess the communications knowledge and skills to perform effectively in a variety of roles in your organizations. By the end of the Rice MBA for Professionals program, students should be able to: Communicate on the basis of sound strategic thinking; Create and deliver both individual and team presentations confidently and persuasively; Write strategic, effective emails; Use PowerPoint® effectively as a tool to support content; Participate constructively in team activities; Provide meaningful peer feedback.

MGMW 597 - ICE ILE
Short Title: ICE ILE
Department: Management
Grade Mode: Standard Letter
Course Type: Intensive Learning Experience
Credit Hours: 1.5
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: The Ice Cream Game is a realistic, competitive game set in a Marketing Context. Student teams have a fixed budget to spend on Production and Advertising across each of three different time periods. They control: 1) How many different product types they offer (up to 4); 2) What specific raw material ingredient combinations make up those products; 3) How many units of each product type to produce; 4) What price to charge; 5) How much money to allocate to advertising (if any) for each product in each media; and, 6) How much to spend stressing each product attribute. All teams compete with each other for share, sales, and profit in a world composed of three segments which (may) differ in their preferences – thus each team’s strategy can definitely affect all the other team’s results. The game allows the student to apply what they have learned in Data Analysis, Marketing, Economics, Strategy, and Organization Behavior all in a world where both analysis and creativity are important ingredients in the recipe for success.

MGMW 700 - 2ND YEAR IMMERSION
Short Title: 2ND YEAR IMMERSION
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: Repeatable for Credit.

MGMW 701 - COMMUNICATIONS
Short Title: COMMUNICATIONS
Department: Management
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 0.75
Restrictions: Enrollment limited to students in the MBA or PMBA programs.
Course Level: Graduate
Description: In this course students will explore current topics in business communications. The course applies theory and research in business communications to everyday business communication practice. Individual sessions focus on the following issues: Internal Corporate Communications and Web 2.0; Crisis Communications; Cross-Cultural Communications; Interpersonal Communications in Business. Students will be expected to conduct research, analyze case studies, and present their findings. The course strives to teach knowledge and skills immediately applicable to solving business communication problems in the 21st century workplace. Repeatable for Credit.
MGMW 706 - LEADERSHIP  
Short Title: LEADERSHIP  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course aims to develop a more thorough understanding of leadership and the leadership process. Through this exploration, it is hoped that students will come to understand themselves better within the leadership context (i.e., as a follower, as a self-leader, and as a leader of others).

MGMW 709 - NEGOTIATIONS  
Short Title: NEGOTIATIONS  
Department: Management  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Lecture  
Credit Hours: 1.5  
Restrictions: Enrollment limited to students in the MBA or PMBA programs. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Negotiating is an important part of our everyday lives, whether we realize this or not. As research tends to show, however, most of us are often not as effective as we could be in negotiation situations. The purpose of this course is simply to improve your ability to negotiate in ways that are consistent with the demands of the situation and your own personal values. The course is designed around the premise that negotiation is a science and an art. The assigned readings are informed by the latest research on negotiations. The exercises and other learning activities were chosen to help you gain a feel for how this science informs the practice of securing agreements between interdependent parties. Repeatable for Credit.

MGMW 799 - PROGRAM CAPSTONE  
Short Title: PROGRAM CAPSTONE  
Department: Management  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The MBA-P Capstone course gives students the opportunity to apply the multi-functional (strategy, finance, marketing, organizational behavior, etc.) knowledge that they have gained in the program and their own professional experience to solve a complex, real-world managerial problem. However, this course provides a unique twist to further challenge the students — the real-world problem is based on a Houston-based, social-oriented community organization. Students will work with senior executives at these organizations and the course instructors through the semester to develop thorough and actionable solutions to the strategic challenges facing these organizations. For instance, cases include growth strategies, turnaround strategies, business plans for major programs, alliance/partnership strategies, and entrepreneurial start-ups. Capstone organizations come from many different parts of the community, including education/childhood development, healthcare, social services, and environment/conservation, as well as come in many different sizes.

Mechanical Engineering (MECH)

MECH 200 - CLASSICAL THERMODYNAMICS  
Short Title: CLASSICAL THERMODYNAMICS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Explication of the fundamental laws of classical thermodynamics and deductions from them. Includes applications with particular attention to pure substances. Required for mechanical engineering majors. Department Permission Required. Recommended Prerequisite(s): PHYS 101 and PHYS 102.

MECH 211 - ENGINEERING MECHANICS  
Short Title: ENGINEERING MECHANICS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and MATH 101 and MATH 102  
Description: The study equilibrium of static systems, the dynamics of a particle and particle systems, and rigid-body dynamics. Required for mechanical engineering and materials science and engineering majors. Cross-list: CEVE 211.
MECH 308 - SENIOR DESIGN JUNIOR OBSERVERS
Short Title: SENIOR DESIGN JUNIOR OBSERVERS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MECH 311 - MECHANICS OF SOLIDS AND STRUCTURES
Short Title: MECHANICS OF SOLIDS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 211 or CEVE 211
Description: Analysis of stress and the deformation of solids with applications to beams, circular shafts, and columns. Open only to mechanical engineering and civil engineering majors. Required for mechanical engineering majors. Cross-list: CEVE 311.

MECH 331 - JUNIOR LABORATORY I
Short Title: JUNIOR LABORATORY I
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Instruction in static and impact testing of engineering materials. Includes beam deflection and shear center experiments, as well as the application and testing of strain gauges. Required for mechanical engineering majors in B.S. program.

MECH 332 - JUNIOR LABORATORY II
Short Title: JUNIOR LABORATORY II
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 371
Description: Instruction in fluid mechanics and thermodynamics. Students work in groups and perform classic experiments in fluid flow. This laboratory course provides experimental support to MECH 371.

MECH 333 - INDUSTRIAL PROCESS LAB
Short Title: INDUSTRIAL PROCESS LAB
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Mechanical Engineering. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Practical experience in, and observation of, selected industrial processes. Must sign up in department office at the beginning of registration for sections; each section is limited to 8 students. Open only to mechanical engineering majors. Required for mechanical engineering majors in B.S. program. Final registration confirmed after the first week's organizational meeting. Meeting announcements posted in the MEMS department.

MECH 343 - MODELING OF DYNAMIC SYSTEMS
Short Title: MODELING OF DYNAMIC SYSTEMS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MECH 211 or CEVE 211) and MECH 200 and MATH 211
Description: Energy-based modeling of dynamic systems. The focus of the course will be mechanical systems and electrical circuits, but will also involve fluid, thermal and other domains. The course will introduce modeling and simulation of systems via MATLAB, Simulink, and Labview, and an introduction to systems theory. Modeling and simulation of systems via MATLAB, and an introduction to systems theory. Includes laboratory assignments. Required for mechanical engineering majors in B.S. program. Recommended Prerequisite(s): CAAM 335.

MECH 371 - FLUID MECHANICS I
Short Title: FLUID MECHANICS I
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 200 and (MECH 211 or CEVE 211) and MATH 212
Description: Introduction to fluid statics and dynamics. Includes the development of the fundamental equations of fluid mechanics and their application to problems of engineering interest. Required for mechanical engineering majors in B.S. program. Department Permission Required.

MECH 373 - ACOUSTICS
Short Title: ACOUSTICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Basics of technical acoustics, including generation, propagation, reception and reproduction of sound, speech and hearing, musical and architectural acoustics, and noise control. Offered alternate years.
MECH 380 - INTRODUCTION TO MECHANICAL EFFECTS IN TISSUES
Short Title: INTRO TO MECHANICAL EFFECTS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 211 and MECH 311 or CEVE 300
Description: Development of a general background in physiology and in advanced mechanics for applications in medicine. Includes bone mechanics in remodeling, cartilage and ligament mechanics, and muscle mechanics, as well as an on paper design project on a subject selected by students.

MECH 383 - INTRODUCTION TO BIOMEDICAL INSTRUMENTATION AND MEASUREMENT TECHNIQUES
Short Title: BIOMED INSTRUMENT&MESURE TECHN
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 381
Description: Review of basic sensors, measurement principles and analog electronics using operational amplifiers. Includes design problems using operational amplifier circuits (e.g. instrumentation and isolation amplifiers, comparators, timer circuits). Introduction to development of virtual instruments (VIs) using LabView. Discussion of micro and macro-biopotential electrodes, cell cytometry, the measurement of blood pressure, blood flow, and heart sounds, temperature, and the principles of electrical safety (e.g. micro and macro-shock hazards in the clinical environment). Includes discussion of pulmonary instrumentation and medical applications of ultrasound. Two lab exercises and a term project required.

MECH 400 - ADVANCED MECHANICS OF MATERIALS
Short Title: ADV MECHANICS OF MATERIALS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MECH 211 or CEVE 211) and (MECH 311 or CEVE 311)
Description: Advanced topics in solid mechanics and strength of materials including energy methods, principle of virtual work, conservation laws, constitutive modeling, aspects of elasticity theory, stability and fracture mechanics with application to the analysis and design of reliable structures. Cross-list: CEVE 400. Graduate/Undergraduate Equivalency: MECH 500. Mutually Exclusive: Credit cannot be earned for MECH 400 and MECH 500.

MECH 401 - MECHANICAL DESIGN APPLICATIONS
Short Title: MECHANICAL DESIGN APPLICATIONS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 311 or CEVE 311
Description: Brief review of solid mechanics with introduction to failure theories and fatigue analysis. The principles of mechanics are applied to the design of machine elements. A semester design project requires using the analysis tools learned in the course. Required for mechanical engineering majors in B.S. program.

MECH 403 - COMPUTER AIDED DESIGN
Short Title: COMPUTER AIDED DESIGN
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Investigation of the integration of the computer into the area of mechanical design. Includes such subjects as optimization, finite element, analysis, and commercial software. Graduate/Undergraduate Equivalency: MECH 503. Mutually Exclusive: Credit cannot be earned for MECH 403 and MECH 503.

MECH 404 - MECHANICAL DESIGN PROJECT
Short Title: MECHANICAL DESIGN PROJECT
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Project based course for group or individual design projects relating to mechanical engineering topics.

MECH 407 - CAPSTONE DESIGN PROJECT I
Short Title: CAPSTONE DESIGN PROJECT I
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An interdisciplinary capstone design experience in mechanical engineering. This course provides an opportunity for students to apply knowledge and skills acquired in previous courses to the solution of a realistic engineering problem. Teams of students will specify, design, and build a system to meet a prescribed set of requirements. The topics covered in this course will include design methodology, effective teamwork, project management, documentation, and presentation skills. Must complete MECH 408 to receive credit for MECH 407. Required for mechanical engineering majors in B.S. program.
MECH 408 - CAPSTONE DESIGN PROJECT II
Short Title: CAPSTONE DESIGN PROJECT II
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An interdisciplinary capstone design experience in mechanical engineering. This course provides an opportunity for students to apply knowledge and skills acquired in previous courses to the solution of a realistic engineering problem. Teams of students will specify, design, and build a system to meet a prescribed set of requirements. The topics covered in this course will include design methodology, effective teamwork, project management, documentation, and presentation skills. Must complete MECH 408 to receive credit for MECH 407. Required for mechanical engineering majors in B.S. program. Department Permission Required.

MECH 411 - DYNAMICS AND CONTROL OF MECHANICAL SYSTEMS
Short Title: DYNAMICS & CONTROL OF MECH SYS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 343 and MECH 420
Description: The application of the principles of kinematics, dynamics and systems and control theory to the design and analysis of controlled mechanical systems. Kinematics and Newtonian dynamics of particles and rigid bodies, elements of analytical dynamics, system analysis, stability, and simulation of dynamical behavior, control of mechanical systems. Demonstrations and laboratory examples. Graduate/Undergraduate Equivalency: MECH 501. Mutually Exclusive: Credit cannot be earned for MECH 411 and MECH 501.

MECH 412 - VIBRATIONS
Short Title: VIBRATIONS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 343
Description: Analysis of discrete and continuous linear vibrating systems, with emphasis on multi-degree-of-freedom systems. Includes approximate methods. Coverage of statistics (e.g. Gaussian and other distributions; and power spectra) as a foundation for random vibrations analysis. Required for mechanical engineering majors in B.S. program. Graduate/Undergraduate Equivalency: MECH 502. Mutually Exclusive: Credit cannot be earned for MECH 412 and MECH 502.

MECH 417 - FINITE ELEMENT ANALYSIS
Short Title: FINITE ELEMENT ANALYSIS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 212 or MATH 222) and (CAAM 210 or CAAM 211)
Description: An introduction to finite element analysis by Galerkin's method and the method of least squares as applied to both ordinary and partial differential equations common in engineering applications. Element interpolations, numerical integration, computational considerations for efficient solution and post-processing methods. Application of the commercial codes to ANSYS and Cosmosworks. Cross-list: CEVE 417. Graduate/Undergraduate Equivalency: MECH 517. Mutually Exclusive: Credit cannot be earned for MECH 417 and MECH 517.

MECH 420 - FUNDAMENTALS OF CONTROL SYSTEMS
Short Title: FUNDAMENTALS OF CONTROL SYST
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 343 or (ELEC 242 and ELEC 244) or (CAAM 335 or MATH 355)
Description: Linear systems and the fundamental principles of classical feedback control, state variable analysis of linear dynamic systems, stability of linear control systems, time-domain analysis and control of linear systems, root-locus analysis and design and pole-zero synthesis, frequency domain techniques for the analysis and design of control systems. Required for mechanical engineering majors in B.S. program. Cross-list: ELEC 436. Graduate/Undergraduate Equivalency: MECH 620. Mutually Exclusive: Credit cannot be earned for MECH 420 and MECH 620.

MECH 427 - COMPUTATIONAL STRUCTURAL MECHANICS AND FEM
Short Title: COMPUTATIONAL STR MECH & FEM
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): CEVE 311 or MECH 311
Description: Introduction to matrix structural analysis, trusses, beams, frames. Use of computer programs for structural analysis of Civil, Mechanical, and Aerospace Structures. Cross-list: CEVE 427.
MECH 431 - SENIOR LABORATORY I
Short Title: SENIOR LABORATORY I
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Laboratory instruction in heat transfer and thermodynamics. Students work in groups doing experiments with emphasis on applied thermodynamics. Required for mechanical engineering majors in B.S. program. See online registration for sections. Department Permission Required.

MECH 435 - INTRODUCTION TO ENERGY-EFFICIENT MECHATRONICS
Short Title: INTRO TO MECHATRONICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ELEC 242 or ELEC 243
Description: Introduction to electromechanical systems, focusing on motor mechanics, electric drives and electronics, and modern digital control algorithms. Covers basic principles of electromechanical energy conversion and motor control. Students are introduced to energy efficiency considerations of modern electric drives. Includes hands-on laboratory projects involving digital computer control of various motor types. Cross-list: ELEC 435. Graduate/Undergraduate Equivalency: MECH 535. Mutually Exclusive: Credit cannot be earned for MECH 435 and MECH 535.

MECH 450 - ALGORITHMIC ROBOTICS
Short Title: ALGORITHMIC ROBOTICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (COMP 221 or COMP 321) and COMP 215
Description: Robots have fascinated people for generations. Today, robots are built for applications as diverse as exploring remote planets, de-mining war zones, cleaning toxic waste, assembling cars, inspecting pipes in industrial plants and mowing lawns. Robots are also interacting with humans in a variety of ways: robots are museum guides, robots assist surgeons in life threatening operations, and robotic cars can drive us around. The field of robotics studies not only the design of new mechanisms but also the development of artificial intelligence frameworks to make these mechanisms useful in the physical world, integrating computer science, engineering, mathematics and more recently biology and sociology, in a unique way. This class will present fundamental algorithmic advances that enable today's robots to move in real environments and plan their actions. It will also explore fundamentals of the field of Artificial Intelligence through the prism of robotics. The class involves a significant programming project. Cross-list: COMP 450, ELEC 450. Graduate/Undergraduate Equivalency: MECH 550. Mutually Exclusive: Credit cannot be earned for MECH 450 and MECH 550.

MECH 454 - COMPUTATIONAL FLUID MECHANICS
Short Title: COMPUTATIONAL FLUID MECHANICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 371 (may be taken concurrently) or CEVE 363 (may be taken concurrently) or CHBE 401 (may be taken concurrently)
Description: Fundamental concepts of finite element methods in fluid mechanics, including spatial discretization and numerical integration in multidimensions, time-integration, and solution of nonlinear ordinary differential equation systems. Advanced numerical stabilization techniques designed for fluid mechanics problems. Strategies for solution of complex, real-world problems. Topics in large-scale computing, parallel processing, and visualization. Prerequisites may be taken concurrently. Cross-list: BIOE 454, CEVE 454. Graduate/Undergraduate Equivalency: MECH 554. Mutually Exclusive: Credit cannot be earned for MECH 454 and MECH 554.

MECH 456 - LEGAL THEMES IN ENGINEERING AND MANAGING PRACTICES
Short Title: LEGAL THEMES IN ENGI PRACTICES
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to fundamental legal concepts of the American legal system for upper level undergraduate students, primarily aimed at what engineers, scientists and other professionals could expect to encounter in their professional careers. The primary focus is to provide students with the basic tools to understand and interact with lawyers. Cross-list: MANA 499. Graduate/Undergraduate Equivalency: MECH 556. Mutually Exclusive: Credit cannot be earned for MECH 456 and MECH 556.

MECH 472 - THERMAL SYSTEMS DESIGN
Short Title: THERMAL DESIGN
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 371 (may be taken concurrently) and MECH 481
Description: Design and synthesis of systems based on applications of thermodynamics, fluid mechanics, heat transfer, economics, and optimization theories. Required for mechanical engineering majors in B.S. program.
MECH 473 - ADVANCED FLUID MECHANICS I
Short Title: ADVANCED FLUID MECHANICS I
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Governing equations for inviscid and viscous flows. Constitutive laws, simple non-Newtonian flows, and surface tension. Derivation and applications of the equations representing the conservation of mass and momentum. Various forms of the Bernoulli equation. Introductory concepts of computational fluid mechanics. Graduate/Undergraduate Equivalency: MECH 573. Mutually Exclusive: Credit cannot be earned for MECH 473 and MECH 573.

MECH 474 - ADVANCED COMPUTATIONAL MECHANICS
Short Title: ADV COMPUTATIONAL MECHANICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 454 or CEVE 454 or MECH 454 or BIOE 554 or CEVE 554 or MECH 554
Description: Undergraduate version of MECH 654. The required semester-end report and presentation will be on the introductory topics of the course. Mutually Exclusive: Credit cannot be earned for MECH 474 and MECH 654.

MECH 481 - HEAT TRANSFER
Short Title: HEAT TRANSFER
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MECH 200 and MECH 371)
Description: Study of the general principles of heat transfer by conduction, convection, and radiation. Includes their application to problems of engineering practice. Required for mechanical engineering majors in B.S. program.

MECH 488 - DESIGN OF MECHATRONIC SYSTEMS
Short Title: DESIGN OF MECHATRONIC SYSTEMS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MECH 343 or ELEC 241 or ELEC 243
Description: Analog electronic design for purposes of controlling electromechanical systems, including electromechanical sensors and actuators, analog electronic design of filters, state space and classical controllers, and transistor-based servo amplifiers and high voltage amplifiers. Implementation of digital controllers. Significant laboratory component with design and fabrication of circuits to control electromechanical systems. Graduate/Undergraduate Equivalency: MECH 588. Recommended Prerequisite(s): MECH 211 and ELEC 436 or MECH 420. Mutually Exclusive: Credit cannot be earned for MECH 488 and MECH 588.

MECH 490 - MECHANICAL ENGINEERING RESEARCH PROJECTS
Short Title: MECH ENG RESEARCH PROJECTS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent investigation of a specific topic or problem in mechanical engineering. Research under the direction of a selected faculty member. Instructor Permission Required. Repeatable for Credit.

MECH 498 - INTRODUCTION TO ROBOTICS
Short Title: INTRODUCTION TO ROBOTICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 354 or MATH 355 or CAAM 335
Description: The course will provide the student with a mathematical introduction to many of the key ideas used in today's intelligent robot systems. The focus of the course is on the analysis and control of manipulators. The course will also give an overview of common approaches to building intelligent robot systems. Cross-list: COMP 498, ELEC 498. Graduate/Undergraduate Equivalency: MECH 598. Mutually Exclusive: Credit cannot be earned for MECH 498 and MECH 598.

MECH 499 - CURRENT TOPICS
Short Title: CURRENT TOPICS
Department: Mechanical Engineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Designed for undergraduate mechanical engineering students. Lectures in areas of current interest in mechanical engineering. Topics vary from term to term. Repeatable for Credit.
MECH 500 - ADVANCED MECHANICS OF MATERIALS
Short Title: ADV MECHANICS OF MATERIALS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (MECH 211 or CEVE 211) and (MECH 311 or CEVE 311)
Description: Advanced topics in solid mechanics and strength of materials including energy methods, principle of virtual work, conservation laws, constitutive modeling, aspects of elasticity theory, stability and fracture mechanics with application to the analysis and design of reliable structures. Cross-list: CEVE 500. Graduate/Undergraduate Equivalency: MECH 400. Mutually Exclusive: Credit cannot be earned for MECH 500 and MECH 400.

MECH 501 - DYNAMICS AND CONTROL OF MECHANICAL SYSTEMS
Short Title: DYNAMICS & CONTROL OF MECH SYS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MECH 343 and MECH 420
Description: Graduate version of MECH 411. Offered continually with MECH 411. Graduate/Undergraduate Equivalency: MECH 411. Mutually Exclusive: Credit cannot be earned for MECH 501 and MECH 411.

MECH 502 - VIBRATIONS
Short Title: VIBRATIONS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MECH 343
Description: Term project is required. Graduate/Undergraduate Equivalency: MECH 412. Mutually Exclusive: Credit cannot be earned for MECH 502 and MECH 412.

MECH 503 - COMPUTER AIDED DESIGN
Short Title: COMPUTER AIDED DESIGN
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Investigation of the integration of the computer into the area of design. Includes such subjects as optimization, finite element analysis, and commercial software. Graduate/Undergraduate Equivalency: MECH 403. Mutually Exclusive: Credit cannot be earned for MECH 503 and MECH 403.

MECH 505 - NUMERICAL METHODS FOR ENGINEERS
Short Title: NUMERICAL METHODS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Numerical methods are the computational solution of mathematical problems. This course focuses on developing a competency in the four basic areas of numerical methods: differentiation, integration, optimization, and continuation. These four categories of methods form a tool set that are used throughout the computational solution of engineering problems.

MECH 508 - NONLINEAR SYSTEMS: ANALYSIS AND CONTROL
Short Title: NONLINEAR SYSTEMS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

MECH 510 - ELASTO DYNAMICS
Short Title: ELASTO DYNAMICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

MECH 511 - ELASTO DYNAMICS
Short Title: ELASTO DYNAMICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
MECH 517 - FINITE ELEMENT ANALYSIS
Short Title: FINITE ELEMENT ANALYSIS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (MATH 212 or MATH 222) and (CAAM 210 or CAAM 211)

MECH 519 - ELASTICITY, PLASTICITY AND DAMAGE MECHANICS
Short Title: ELASTICITY/PLASTICITY/DAMAGE
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An overview of phenomena that determine the response of solids to deformation and loading: elasticity, plasticity, damage mechanics and cracking. Review of continuum mechanics with emphasis on the physical mechanisms of deformation and fracture. Classification of the behavior of solids. Modeling of different types of material behavior. The physics underlying the phenomena and methods for the numerical analysis of the resulting equations are discussed. Cross-list: CEVE 519.

MECH 520 - NONLINEAR FINITE ELEMENT ANALYSIS
Short Title: NONLINEAR FEM
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

MECH 523 - PROBABILISTIC STRUCTURAL DYNAMICS
Short Title: PROB STRUCTURAL DYNAMICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MECH 412 or CEVE 521
Description: Introduction to probability theory and random processes. Includes the dynamic analysis of linear and nonlinear structural systems subjected to stationary and nonstationary random excitations reliability studies related to first excursion and fatigue failures, and applications to earthquake engineering, offshore engineering, and wind engineering. Recommended prerequisite(s): Basic knowledge of probability theory.

MECH 524 - ENGINEERING MATHEMATICAL AND NUMERICAL METHODS
Short Title: ENGR MATH & NUMERICAL METHODS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Elements of linear algebra, linear operators, systems of linear differential equations for discrete physical systems, calculus of variations, partial differential equations, Green’s functions, examples from solid and fluid mechanics, discretization of continuous systems, finite element method.

MECH 527 - COMPUTATIONAL STRUCTURAL MECHANICS AND FEM
Short Title: COMPUTATIONAL STR MECH & FEM
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to differential and integral formulations, minimum principles, variational principles, weighted residuals, energy principles, and principle of virtual work. Boundary, initial, and eigenvalue problems. Finite element and finite difference methods for structural mechanics. Applications to static and dynamic truss beams and frame problems. MATLAB programming and use of computer software. Cross-list: CEVE 527.
MECH 535 - INTRODUCTION TO ENERGY-EFFICIENT MECHATRONICS
Short Title: INTRO TO MECHATRONICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to electromechanical systems, focusing on motor mechanics, electric drives & electronics, & modern digital control algorithms. Covers basic principles of electromechanical energy conversion & motor control. Students are introduced to energy efficiency considerations of modern electric drives. Includes hands-on laboratory projects involving digital computer control of various motor types. Additional coursework required beyond the undergraduate course requirements. Cross-list: ELEC 532. Graduate/Undergraduate Equivalency: MECH 435. Mutually Exclusive: Credit cannot be earned for MECH 535 and MECH 435.

MECH 537 - DESIGN AND CONTROL OF COMPUTER NETWORKS
Short Title: COMMUNICATION NETWORKS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate-level introduction to design and analysis of communication networks. Topics include wireless networks, medium access, routing, traffic modeling, congestion control, and scheduling. Cross-list: ELEC 537.

MECH 550 - ALGORITHMIC ROBOTICS
Short Title: ALGORITHMIC ROBOTICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (COMP 221 or COMP 321) and COMP 215
Description: Robots have fascinated people for generations. Today, robots are built for applications as diverse as exploring remote planets, de-mining war zones, cleaning toxic waste, assembling cars, inspecting pipes in industrial plants and mowing lawns. Robots are also interacting with humans in a variety of ways: robots are museum guides, robots assist surgeon sin life threatening operations, and robotic cars can drive us around. The field of robotics studies not only the design of new mechanisms but also the development of artificial intelligence frameworks to make these mechanisms useful in the physical world, integrating computer science, engineering, mathematics and more recently biology and sociology, in a unique way. This class will present fundamental algorithmic advances that enable today’s robots to move in real environments and plan their actions. It will also explore fundamentals of the field of Artificial Intelligence through the prism of robotics. The class involves a significant programming project. Graduate/Undergraduate Equivalency: MECH 450. Mutually Exclusive: Credit cannot be earned for MECH 550 and MECH 450.

MECH 554 - COMPUTATIONAL FLUID MECHANICS
Short Title: COMPUTATIONAL FLUID MECHANICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MECH 371 (may be taken concurrently) or CEVE 363 (may be taken concurrently) or CHBE 401 (may be taken concurrently)
Description: Additional work required. Cross-list: BIOE 554, CEVE 554.
Graduate/Undergraduate Equivalency: MECH 454. Mutually Exclusive: Credit cannot be earned for MECH 554 and MECH 454.

MECH 555 - COMPUTATIONAL FLUID-STRUCTURE INTERACTION
Short Title: COMPUTATIONAL FSI
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (MECH 454 or BIOE 454 or CEVE 454) or (MECH 554 or BIOE 554 or CEVE 554)
Description: Components and challenges of fluid-structure interaction (FSI) computations. Finite element methods for flows with moving interfaces; space-time techniques. Fluid-structure interface projection techniques. Mesh moving and remeshing techniques. FSI coupling techniques for fluid, structure, and mesh equation blocks. FSI computation sequences. FSI contact algorithms, multiscale FSI, cardiovascular FSI, and parachute FSI.

MECH 556 - LEGAL THEMES IN ENGINEERING AND MANAGING PRACTICE
Short Title: LEGAL THEMES IN ENGI PRACTICES
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to fundamental legal concepts of the American legal system for upper level undergraduate students, primarily aimed at what engineers, scientists and other professionals could expect to encounter in their professional careers. The primary focus is to provide students with the basic tools to understand and interact with lawyers. Graduate/Undergraduate Equivalency: MECH 456. Mutually Exclusive: Credit cannot be earned for MECH 556 and MECH 456.

MECH 572 - AEROSPACE SYSTEMS ENGINEERING
Short Title: AEROSPACE SYSTEMS ENGINEERING
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Integration of engineering problem solving methodologies based on systems concepts. Applications to complex, large scale aerospace systems and problems faced by engineering managers. Recommended Prerequisite(s): MECH 472 and MECH 594.
MECH 573 - ADVANCED FLUID MECHANICS I
Short Title: ADVANCED FLUID MECHANICS I
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced fluid mechanics. Theoretical foundations and practical applications of fluid dynamics.

MECH 575 - INTRODUCTION TO HYDRODYNAMIC STABILITY
Short Title: INTRODUCTION TO HYDRODYNAMIC STABILITY
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to hydrodynamic stability theory and its applications in various fields.

MECH 576 - STRUCTURAL DYNAMIC SYSTEMS
Short Title: STRUCTURAL DYNAMIC SYSTEMS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to structural dynamic systems. Linear SDOF and MDOF discrete systems, undamped and damped systems, free and forced vibration, dynamic response to periodic and arbitrary excitations, numerical evaluation of dynamic response, response spectrum and modal analysis. Additional topics for graduate version 576: Linear systems theory, transform methods, state space methods, feedback control, observers and identification. Applications using MATLAB. Demonstrations and laboratory examples. Students will be required to do more advanced assignments and a project. Cross-list: CEVE 576. Recommended Prerequisite(s): MECH 371 or CEVE 363 or ESCI 460 or CAAM 436 or CHBE 401. Repeatable for Credit.

MECH 578 - MECHANICS AND KINEMATICS OF RESPIRATORY MUSCLE IN OBESITY
Short Title: MECHANICS AND KINEMATICS OF RESPIRATORY MUSCLE IN OBESITY
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course is designed to understand unique aspects of remodeling the respiratory system mechanics in obesity. Focus will be on remodeling of diaphragm muscle and chest wall as a consequence of obesity. In particular, alteration in the kinematics and mechanics of the diaphragm in obese subjects will be evaluated.

MECH 581 - MICRO AND NANO HEAT TRANSPORT METHODOLOGIES AND DESIGN
Short Title: MICRO AND NANO HEAT TRANSPORT METHODOLOGIES AND DESIGN
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate or Senior. Enrollment is limited to students with a major in Mechanical Engineering or Materials Science & NanoEng. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MECH 481

MECH 582 - CONVECTIVE HEAT TRANSFER
Short Title: CONVECTIVE HEAT TRANSFER
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Rigorous study of the transfer of heat by free and forced convection. Not offered every year.

MECH 586 - RESPIRATORY SYSTEM MECHANICS
Short Title: RESPIRATORY SYSTEM MECHANICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mechanics of ventilation, respiratory muscle mechanics, rib cage mechanics, mechanical coupling between the respiratory muscles and the rib cage, and inferences on mechanics from respiratory muscle anatomy. The class will meet in the Pulmonary Division at Baylor College of Medicine in the Texas Medical Center. Cross-list: BIOE 586.
MECH 588 - DESIGN OF MECHATRONIC SYSTEMS  
Short Title: DESIGN OF MECHATRONIC SYSTEMS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Additional work required. Graduate/Undergraduate  
Equivalency: MECH 488. Mutually Exclusive: Credit cannot be earned for MECH 588 and MECH 488.

MECH 591 - GAS DYNAMICS  
Short Title: GAS DYNAMICS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MECH 371  
Description: Study of the fundamentals of compressible, one-dimensional gas flows with area change, normal shocks, friction, and heat addition. Includes oblique shocks, Prandtl-Meyer flows expansions, and numerical techniques.

MECH 592 - DESIGN FOR AEROSPACE ENVIRONMENTS  
Short Title: AEROSPACE ENVIRONMENTS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Graduate course on aerospace environments, including theoretical bases. Topics include key mission phases, orbital mechanics, the effects of the sun, plasma, particles and ionizing radiation, neutral atmosphere, contamination, micrometeoroid/orbital debris, thermal and aerothermal environments. Extraterrestrial environments are briefly discussed.

MECH 593 - MECHANICAL ENGINEERING PROBLEMS  
Short Title: MECH ENGINEERING PROBLEMS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Mechanical Engineering. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: An approved investigation or design project under the direction of a member of the staff. Open only to mechanical engineering majors. Repeatable for Credit.

MECH 594 - INTRODUCTION TO AERONAUTICS  
Short Title: INTRODUCTION TO AERONAUTICS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MECH 371  
Description: Development of theories for the prediction of aerodynamic forces and moments acting on airfoils, wings, and bodies. Includes their design applications.

MECH 595 - MODELING TISSUE MECHANICS  
Short Title: MODELING TISSUE MECHANICS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Independent study and seminar course which focuses on modeling the mechanical properties of biological tissues. Data from experiments will be used to refine the predictions of nonlinear mathematical computer models. Aimed at juniors, seniors, and graduate students. Laboratory work performed at Baylor College of Medicine, computer work at Rice University. Cross-list: BIOE 595.

MECH 596 - INTRODUCTION TO FLIGHT MECHANICS  
Short Title: INTRO TO FLIGHT MECHANICS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MECH 371 or CEVE 371  
Description: This course will examine the basic flight mechanics of aircraft and spacecraft. Simulation exercises will be conducted to illustrate the principles. Recommended Prerequisite(s): MECH 594

MECH 598 - INTRODUCTION TO ROBOTICS  
Short Title: INTRODUCTION TO ROBOTICS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Introduction to the kinematics, dynamics, and control of robot manipulators and to applications of artificial intelligence and computer vision in robotics. Additional work required for Graduate course.  
Cross-list: COMP 598, ELEC 598. Graduate/Undergraduate Equivalency: MECH 498. Mutually Exclusive: Credit cannot be earned for MECH 598 and MECH 498.
MECH 599 - CURRENT TOPICS IN MECHANICAL ENGINEERING
Short Title: SPECIAL TOPICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Designed for senior and graduate level students. Lectures in areas of current interest in mechanical engineering. Topics may vary from term to term. Spring 2018: Section 001: Covers the science of surfaces interacting via dry, lubricated, and mixed (i.e., dry + lubricated) contact. Fundamental aspects include the Reynolds Equation, thermal-tribology, friction, and wear. Applied topics include bearings, surface analysis, nanomanufacturing, and biotribology. The course will conclude with a team project which will require computer programming. Section 002: This course will cover recent topics in neuroengineering, with a focus on human-machine interface systems for individuals with neurological impairment, bioinspired and wearable sensing and robotic systems for diagnostic, assistive, and therapeutic applications, and neurorehabilitation. Intended for graduate students with a background and interest in neuroengineering, robotics, control systems, signal processing, and biomechanics. This course will include a significant technical communications component (oral and written) covering the research pipeline process, and will require experimental work via project. Repeatable for Credit.

MECH 601 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics may vary. Please consult with the department for additional information. FA 2016, Section 001: Special Topics: Advanced Topics and Tools in Particle Flows & Tribology. Instructor Permission Required.

MECH 602 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics may vary. Please consult with the department for additional information.

MECH 606 - GRADUATE SEMINAR
Short Title: GRADUATE SEMINAR
Department: Mechanical Engineering
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MECH 611 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MECH 612 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MECH 620 - FUNDAMENTALS OF CONTROL SYSTEMS
Short Title: FUNDAMENTALS OF CONTROL SYST
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Linear systems and the fundamental principles of classical feedback control, state variable analysis of linear dynamic systems, stability of linear control systems, time-domain analysis and control of linear systems, root-locus analysis and design and pole-zero synthesis, frequency domain techniques for the analysis and design of control systems. Required for mechanical engineering majors in B.S. program. Additional work required for MECH 620. Cannot be taken if MECH 420 or ELEC 436 was previously taken. Instructor Permission Required. Graduate/Undergraduate Equivalency: MECH 420. Mutually Exclusive: Credit cannot be earned for MECH 620 and MECH 420.

MECH 621 - M.M.E. RESEARCH PROJECT I
Short Title: M.M.E. RESEARCH PROJECT I
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is the first part of the M.M.E. research project course. The faculty advisor, taking into account the background and research interests of the student as well as the research interests of the faculty advisor, will determine the contents. Course requirements will include a final report. Instructor Permission Required.

MECH 622 - M.M.E. RESEARCH PROJECT II
Short Title: M.M.E. RESEARCH PROJECT II
Department: Mechanical Engineering
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is the second part of the M.M.E. research project and continuation of MECH 621. Course requirements will include a final report.
MECH 654 - ADVANCED COMPUTATIONAL MECHANICS  
Short Title: ADV COMPUTATIONAL MECHANICS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): BIOE 554 or CEVE 554 or MECH 554 or CEVE 454 or MECH 454 or BIOE 454  

MECH 655 - ANALYSIS OF VIBRATIONS IN NONLINEAR SYSTEMS  
Short Title: NONLINEAR VIBRATIONS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MECH 502  
Description: Nonlinear vibrations are studied in structural and mechanical systems. Methods for the qualitative and quantitative analysis of these systems are applied. The classification and stability of equilibrium and periodic solutions are discussed for continuous time systems and discrete maps. Floquet theory and Poincare maps are used to study periodic behavior.

MECH 667 - NONLINEAR DYNAMIC BEHAVIOR IN MECHANIC SYSTEMS AND STRUCTURES  
Short Title: NONLINEAR DYNAMICS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MECH 502  
Description: Various types of nonlinear dynamic behavior are studied in mechanical systems and structures. The course will focus mainly on quasi-periodic and chaotic behavior but will also include periodic behavior. Modeling and analysis methods will be discussed for both discrete and continuous time systems including Lyapunov exponents and pseudo-state space. Recommended Prerequisite(s): MECH 665

MECH 678 - ADVANCED STOCHASTIC MECHANICS  
Short Title: ADV STOCHASTIC MECHANICS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Nonlinear random vibrations, Statistical Linearization, ARMA filters modeling, Monte Carlo Simulation, Wiener-Volterra series, time-variant structural reliability, and Stochastic Finite Elements are presented from a perspective of usefulness to aerospace, civil, marine, and mechanical applications. Cross-list: CEVE 678.

MECH 679 - APPLIED MONTE CARLO ANALYSIS  
Short Title: APPLIED MONTE CARLO ANALYSIS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Probability density and power spectrum based simulation concepts and procedures are discussed. Scalar and vectorial simulation are addressed. Spectral decomposition and digital filter algorithms are presented. Applications from aerospace, earthquake, marine, and wind engineering, and from other applied science disciplines are included. Cross-list: CEVE 679.

MECH 683 - RADIATIVE HEAT TRANSFER I  
Short Title: RADIATION HEAT TRSF I  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Rigorous study of the transfer of heat by radiant exchange in the absence of absorbing media.

MECH 691 - INTRODUCTION TO HYPERSONIC AERODYNAMICS  
Short Title: INTRO TO HYPERSONICS  
Department: Mechanical Engineering  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Recommended Prerequisite(s): MECH 591.

MECH 800 - RESEARCH AND THESIS  
Short Title: RESEARCH AND THESIS  
Department: Mechanical Engineering  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Research  
Credit Hours: 1-12  
Restrictions: Enrollment is limited to students with a major in Mechanical Engineering. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Repeatable for Credit.
Medieval/Early Modern Studies (MDEM)

MDEM 100 - ROMANCING RELIGION: NARRATIVES OF THE SACRED
Short Title: ROMANCING RELIGION
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines links between religious experience and romance narrative taking the grail as a focal point. We start with grail legends in the middle ages, explore historical associations of the grail with medieval Christianity, and end with quest narratives and grail motifs in modern occultism, fiction and film. This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 100, RELI 100.

MDEM 101 - ELEMENTARY LATIN I
Short Title: ELEMENTARY LATIN I
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Study of the fundamentals of Latin grammar with emphasis on acquisition of reading skills. Cross-list: LATI 101.

MDEM 102 - ELEMENTARY LATIN II
Short Title: ELEMENTARY LATIN II
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LATI 101 or MDST 101 or MDEM 101
Description: Continuation of LATI 101 and MDEM 101. Graduate students require permission of instructor. Cross-list: LATI 102.

MDEM 103 - INTRODUCTION TO JEWISH MYSTICISM
Short Title: INTRO TO JEWISH MYSTICISM
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Surveys the historical development and central themes of Jewish mysticism. From the bible to ancient mysticism to medieval Kabbalah to modern expressions, we will critically reflection the ideas such as divine presence in the world, the cultivation of insight and magical powers, contemplative and restorative practices, and charismatic authority. Cross-list: RELI 104.

MDEM 105 - INTRODUCTION TO MEDIEVAL CHRISTIAN THOUGHT
Short Title: MEDIEVAL CHRISTIAN THOUGHT
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of major medieval Christian thinkers. Primary focus on high and late middle ages (12th-15th century), with some attention to spiritual and apocalyptic writings and dissenting thought in this period. Cross-list: RELI 105.

MDEM 108 - ART IN CONTEXT: LATE MEDIEVAL AND RENAISSANCE CULTURE
Short Title: LATE MEDIEVAL & RENAISSANCE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will be concerned with art, architecture, and history of the late Middle Ages and Renaissance. We will employ historical texts, literature, and illustrations of works of art, showing how historical documents and sources can illuminate the cultural context of art and architecture. Cross-list: HART 240, HUMA 108.

MDEM 111 - INTRODUCTION TO THE HISTORY OF WESTERN ART I: PREHISTORIC TO GOTHIC
Short Title: INTRO TO HIST OF WESTERN ART I
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A survey of painting, sculpture, and architecture from Antiquity through the 15th century. Students will also attend a one-hour weekly tutorial with a teaching assistant. Cross-list: CLAS 102, HART 101.

MDEM 116 - MYSTICISM THROUGHOUT THE AGES
Short Title: MYSTICISM THROUGHOUT THE AGES
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines the historical development of mysticism in Western thought, placing the Christian experiential traditions in comparison with Jewish developments. Through mystical texts, we will explore key concepts, such as visions of God and spiritual journeys, as developed during late antiquity, the middle-ages, and into the early modern period. Cross-list: RELI 116.
MDEM 120 - MEDIEVAL CIVILIZATIONS
Short Title: MEDIEVAL CIVILIZATIONS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Focusing on the period between 300-1500 CE, the course will survey political institutions, society, and culture in medieval European, Byzantine, and Islamic civilizations. Topics include Christianization of Europe, the rise of Islam, the Crusades, scholastic theology, persecution of heretics, bubonic plague, and the rise of centralized monarchies. Cross-list: HIST 120.

MDEM 171 - THE BODY AND THE COSMOS IN THE MIDDLE AGES
Short Title: BODY & COSMOS IN MIDDLE AGES
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: What shaped medieval Christian notions of the body? How did common experiences of pain, sexuality, childbirth, and death refract the grasp of larger concepts - God, time, and the cosmos? This seminar will explore the issues connecting body to cosmos through close reading of medieval literary, mystical, and autobiographical texts. This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 171, RELI 171. Mutually Exclusive: Credit cannot be earned for MDEM 171 and FWIS 150.

MDEM 201 - HISTORY OF PHILOSOPHY I
Short Title: HISTORY OF PHILOSOPHY I
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of the major philosophers and philosophical systems of ancient Greece, from Parmenides to the Stoics. Cross-list: CLAS 201, PHIL 201.

MDEM 205 - MEDIEVAL MEDITERRANEAN WORLD
Short Title: MEDIEVAL MEDITERRANEAN WORLD
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Course examines the political, institutional, military, and cultural development of the societies that successively dominated the "Middle Sea" from AD 500-1500 in Europe and the Islamic World. It highlights the Mediterranean legacy of commercial, cultural, and religious exchange and coexistence, as well as its history of confrontation and warfare. Cross-list: HIST 205.

MDEM 210 - MEDIEVAL VIOLENCE
Short Title: MEDIEVAL VIOLENCE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Discussion course looks at private and large-scale warfare during the European Middle Ages. It considers how violence was legitimized and carried out, and examines attitudes towards violence and its effects on society. Topics include theoretical approaches to violence, crusading, chivalry, Truce of God, rituals of violence, military technologies, and cinematic portrayals of medieval warfare. Cross-list: HIST 211.

MDEM 211 - INTERMEDIATE LATIN I: PROSE
Short Title: INTERMEDIATE LATIN I: PROSE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Review of grammar and readings in Latin prose. Cross-list: LATI 201.

MDEM 212 - INTERMEDIATE LATIN II
Short Title: INTERMEDIATE LATIN II
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): LATI 201 or MDST 211 or MDEM 211

MDEM 222 - MEDIEVAL AND RENAISSANCE ERAS
Short Title: MEDIEVAL AND RENAISSANCE ERAS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): MUSI 211 or MUSI 317
Description: Introduction to the study of Western music history, with emphasis on music before 1600. Score reading ability required. Cross-list: MUSI 222.
MDEM 271 - MEDIEVAL POPULAR CHRISTIANITY
Short Title: MEDIEVAL POPULAR CHRISTIANITY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: For much of the Middle Ages, literacy was a luxury that ordinary people could not afford. How could peasants participate in Christian traditions? Course surveys devotional practices engaged by the laity, including penance, pilgrimage, plays, charms and spells, as well as traditions of lay interaction with dead saints and ghosts. Cross-list: RELI 271.

MDEM 281 - THE MIDDLE EAST FROM THE PROPHET MUHAMMAD TO SULAYMAN THE MAGNIFICENT
Short Title: PREMODERN MIDDLE EAST HISTORY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the Middle East from the rise of Islam to the middle of the 16th century. Topics include conquests and classical Islamic states, Arabization, Jewish and Christian communities, impact of Turkic peoples, and the Ottoman Empire, with emphasis on social, cultural, political, and religious trends that shaped the region’s history. Cross-list: HIST 281.

MDEM 301 - ANCIENT AND MEDIEVAL PHILOSOPHY
Short Title: ANCIENT & MEDIEVAL PHILOSOPHY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Thematic coverage of developments throughout the continent from the Lower Paleolithic to medieval times, with emphasis on food production, metallurgy and the rise of cities and complex societies. Cross-list: ANTH 312.

MDEM 308 - THE WORLD OF LATE ANTIQUITY
Short Title: THE WORLD OF LATE ANTIQUITY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the social, religious, and political history of the Roman world from Diocletian to the rise of Islam, with emphasis on the breaking of the unity of the Mediterranean world and the emergence of early medieval societies in the east and west. Cross-list: HIST 308.

MDEM 311 - AFRICAN PREHISTORY
Short Title: AFRICAN PREHISTORY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A various topics course that includes a wide range of reading of poems, prose, materials from chronicle, myth, and legend. Topics will vary from semester to semester. Cross-list: ENGL 312. Repeatable for Credit.
Course URL: www.english.rice.edu

MDEM 312 - TOPICS IN OLD ENGLISH
Short Title: TOPICS IN OLD ENGLISH
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics in the history of philosophy from the 4th century B.C. through the 14th century. Graduate students require permission of instructor. Credit may not be received for both MDEM 301 and MDEM 481. Cross-list: CLAS 301, PHIL 301. Mutually Exclusive: Credit cannot be earned for MDEM 301 and MDEM 481. Repeatable for Credit.

MDEM 313 - BEOWULF FOR THE 21ST CENTURY
Short Title: BEOWULF FOR THE 21ST CENTURY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A close reading of Beowulf with attention to Anglo-Saxon culture and Old English poetics. Cross-list: ENGL 313.
Course URL: www.english.rice.edu
MDEM 314 - DIVINE SEX: GENDER AND DIVINITY IN THE MIDDLE AGES
Short Title: DIVINE SEX
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine key medieval works, with special attention to women's writing, focusing on gender construction in mysticism and theology. Primary readings will include works by Hildegard of Bingen, Birgitta of Sweden, Margery Kempe, and others. Cross-list: RELI 314, SWGS 314.

MDEM 315 - MEDIEVAL CULTURES THROUGH FILM
Short Title: MEDIEVAL CULTURES THROUGH FILM
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An interdisciplinary course exploring the literature, art, philosophy, history, music, and science of the Middle Ages, with films by Pasolini, Bergman, Dreyer, Einstein, Annaud, Vigne, and others, and highlighted by a medieval banquet. Cross-list: ENGL 315.

MDEM 316 - CHAUCER
Short Title: CHAUCER
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to Geoffrey Chaucer's The Canterbury Tales, Middle English, and the political and cultural climate of the fourteenth century. Cross-list: ENGL 316, SWGS 305.

MDEM 317 - ARTHURIAN LITERATURE
Short Title: ARTHURIAN LITERATURE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A survey of the origins and development of the Arthurian legend from the earliest chronicles in the sixth century and later medieval French, Welsh, Irish, and English Arthurian poems to modern adaptations of Arthurian material, including films. Cross-list: ENGL 317, SWGS 301.

MDEM 319 - MEDIEVAL ROMANCE
Short Title: MEDIEVAL ROMANCE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course that examines the development of romance as a genre during the medieval period. Cross-list: ENGL 314.

MDEM 320 - DIRECTED READING IN MEDIEVAL STUDIES
Short Title: DIRECTED READING MEDIEVAL STDY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Independent Study
Distribution Group: Distribution Group I
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Student works one-on-one with an individual faculty member on a topic directly related to Medieval Studies. Instructor Permission Required.

MDEM 323 - RELIGIOUS VISUAL CULTURES IN TRADITIONAL CHINA
Short Title: CHINESE RELIGIOUS ART
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the visual materials and their context that shed light on pre-modern China's Buddhist, Daoist, funeral, and other diverse religious and ritual practices. Topics of discussion include iconic and aniconic traditions; breathing, meditation, and visualization; paradise and hell; body; ritual performance; patronage; Buddhist grottoes; tombs; multi-ethnic; printing. Cross-list: ASIA 323, HART 323.

MDEM 324 - COEXISTENCE IN MEDIEVAL SPAIN
Short Title: COEXISTENCE IN MEDIEVAL SPAIN
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course explores the history of the Iberian Peninsula from late Antiquity to the early 16th century, focusing on coexistence and conflict between medieval Spain's three religious communities - Christians, Jews, and Muslims. Cross-list: HIST 324.
MDEM 327 - EUROPEAN FRONTIER SOCIETIES
Short Title: MEDIEVAL BORDERLANDS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Courses examines the military, political, social and cultural developments on the European frontiers between 500-1500 AD. Topics include colonization and conquest, crusades and Spanish Reconquista, piracy, slavery, encounters with native peoples, spread of Christianity, medieval colonial regimes, map-making and cultural exchanges. Cross-list: HIST 327.

MDEM 330 - EARLY MEDIEVAL ART
Short Title: EARLY MEDIEVAL ART
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course begins with a study of the art and architecture of the Ostrogoths, Visigoths, Lombards, Celts, Anglo-Saxons, Franks, and Merovingians, and the transformation of the Roman World through new Germanic, Barbarian, and Christian forces. The second part of the course considers the cultural Renaissance of the Carolingian and Ottonian Periods under rulers such as Charlemagne and Otto III. The last third of the course focuses on themes of pilgrimage, relics, crusades and the emergence of new monumental tradition in art and architecture during the Romanesque Period. Cross-list: HART 330.

MDEM 331 - GOTHIC ART
Short Title: GOTHIC ART
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examination of the full array of sacred art and architecture produced in the early and high gothic periods in northern Europe. Includes cathedral architecture, sculpture, stained glass, manuscripts, and metalwork studies in relationship to the expansion of royal and Episcopal power. Cross-list: HART 331.

MDEM 332 - ART OF THE COURTS
Short Title: ART OF THE COURTS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of art in northern Europe from Jan van Eyck to Peter Bruegel. Cross-list: HART 332.

MDEM 340 - NORTHERN RENAISSANCE ART
Short Title: NORTHERN RENAISSANCE ART
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examination of art and architecture produced in the late gothic period within three distinct settings-the court, the city, and the church. Includes private, public, and religious life as expressed in the objects, architecture, and decoration of the castle and palace, the house, city hall and hospital, and the chapel and parish church. Cross-list: HART 340.

MDEM 343 - MASTERS OF THE BAROQUE ERA
Short Title: MASTERS OF THE BAROQUE ERA
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the works of the greatest painters and sculptors in Europe during the Baroque period. Includes Rembrandt, Rubens, Caravaggio, Poussin, Claude, and Velazquez. Cross-list: HART 343.

MDEM 345 - RENAISSANCE EUROPE
Short Title: RENAISSANCE EUROPE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How did the recovery of ancient texts shape the discovery of new worlds and perhaps the destruction of the old? This course explores major developments in western Europe from the rise of Italian humanism in the fourteenth century to the imperial expansion and devastating conflicts of the 1500s and 1600s. Cross-list: HIST 345.
MDEM 350 - DEMONS, MENTAL ILLNESS AND MEDICINE
Short Title: DEMONS/MENTAL ILLNESS/MEDICINE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Treats complex connections between religious beliefs/practices and formulation of human psychology in western tradition, through a historical reckoning with demonology. Consider the way demons are represented -- from semi-corporeal beings to marks of mental illness -- by looking at texts from the ancient world to modern psychiatry. Cross-list: RELI 350.

MDEM 357 - JEWS AND CHRISTIANS IN MEDIEVAL EUROPE
Short Title: JEWS & CHRISTIANS-MEDIEVAL EUR
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course will focus on Jewish-Christian coexistence in medieval Europe. Will examine the Jews’ legal status in Christendom, their communal life, economic activities, intellectual achievements, while also focusing on the complex dynamics of Jewish-Christian interaction, and the shifting patterns of persecution and acceptance. Cross-list: HIST 357.

MDEM 363 - THE RISE OF CAPITALISM AND LATE MEDIEVAL AND EARLY MODERN ART
Short Title: CAPITALISM & ART, 1300-1700
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will explore how the rise of capitalism affected late medieval and early modern art. It will explore depictions of avarice, charity, and poverty; representations of shopping; how the rise of the art market affected art production; images of different socio-economic classes, and the material culture of money. Cross-list: HART 364.

MDEM 364 - CENTRAL ASIAN CONQUEST EMPIRES
Short Title: CENTRAL ASIAN CONQUEST EMPIRES
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course examines the rise of Chingis Khan and Mongol Steppe society (religion, role of women, cultural exchange, strategies of violence, imperial ideologies) as well as successor empires: Yuan, Golden Horde, Ilkhanid and eventually that ruled by Timur/Taerlane, who reproduced Mongol imperial power in Central Asia and India. Cross-list: HIST 364.

MDEM 370 - INTRODUCTION TO TRADITIONAL CHINESE POETRY
Short Title: INTRO TO TRAD CHINESE POETRY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course seeks to decode enchanting features of traditional Chinese poetry through examining the transformation of poetic genres, the interaction between poetic creation and political, social and cultural changes, and the close association of poetry with art. Thus, this course also serves to understand Chinese culture and history through poetic perspectives. All readings in English translation. Cross-list: ASIA 330, CHIN 330.

MDEM 373 - CHINESE ART AND VISUAL CULTURE
Short Title: CHINESE ART AND VISUAL CULTURE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this course, we will study how various artistic styles developed in historical, social, and cultural contexts from the ancient period to the present day. Through the careful examination of architecture, calligraphy, painting, sculpture, ceramics, bronze, and film, students will gain a deeper understanding of Chinese art and visual culture. Cross-list: ASIA 372, HART 372.

MDEM 375 - INTRODUCTION TO CLASSICAL CHINESE NOVELS
Short Title: CLASSICAL CHINESE NOVELS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examination of the basic characteristics of classical Chinese novels, primarily through six important works from the 16th to 18th centuries: Water Margin, Monkey, Golden Lotus, Scholars, Romance of the Three Kingdoms, and Dream of the Red Chamber. Cross-list: ASIA 335, CHIN 335.

MDEM 376 - EAST & WEST: MEDIEVAL VISUAL CULTURE IN CHINA AND NORTHERN EUROPE
Short Title: EAST AND WEST
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores a series of issues that are critically important for the medieval art of both China and northern Europe. Topics include materials and techniques; public and private art: commerce, technology and prints; art and motion; archaeology; paradise and hell; maps and space; the gaze; erotica; patronage; and multiculturalism. Cross-list: ASIA 376, HART 376.
MDEM 377 - MEDIEVAL MANUSCRIPTS
Short Title: MEDIEVAL MANUSCRIPTS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar explores illuminated European manuscripts from late antiquity through the early sixteenth century. It examines manuscripts’ functions, patrons, makers, and materials and technique, as well as such issues as the relationship between text and image and the manuscript's ideological stance. Students have the opportunity to study original medieval illuminations. Cross-list: HART 377.

MDEM 378 - DUTCH ART IN THE AGE OF REMBRANDT
Short Title: DUTCH ART IN AGE OF REMBRANDT
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine Dutch and Flemish seventeenth-century art, including major masters, such as Rembrandt, Rubens, and Vermeer, and major developments, such as the rise of still life, genre, and landscape painting. Cross-list: HART 378.

MDEM 379 - WOMEN IN CHINESE LITERATURE
Short Title: WOMEN IN CHINESE LITERATURE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines women’s roles in Chinese Literature as writers, readers, and characters, focusing particularly on the tension between women’s lived bodily experiences and the cultural experiences inscribed on the female body and how, in the process, women have contrarily gendered patriarchal culture into their own. It will also touch on Chinese women’s incorporation of the Western Tradition. Cross-list: ASIA 399, SWGS 399.

MDEM 391 - THE REFORMATION & ITS RESULTS
Short Title: THE REFORMATION & ITS RESULTS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Theology and church-state issues from 16th-century Reformation to 17th-century; medieval background; Luther and Calvin, the Catholic Reformation; religious wars; Protestant orthodoxy; Pietist spirituality; Puritanism; and calls for toleration. Cross-list: RELI 391. Mutually Exclusive: Credit cannot be earned for MDEM 391 and RELI 286.

MDEM 395 - CLASSICAL CHINESE NOVELS
Short Title: CLASSICAL CHINESE NOVELS
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to the phonology and morphology of Middle High German, such as will prepare students to read 'Tristan', 'Parzifal', and the 'Niebelungenlied', as well as the great lyric poets of that period. Emphasis will be on pronunciation and grammatical distinctions between Middle High and Modern High German as well as on the diverging semantic developments of the two vocabularies.

MDEM 402 - MIDDLE HIGH GERMAN
Short Title: MIDDLE HIGH GERMAN
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to the phonology and morphology of Middle High German, such as will prepare students to read 'Tristan', 'Parzifal', and the 'Niebelungenlied', as well as the great lyric poets of that period. Emphasis will be on pronunciation and grammatical distinctions between Middle High and Modern High German as well as on the diverging semantic developments of the two vocabularies.

MDEM 404 - BEGINNINGS OF THE LANGUAGE AND LITERATURE OF FRANCE
Short Title: THE LANG AND LIT OF FRANCE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course includes an external history of the French language, an examination of hagiographic literature and the chanson de geste in their cultural and artistic contexts, as well as bibliographic component to acquaint the students with library tools available for research emphasizing medieval resources but not excluding those for later periods. Students will acquire a reading knowledge of Old French. Course taught in French. Cross-list: FREN 404. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.
MDEM 411 - THE LITERARY AND HISTORICAL IMAGE OF THE MEDIEVAL WOMAN
Short Title: LIT & HIST IMAGE MED WOMAN
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): FREN 311 or FREN 312
Description: Comparison and contrast of the presentation of the medieval woman in literature with evidence of historical women from contemporary documents and records.

MDEM 412 - INTRODUCTION TO OLD ENGLISH LANGUAGE
Short Title: INTRO TO OLD ENGLISH LANGUAGE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 412 or MDST 412 or MDEM 412
Description: An introduction to the language, prose and shorter poems. Cross-list: ENGL 412.

MDEM 413 - BEOWULF IN OLD ENGLISH
Short Title: BEOWULF IN OLD ENGLISH
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ENGL 412 or MDEM 412
Description: A course in the study of Beowulf in Old English. Cross-list: ENGL 413. Repeatable for Credit.

MDEM 425 - COURTLY LOVE IN MEDIEVAL FRANCE
Short Title: COURTLY LOVE MEDIEVAL FRANCE
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): FREN 311 or FREN 312
Description: Undergraduate version of FREN 515. Study of the Occitan and Old French poetry that served as the source of the kind of love that came to be called "amour courtois" in the 19th century. Cross-list: FREN 415. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor.

MDEM 427 - TOPICS IN EARLY MUSIC
Short Title: TOPICS IN EARLY MUSIC
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level

MDEM 429 - MUSIC OF THE MIDDLE AGES
Short Title: MUSIC OF THE MIDDLE AGES
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A study of the major musical styles and composers of western art music before 1400 and their historical, cultural, and sociological contexts. Cross-list: MUSI 429.

MDEM 431 - ARCHITECTURE OF THE GOTHIC CATHEDRAL FROM THE MIDDLE AGES TO THE TWENTIETH CENTURY
Short Title: ARCH OF GOTHIC CATHEDRAL
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will focus on one of the most important contributions to the history of western architecture--the Gothic cathedral. The course will approach the material from a number of different perspectives--the formal and technical development of Gothic architecture; the Medieval architect and the design of Gothic buildings; the social, economic, and political history of "big church" building in the Middle Ages; Gothic architecture as experience and metaphor; and the afterlife of the Gothic cathedral from Vasari to the National Cathedral in Washington, D.C. Cross-list: HART 431.

MDEM 434 - SEEING SEX IN EUROPEAN ART, 1400-1700
Short Title: SEEING SEX IN EUROPEAN ART
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine the visual history of sexuality from 1400-1700. It will explore how imagery structured sexual desire; the role of erotic sacred art; the rise of pornography; the intersection of spatial topography and sexuality; the linkage of licit and illicit sexualities; and the sexuality of artist and patrons. Cross-list: HART 434, SWGS 434.

MDEM 435 - MULTICULTURAL EUROPE, 1400-1700
Short Title: MULTICULTURAL EUROPE, 1400-1700
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine the visual history of sexuality from 1400-1700. It will explore how imagery structured sexual desire; the role of erotic sacred art; the rise of pornography; the intersection of spatial topography and sexuality; the linkage of licit and illicit sexualities; and the sexuality of artist and patrons. Cross-list: HART 435, HIST 443.
MDEM 436 - LITERATURE AND CULTURE OF THE MIDDLE AGES: KING ARTHUR
Short Title: LIT & CULTURE OF MIDDLE AGES
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): FREN 311 or FREN 312
Description: Examination of the origins of the legend of King Arthur and reasons for its popularity, particularly in literature of the French Middle Ages but also in other medieval literatures of Western Europe. Includes discussion of the legend's influence in diverse areas even in modern times. Cross-list: FREN 416. Recommended Prerequisite(s): Completion of one 300-level course or permission of instructor

MDEM 444 - VISIONS AND VISIONARY PRACTICES: MEDIEVAL TO MODERN
Short Title: VISIONS & VISIONARY PRACTICES
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines accounts of visions, comparing medieval and modern visionary techniques and processes and relating visionary writings to cultural and personal contexts. Includes some Christian theology along with other theoretical frameworks, but emphasis on praxis. Cross-list: RELI 444.

MDEM 456 - COLLEGIUM MUSICUM
Short Title: COLLEGIUM MUSICUM
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Performance of music up to the early 17th century. Does not count as chamber music. Instructor permission required. Repeatable for credit. Instructor Permission Required. Cross-list: MUSI 436. Repeatable for Credit.

MDEM 462 - ENGLISH SPIRITUALITY AFTER HENRY VIII: PROTESTANT, CATHOLIC, OR ANGLICAN?
Short Title: ENGLISH SPIRITUALITY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Reformation's aftermath explored through key topics, texts in spiritual practice, e.g.: ecclesiastical discipline; secularization; stylized and free-form intersections of English time with Christian eternity; King James Bible; Book of Common Prayer; "saintly revolution;" Thomas Cranmer; William Laud; William Shakespeare; Lancelot Andrewes; John Donne; J.H. Newman; hymnody; C.S. Lewis; T.S. Eliot. Cross-list: RELI 462.

MDEM 478 - MEDIEVAL STUDIES
Short Title: MEDIEVAL STUDIES
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Special Topics in medival Europe comparative literature. Repeatable for Credit.

MDEM 481 - ANCIENT AND MEDIEVAL PHILOSOPHY
Short Title: ANCIENT & MEDIEVAL PHILOSOPHY
Department: Medieval/Early Modern Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics in the history of philosophy from the 4th century B.C. through the 14th century. Mutually Exclusive: Credit cannot be earned for MDEM 481 and CLAS 301/MDEM 301/MDST 301/PHIL 301.

Mgmt Integrated Crse Offering (MICO)

MICO 601 - CRITICAL THINKING AND STRATEGIC DECISION MAKING
Short Title: CRITICAL THINKING & DECISION
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 6
Course Level: Graduate

MICO 602 - CUSTOMER FOCUS PRODUCT MANAGEMENT FOR OILFIELD SERVICES FIRMS
Short Title: CUSTOMER FOCUS PRODUCT MGMT
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Course Level: Graduate
Description: Understanding customer needs, and developing products that successfully meet those needs is a cornerstone of success for oilfield services firms. Products in such firms may range from nuts and bolts to multi$ million dollar rigs. How should firms ensure that their products, processes, people, and pricing strategies are aligned to customer needs? The course will introduce a strategic framework that can enable firms to become customer focused, gain competitive advantage, become financially disciplined, and develop strategic focus. Case studies and articles from business press will be used to illustrate the key concepts. Department Permission Required.
MICO 603 - STRATEGIC DESIGN AND MANAGEMENT OF LOGISTICS
DISTRIBUTION NETWORKS FOR THE ENERGY INDUSTRY
Short Title: STRATEGY DGN & MGMT: LOGISTICS
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Course Level: Graduate
Description: This course provides the necessary quantitative modeling techniques for managers to address logistics problems – that is, finding the least expensive way to transport products from their origin to their destinations. Real logistic problems are often coupled with manufacturing/plant location decisions. We will study both Linear and Non-Linear modeling techniques. Many of these problems have a natural graphical network representation and are part of the minimum cost network flow model. Specific examples of network optimization problems include plant location problems, transportation problems, shortest route problems, maximal flow problems, equipment replacement problems and others. We will develop the basic concepts behind those methodologies with simple examples and then use them to solve complex problems in the oil and gas industry. We will use excel and other appropriate software. Department Permission Required.

MICO 604 - MINDFULNESS AND PERFORMANCE IN HIGH RELIABILITY ORGANIZATIONS
Short Title: MINDFULNESS AND PERFORMANCE
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: While organizations frequently discuss the importance of safety, safety incidents are both commonplace and costly across a number of industries. This course is designed to equip you with tools and insights that will help you and your organization prevent costly, safety-related errors and achieve higher and more reliable performance. Department Permission Required.

MICO 605 - MANAGING FOREIGN MARKET ENTRY FOR THE ENERGY INDUSTRY
Short Title: MANAGING FOREIGN MARKET ENTRY
Department: Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides the necessary quantitative modeling techniques for managers to address logistics problems – that is, finding the least expensive way to transport products from their origin to their destinations. Real logistic problems are often coupled with manufacturing/plant location decisions. We will study both Linear and Non-Linear modeling techniques. Many of these problems have a natural graphical network representation and are part of the minimum cost network flow model. Specific examples of network optimization problems include plant location problems, transportation problems, shortest route problems, maximal flow problems, equipment replacement problems and others. We will develop the basic concepts behind those methodologies with simple examples and then use them to solve complex problems in the oil and gas industry. We will use excel and other appropriate software. Department Permission Required.

MILI 106 - INTERMEDIATE PHYSICAL FITNESS
Short Title: INTRO TO PHYSICAL FITNESS
Department: Military Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Physically demanding. Develops skills through team competition. Land navigation, assembly/disassembly of weapon, tactics, assembly of one-man rope bridge. Students are also required to attend fitness training 5 times a week. Participants compete for Ranger Challenge slots. Selected cadets compete against other teams at the annual Ranger Challenge competition. Course taught at the University of Houston. Must provide CC Form 139-r to Military Science Dept. at UH prior to attendance. Recommended prerequisite(s): Must be ROTC cadet. MUST BE ENROLLED IN ONE OF THE FOLLOWING COURSES: MILI 121, MILI 201, MILI 301 OR MILI 401. Faculty: Al Francis. Repeatable for Credit.

MILI 109 - INTRODUCTION TO PHYSICAL FITNESS
Short Title: INTRO TO PHYSICAL FITNESS
Department: Military Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Open to all students. Utilizes Army fitness techniques; develops strength, flexibility and endurance; develops self-confidence through leadership training and physical activities. Course taught at the University of Houston. Must provide CC Form 139-r to Military Science Dept. at UH prior to attendance. Repeatable for Credit.

MILI 121 - INTRODUCTION TO LEADERSHIP
Short Title: INTRODUCTION TO LEADERSHIP
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Principles of effective leadership and reinforcement of self-confidence through participation in physically and mentally challenging training with upper-division ROTC students; develop communication skills to improve individual performance and group interaction. One hour classroom session and a required lab. No military commitment is required for attending this course. Course taught at the University of Houston. Must provide CC Form 139-r to Military Science Dept. at UH prior to attendance. Department Permission Required.
MILI 122 - INTRODUCTION TO LEADERSHIP II
Short Title: INTRODUCTION TO LEADERSHIP II
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Continuation of MILI 121. One hour classroom session and a required lab. No military commitment is required for attending this course. Course taught at the University of Houston. Must provide CC Form 139-r to Military Science Dept. at UH prior to attendance. Department Permission Required.

MILI 123 - LEADERSHIP LAB
Short Title: LEADERSHIP LAB
Department: Military Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 0
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Characteristics of leadership, problem analysis, decision making, oral presentations, first aid, small unit tactics, land navigation, fitness training. Fitness training required two times per week in addition to class and lab. Course taught at the University of Houston. Must provide CC Form 139-r and DA 3425 to Military Science Dept. at UH prior to attendance. Department Permission Required.

MILI 201 - FOUNDATIONS OF LEADERSHIP
Short Title: FOUNDATIONS OF LEADERSHIP
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Continuation of MILI 201. Course taught at the University of Houston. Must provide CC Form 139-r to Military Science Dept. at UH prior to attendance. Department Permission Required.

MILI 202 - FOUNDATIONS OF LEADERSHIP II
Short Title: FOUNDATIONS OF LEADERSHIP II
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Continuation of MILI 201. Course taught at the University of Houston. Must provide CC Form 139-r to Military Science Dept. at UH prior to attendance. Department Permission Required.

MILI 203 - LEADERSHIP LABORATORY
Short Title: LEADERSHIP LABORATORY
Department: Military Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 0
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Course taught at the University of Houston. Must provide CC Form 139-r and DA 3425 to Military Science Dept. at UH prior to attendance. Department Permission Required.

MILI 281 - LEADER TRAINING COURSE (LTC)
Short Title: LEADER TRAINING COURSE (LTC)
Department: Military Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 8
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Four week off campus field training practicum. Introduces students to the Army and Leadership. No military obligation is associated with this course. Course taught at the University of Houston. Department Permission Required.

MILI 301 - ADVANCED LEADERSHIP
Short Title: ADVANCED LEADERSHIP
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Leadership training, preparing combat orders, military instruction principles, small unit tactics, and tactical communications. Course is designed to prepare students for Leader Development Assessment Course (LDAC). In addition to class, students must attend lab and physical fitness training. Course taught at the University of Houston. Department Permission Required.

MILI 302 - ADVANCED LEADERSHIP II
Short Title: ADVANCED LEADERSHIP II
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Continuation of MILI 301. Course taught at the University of Houston. Department Permission Required.

MILI 304 - LEADERSHIP LABORATORY
Short Title: LEADERSHIP LABORATORY
Department: Military Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 0
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course taught at the University of Houston. Department Permission Required.

MILI 349 - LEADER DEVELOPMENT ASSESSMENT
Short Title: LEADER DEVELOPMENT ASSESSMENT
Department: Military Science
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MILI 302
Description: Off campus field training practicum stressing application of leadership management with emphasis on tactical and special military skills. Course taught at the University of Houston. Department Permission Required.
MILI 398 - SPECIAL PROBLEMS
Short Title: SPECIAL PROBLEMS
Department: Military Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course taught at the University of Houston. Department Permission Required.

MILI 401 - ADAPTIVE LEADERSHIP
Short Title: ADAPTIVE LEADERSHIP
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MILI 302
Description: Leadership and command, military law, administrative/staff operations and procedures, dynamics of the military team, training management, ethics and professionalism. Prepares students for commissioning as an Army Officer. In addition to class, students must attend lab and physical fitness training. Course taught at the University of Houston. Department Permission Required.

MILI 402 - LEADERSHIP IN A COMPLEX WORLD
Short Title: LEADERSHIP IN A COMPLEX WORLD
Department: Military Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MILI 302
Description: Continuation of MILI 401. Course taught at the University of Houston. Department Permission Required.

MILI 403 - LEADERSHIP LABORATORY
Short Title: LEADERSHIP LABORATORY
Department: Military Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 0
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course taught at the University of Houston. Department Permission Required.

MILI 439 - SPECIAL PROBLEMS
Short Title: SPECIAL PROBLEMS
Department: Military Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course taught at the University of Houston. Department Permission Required.

Music (MUSI)

MUSI 117 - FUNDAMENTALS OF MUSIC I
Short Title: FUNDAMENTALS OF MUSIC I
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: For non-music majors with minimal music preparation. Rudiments of pitch and duration. Study of scales, chord structure, tonality, and forms.

MUSI 119 - EXPERIENCING MUSIC, EXPRESSING CULTURE: AN INTRODUCTION TO CHINESE MUSIC
Short Title: INTRODUCTION TO CHINESE MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course is an introduction to Chinese music in the context of its historical and cultural evolution. It will explore the music on its own terms and in comparison to Western classical music.

MUSI 141 - CLASSICAL GUITAR/NON-MAJOR
Short Title: CLASSICAL GUITAR/NON-MAJOR
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Private instruction on guitar. Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 151 - FLUTE FOR NON-MAJORS
Short Title: FLUTE FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 153 - OBOE FOR NON-MAJORS
Short Title: OBOE FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.
MUSI 155 - CLARINET FOR NON-MAJORS
Short Title: CLARINET FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 157 - BASSOON FOR NON-MAJORS
Short Title: BASSOON FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 161 - HORN FOR NON-MAJORS
Short Title: HORN FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 163 - TRUMPET FOR NON-MAJORS
Short Title: TRUMPET FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 165 - TROMBONE FOR NON-MAJORS
Short Title: TROMBONE FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 167 - TUBA FOR NON-MAJORS
Short Title: TUBA FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 171 - PERCUSSION FOR NON-MAJORS
Short Title: PERCUSSION/NON MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 173 - VOICE FOR NON-MAJORS
Short Title: VOICE FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 181 - PIANO FOR NON-MAJORS
Short Title: PIANO FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 183 - ORGAN FOR NON-MAJORS
Short Title: ORGAN FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.
MUSI 187 - HARP FOR NON-MAJORS
Short Title: HARP FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 191 - VIOLIN FOR NON-MAJORS
Short Title: VIOLIN FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 193 - VIOLA FOR NON-MAJORS
Short Title: VIOLA FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 195 - VIOLONCELLO FOR NON-MAJORS
Short Title: VIOLONCELLO FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 197 - DOUBLE BASS FOR NON-MAJORS
Short Title: DOUBLE BASS FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Must register with the Shepherd School and the Registrar’s Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 205 - UNDERGRADUATE PERFORMANCE SEMINAR
Short Title: UG PERFORMANCE SEMINAR
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course is designed to create a dynamic performance experience. Practical exercises that harness, develop and enhance performance skills will be a major focus. Areas of study include efficient practice and performance preparation, confidence on stage, and audience communication. A final performance will incorporate skills developed throughout the semester. NOTE: For Music Majors Only

MUSI 211 - THEORY I
Short Title: THEORY I
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Intensive study of the fundamentals of pitch, rhythm, and timbre. Introduction to diatonic harmony and harmonic progression.

MUSI 212 - THEORY II
Short Title: THEORY II
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Harmony and counterpoint of the Baroque and Classical Eras.

MUSI 220 - SURVEY OF WORLD MUSIC
Short Title: SURVEY OF WORLD MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Traditional, popular and classical musical styles from around the world will be explored for their sonic qualities as well as from an ethno musicological perspective, i.e., in terms of the music's’ interaction with cultural elements such as cosmology, social structure, art, language, economics and politics.
MUSI 222 - MEDIEVAL AND RENAISSANCE ERAS
Short Title: MEDIEVAL AND RENAISSANCE ERAS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): MUSI 211 or MUSI 317
Description: Introduction to the study of Western music history, with emphasis on music before 1600. Score reading ability required. Cross-list: MDEM 222.

MUSI 231 - AURAL SKILLS AND PERFORMANCE TECHNIQUE I
Short Title: AURAL SKILLS & PERFORM TECH I
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Preliminary studies in ear-training, sight-singing, and dictation.

MUSI 232 - AURAL SKILLS AND PERFORMANCE TECHNIQUE II
Short Title: AURAL SKILLS & PERF TECH II
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Continuation of MUSI 231.

MUSI 236 - MUSIC HISTORY THROUGH TECHNOLOGY
Short Title: MUSIC HISTORY THRU TECHNOLOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An exploration of music history and literature taught electronically.

MUSI 240 - UNITY AND VARIETY IN MUSIC
Short Title: UNITY AND VARIETY IN MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: In music, as in life, we need unity and variety: expectations met and occasional surprises. Through studying folk, pop, and art songs, piano solos, instrumental sonatas, chamber and orchestral music, this course helps students become more perceptive listeners by investigating how composers manipulate musical elements to balance unity and variety. Must be able to read music.
MUSI 265 - SECONDARY TROMBONE
Short Title: SECONDARY TROMBONE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 267 - SECONDARY TUBA
Short Title: SECONDARY TUBA
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 271 - SECONDARY PERCUSSION
Short Title: SECONDARY PERCUSSION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 273 - SECONDARY VOICE
Short Title: SECONDARY VOICE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 281 - SECONDARY PIANO
Short Title: SECONDARY PIANO
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 285 - SECONDARY HARPSICHORD
Short Title: SECONDARY HARPSICHORD
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 287 - SECONDARY HARP
Short Title: SECONDARY HARP
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 291 - SECONDARY VIOLIN
Short Title: SECONDARY VIOLIN
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 293 - SECONDARY VIOLA
Short Title: SECONDARY VIOLA
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 295 - SECONDARY VIOLONCELLO
Short Title: SECONDARY VIOLONCELLO
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.

MUSI 297 - SECONDARY DOUBLE BASS
Short Title: SECONDARY DOUBLE BASS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Repeatable for Credit.
MUSI 303 - UNDERGRAD COMPOSITION SEMINAR
Short Title: UNDERGRAD COMPOSITION SEMINAR
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 305 - COMPOSITION ELECTIVE
Short Title: COMPOSITION ELECTIVE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Must register with the Shepherd School of Music and the Registrar's office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 307 - COMPOSITION FOR NON-MAJORS
Short Title: COMPOSITION FOR NON-MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Creative composition employing 20th and 21st century vocabularies. Repeatable for Credit.

MUSI 311 - THEORETICAL STUDIES III
Short Title: THEORETICAL STUDIES III
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of music from the Classical Era through the late Nineteenth Century, with particular focus on phrase structure, form and chromatic harmony.

MUSI 312 - THEORETICAL STUDIES IV
Short Title: THEORETICAL STUDIES IV
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Analysis of selected works composed since 1900

MUSI 316 - EXPERIMENTAL SOUND AND VIDEO
Short Title: EXPERIMENTAL SOUND AND VIDEO
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The purpose of this course is to create experimental, collaborative digital media artworks. Students will learn the basic tools and techniques of digital video and audio production. Students will engage in experiment with sound and moving images by working to complete a number of short projects. Pre-registration of this course is limited to 8 students. 4 additional places will be reserved for VADA and Shepherd School of Music majors. Cross-list: FILM 323. Repeatable for Credit.

MUSI 317 - THEORY FOR NON-MAJORS I
Short Title: THEORY FOR NON MAJORS I
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of harmony, melody, rhythm, and form.

MUSI 318 - THEORY FOR NON-MAJORS II
Short Title: THEORY FOR NON-MAJORS II
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MUSI 317
Description: Continuation of MUSI 317.

MUSI 321 - BAROQUE AND EARLY CLASSICAL ERAS
Short Title: BAROQUE & EARLY CLASSICAL ERAS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MUSI 212 or MUSI 317) and (MUSI 222 or MDST 222)
Description: Advanced historical studies in music of the seventeenth and eighteenth centuries. Score reading ability required.
MUSI 322 - CLASSICAL AND ROMANTIC ERAS
Short Title: CLASSICAL AND ROMANTIC ERAS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MUSI 321
Description: Advanced historical studies in the music of the eighteenth and nineteenth centuries. Score reading ability required.

MUSI 327 - MUSIC LITERATURE FOR NON-MAJORS I
Short Title: MUSIC LIT NON-MAJORS I
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Historical survey of music from the Middle Ages to 1750.

MUSI 328 - MUSIC LITERATURE FOR NON-MAJORS II
Short Title: MUSIC LIT NON-MAJORS II
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Historical survey of music from 1750 to the present.

MUSI 329 - SPECIAL STUDIES IN MUSIC HISTORY
Short Title: SPEC STUDIES IN MUSIC HISTORY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Special studies in music history. Topics may vary. Please consult with the department for additional information. Repeatable for Credit.

MUSI 331 - AURAL SKILLS AND PERFORMANCE TECHNIQUES III
Short Title: AURAL SKILLS & PERF TECH III
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Continuation of MUSI 232.

MUSI 332 - AURAL SKILLS AND PERFORMANCE TECHNIQUES IV
Short Title: AURAL SKILLS & PERF TECH IV
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Continuation of MUSI 331.

MUSI 334 - CAMPANILE ORCHESTRA
Short Title: CAMPANILE ORCHESTRA
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Registration is by audition only. This course requires weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.

MUSI 335 - UNDERGRADUATE CHORUS
Short Title: RICE CHORALE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.

MUSI 336 - UNDERGRADUATE OPERA WORKSHOP
Short Title: UNDERGRADUATE OPERA WORKSHOP
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Operatic techniques for the singer/actor: the cultivation, through study and performance, of free, expressive and significant movement on stage, and the development of musical, dramatic and muscular sensitivity as the basis of good opera theater. Participation in scenes programs. On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.

MUSI 337 - UNDERGRADUATE ORCHESTRA
Short Title: UNDERGRADUATE ORCHESTRA
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.
MUSI 338 - UNDERGRADUATE CHAMBER MUSIC
Short Title: CHAMBER MUSIC - UG
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. NOTE: ALL STUDENTS INTERESTED IN REGISTERING FOR CHAMBER MUSIC SHOULD REGISTER IN SECTION 1. Repeatable for Credit.

MUSI 339 - UNDERGRADUATE ORCHESTRAL REPETOIRE
Short Title: UG ORCHESTRAL REP
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Section 1: Violin; Section 2: Viola; Section 3: Cello; Section 4: Double Bass; Section 5: Woodwinds; Section 6: Brass; Section 7: Percussion; Section 8: Harp. Repeatable for Credit.

MUSI 340 - RICE SYMPHONIC BAND
Short Title: RICE SYMPHONIC BAND
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Section 1: SYMPHONIC BAND, TUD Band Hall; Section 2: CHAMBER MUSIC FOR NON-MAJORS: students with already-formed chamber ensembles will apply for this course in the fall. See bands.rice.edu for applications. Those selected will be given instructor permission for the spring semester. Repeatable for Credit.

MUSI 341 - JUNIOR RECITAL
Short Title: JUNIOR RECITAL
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required.

MUSI 342 - RICE JAZZ ENSEMBLE
Short Title: RICE JAZZ ENSEMBLE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Section 1, Jazz Ensemble; Section 2, Jazz Lab. TUD Band Hall. On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.

MUSI 345 - APPLIED STUDIES IN JAZZ
Short Title: APPLIED STUDIES IN JAZZ
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Private lessons on specific advanced techniques in jazz improvisation. Must register with the Shepherd School and the Registrar's Office by the first week of classes. Department Permission Required. Repeatable for Credit.

MUSI 351 - CONCENTRATION FLUTE
Short Title: CONCENTRATION FLUTE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 353 - CONCENTRATION OBOE
Short Title: CONCENTRATION OBOE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 355 - CONCENTRATION CLARINET
Short Title: CONCENTRATION CLARINET
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 357 - CONCENTRATION BASSOON
Short Title: CONCENTRATION BASSOON
Department: Music
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 361 - CONCENTRATION HORN
Short Title: CONCENTRATION HORN
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.
MUSI 363 - CONCENTRATION TRUMPET
Short Title: CONCENTRATION TRUMPET
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 365 - CONCENTRATION TROMBONE
Short Title: CONCENTRATION TROMBONE
Department: Music
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 367 - CONCENTRATION TUBA
Short Title: CONCENTRATION TUBA
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 371 - CONCENTRATION PERCUSSION
Short Title: CONCENTRATION PERCUSSION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 373 - CONCENTRATION VOICE
Short Title: CONCENTRATION VOICE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 377 - UNDERGRADUATE OPERA PERFORMANCE
Short Title: UG OPER PERFORMANCE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 1-2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: After audition, Director of Opera Studies makes role assignments and grants credit to roles. Leading roles get 2 credits, small roles and chorus in opera get 1 credit. Instructor Permission Required. Repeatable for Credit.

MUSI 378 - CLASSICAL, CONTEMPORARY, AND CROSS-CULTURAL ASIAN MUSIC
Short Title: CROSS-CULTURAL ASIAN MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will focus on traditional and contemporary art music from Asia. The classroom lectures are designed to introduce and accompany one or two events which will include live performances, workshops, lectures by invited performers and scholars. This course may be repeated since each year the countries and invited guest performers/scholars will represent different geographical areas. Cross-list: ASIA 378. Repeatable for Credit.

MUSI 379 - CREATIVITY UP CLOSE
Short Title: CREATIVITY UP CLOSE
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This inter-disciplinary course explores creativity in human behavior and society. Seminars focus on the neuroscience, psychology, sociology and economics of creativity. Students develop hands-on creative projects in oral history, music, industrial design and video. No prior experiences in study of these disciplines required.

MUSI 381 - CONCENTRATION PIANO
Short Title: CONCENTRATION PIANO
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 383 - CONCENTRATION ORGAN
Short Title: CONCENTRATION ORGAN
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 384 - CONCENTRATION ORGAN INTENSIVE
Short Title: CONCENTRATION ORGAN INTENSIVE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.
MUSI 387 - CONCENTRATION HARP  
Short Title: CONCENTRATION HARP  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Laboratory  
Credit Hours: 2  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Repeatable for Credit.  

MUSI 389 - COLLABORATIVE PIANO SKILLS  
Short Title: COLLABORATIVE PIANO SKILLS  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 1  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: A practicum exploring the pianist as an ensemble player.  
3 sessions weekly. Performance class for pianists in partnership with  
instrumentalists and singers-particular techniques discovered in balance,  
pedaling, articulation, style, etc.; Supervised sight-reading private  
appointment with instructor on individual repertoire-songs, sonatas,  
concerto reductions, etc. Instructor Permission Required. Repeatable for  
Credit.
MUSI 413 - INTRODUCTION TO DALCROZE EURHYTHMICS
Short Title: DALCROZE EURHYTHMICS
Department: Music
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Dalcroze Eurhythmics is a musical education which aims to engage and utilize one's whole being in the learning process. Students will explore very basic to quite complex rhythmic concepts through experiencing their own inner fluidity and spacial energy. The class is designed around the philosophy and teachings of Emile Jaques-Dalcroze. Department Permission Required.

MUSI 414 - PIANO CHAMBER MUSIC LITERATURE
Short Title: PIANO CHAMBER MUSIC LITERATURE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Survey on 20th and 21st century chamber music with piano. Instructor Permission Required.

MUSI 415 - BAND ARRANGING
Short Title: BAND ARRANGING
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Creative band arranging for marching, jazz, and concert bands. Study of contemporary harmony, musical style, and scoring supported by practical performance and analysis of student projects. Meets in TUD S101A. Repeatable for Credit.

MUSI 416 - ORCHESTRATION
Short Title: ORCHESTRATION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Intensive study of the individual instruments of the orchestra and orchestration technical from the classical period through the present. Works for analysis include those by Mozart, Beethoven, and Ravel. Students will also form an ensemble and arrange/orchestrate works for the ensemble.

MUSI 417 - MUSIC FOR MEDIA
Short Title: MUSIC FOR MEDIA
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An overview of writing music for linear and non-linear media, includes motion pictures, television, interactive and passive multimedia and digital games. Instructor Permission Required.

MUSI 421 - THE MODERN ERA
Short Title: THE MODERN ERA
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Pre requisite(s): MUSI 322
Description: Advanced historical studies in music of the twentieth and twenty-first centuries. Score reading ability required.

MUSI 422 - RENAISSANCE MUSIC
Short Title: RENAISSANCE MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A study of the major musical styles and composers of Western art and music between 1400 and 1600 and their historical, cultural, and sociological contexts.

MUSI 426 - PIANO LITERATURE - SURVEY
Short Title: PIANO LITERATURE - SURVEY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A study of the major musical styles and composers of western art music before 1400 and their historical, cultural, and sociological contexts. Cross-list: MDEM 429.

MUSI 429 - MUSIC OF THE MIDDLE AGES
Short Title: MUSIC OF THE MIDDLE AGES
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced historical studies in music of the twentieth and twenty-first centuries. Score reading ability required.

MUSI 431 - AURAL SKILLS AND PERFORMANCE TECHNIQUES V
Short Title: AURAL SKILLS & PERFORM TECH V
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Continuation of MUSI 332.
MUSI 432 - GRADUATE AURAL SKILLS REVIEW
Short Title: GRADUATE AURAL SKILLS REVIEW
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A remedial course in ear-training, sight-singing, and musical dictation.

MUSI 435 - CONTEMPORARY MUSIC ENSEMBLE
Short Title: CONTEMPORARY MUSIC ENSEMBLE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Each student will write a piece for an ensemble formed within the class. The piece will be rehearsed and coached as it is being written, and will be performed on various recitals. Repeatable for Credit.

MUSI 436 - COLLEGIUM MUSICUM
Short Title: COLLEGIUM MUSICUM
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The performance of vocal and instrumental music of the Renaissance and Baroque eras in which instrumentalists use period instruments. Specific repertory will depend on student interest and on the availability of instruments. The class entails two hours of evening rehearsal each week and an end-of-semester recital of music prepared. On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Instructor Permission Required. Cross-list: MDEM 456. Repeatable for Credit.

MUSI 441 - SENIOR RECITAL
Short Title: SENIOR RECITAL
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required.

MUSI 444 - PRACTICUM IN CONTEMPORARY MUSIC
Short Title: PRACTICUM IN CONTEMPORARY MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A practicum exploring the basic maintenance procedures of the modern pianoforte. Students will learn cleaning and unison tuning as well as basic action regulation.

MUSI 445 - KEYBOARD HARMONY AND FIGURED BASS I
Short Title: KEYBOARD HARMONY & FIG BASS I
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MUSI 483 or MUSI 683
Description: A study in skills of harmonization at the keyboard, realization of figured bass, score and clef reading, transposition, and modulation.

MUSI 446 - KEYBOARD HARMONY AND FIGURED BASS II
Short Title: KEYBOARD HARMONY & FIG BASS II
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MUSI 483 or MUSI 683
Description: A continued exploration of skills introduced in MUSI 445. In addition to further study in score reading, and harmonization at the keyboard, students will learn to realize continuo accompaniments from scores using figured bass.

MUSI 447 - INTRODUCTION TO PIANO TECHNOLOGY
Short Title: INTRO TO PIANO TECHNOLOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MUSI 483 or MUSI 683
Description: Introduction to the tuning and maintenance of pianos. Includes the theory and acoustics of tuning, a brief history of the piano, and a general exposure to restoration, as well as "hands-on" experience.

MUSI 448 - PIANO TECHNOLOGY PRACTICUM FOR PIANISTS
Short Title: PIANO TECH PRACTICUM PIANISTS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A practicum exploring the basic maintenance procedures of the modern pianoforte. Students will learn cleaning and unison tuning as well as basic action regulation.
MUSI 449 - UNDERGRADUATE INDEPENDENT STUDY
Short Title: UNDERGRAD INDEPENDENT STUDY
Department: Music
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 450 - QUALIFYING RECITAL
Short Title: QUALIFYING RECITAL
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required.

MUSI 451 - FLUTE FOR MAJORS
Short Title: FLUTE FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 453 - OBOE FOR MAJORS
Short Title: OBOE FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 454 - OBOE TECHNOLOGY
Short Title: OBOE TECHNOLOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A hands on study of the basic maintenance and regulation of the oboe, as well as an overview of available equipment for gouging and shaping. Course offered irregularly. Recommended prerequisite(s): DMA enrollment in oboe performance.

MUSI 455 - CLARINET FOR MAJORS
Short Title: CLARINET FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 457 - BASSOON FOR MAJORS
Short Title: BASSOON FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 459 - THEORY OF WOOD WIND PERFORMANCE TECHNIQUES
Short Title: THEORY OF WOODWIND PERF TECH
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Primarily for conductors and composers.

MUSI 461 - HORN FOR MAJORS
Short Title: HORN FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 463 - TRUMPET FOR MAJORS
Short Title: TRUMPET FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 465 - TROMBONE FOR MAJORS
Short Title: TROMBONE FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 467 - TUBA FOR MAJORS
Short Title: TUBA FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.
MUSI 469 - THEORY OF BRASS PERFORMANCE TECHNIQUES
Short Title: THEORY OF BRASS PERF TECH
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Primarily for conductors and composers.

MUSI 471 - PERCUSSION FOR MAJORS
Short Title: PERCUSSION FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 472 - GENERAL PERCUSSION STUDIES
Short Title: GENERAL PERCUSSION STUDIES
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A class that will address other issues of percussion playing to prepare for a job that is not related to regular classical studies, i.e. drum set, jazz kits, rudimental drumming, instrument building, playing shows, sight-reading, etc. The emphasis of the class will vary each semester. Repeatable for Credit.

MUSI 473 - VOICE FOR MAJORS
Short Title: VOICE FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Undergraduate Performance Seminar is required for all freshmen and sophomores. The seminar will meet on Tuesday and Thursday from 1:00-1:50. Repeatable for Credit.

MUSI 475 - THEORY OF VOCAL PERFORMANCE TECHNIQUES
Short Title: THEORY OF VOCAL PERFORM TECH
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Primarily for conductors and composers.

MUSI 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours may vary each semester. Contact department for current semester’s topic(s). FALL 2017: A PROUST SONATA: Weekly seminars explore the music, art and ideas which intersect in Marcel Proust’s in Search of Lost Time, the inspiration for Moody Center guest pianist/director Sarah Rothenberg’s multi-media performance, A Proust Sonata. The course also delves in the process of creating interdisciplinary work. Students of all backgrounds are welcome. Repeatable for Credit.

MUSI 479 - THEORY OF PERCUSSION PERFORMANCE TECHNIQUES
Short Title: THEORY OF PERCUSSION PERF TECH
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Primarily for conductors and composers.

MUSI 481 - PIANO FOR MAJORS
Short Title: PIANO FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 483 - ORGAN FOR MAJORS
Short Title: ORGAN FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 487 - HARP FOR MAJORS
Short Title: HARP FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.
MUSI 491 - VIOLIN FOR MAJORS
Short Title: VIOLIN FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Primarily for conductors and composers.

MUSI 492 - STRING TECHNOLOGY
Short Title: STRING TECHNOLOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction and practicum in the maintenance and repair of string instruments. Instructor Permission Required.

MUSI 493 - VIOLA FOR MAJORS
Short Title: VIOLA FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 495 - VIOLONCELLO FOR MAJORS
Short Title: VIOLONCELLO FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 497 - DOUBLE BASS FOR MAJORS
Short Title: DOUBLE BASS FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

MUSI 499 - THEORY OF STRING PERFORMANCE TECHNIQUES
Short Title: THEORY OF STRING PERF TECH
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Primarily for conductors and composers.

MUSI 500 - IMAGINATION AND COMMUNICATION: DEVELOPING MUSICAL SKILLS THROUGH THEATRICAL TECHNIQUES
Short Title: IMAGINATION AND COMMUNICATION
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course focuses on teaching communication skills through techniques from other areas of the performing arts. Through exercises that enhance imagination and creativity, students will learn to use their physical presences more effectively, thus becoming more effective communicators with audiences, musician colleagues, and future employers. Department Permission Required.

MUSI 501 - ENHANCED PERFORMANCE: WRITING, SPEAKING, PLAYING
Short Title: MUSIC PERFORMANCE ENHANCEMENT
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course prepares music students to communicate with audiences effectively beyond their musical performance through the use of words, both written and oral. Students will study, practice, and gain practical experience in writing and speaking about music through a variety of performance situations. Department Permission Required.

MUSI 502 - CONDUCTING: AN OVERVIEW OF PRACTICAL SKILLS
Short Title: CONDUCTING
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed to present an array of conducting tools to instrumentalists, vocalists and composers. Discussions and presentations will cover diverse topics ranging from baton technique to education/outreach programming. Department Permission Required.

MUSI 503 - MUSIC AND PERFORMANCE: THE MIND/BODY CONNECTION
Short Title: MUSIC AND PERFORMANCE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students learn effective ways to address the physical and mental stress of performance by developing an awareness of the mind/body connection. This course introduces a variety of techniques that help musicians to notice and change unhelpful practice habits and move toward a better performance experience. Department Permission Required.
MUSI 504 - COMPUTER ASSISTED MUSIC COMPOSITION  
Short Title: COMPUTER ASSISTED MUSIC COMP  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 2  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course explores the practical aspects of building and sustaining a career in music. Using networking, self-promotion, and presentation skills, students will create projects needed for pursuing their careers. Guest speakers will offer additional resources for students as they learn how to navigate the world of the Music Business. Department Permission Required.

MUSI 507 - TECHNOLOGY FOR MUSICIANS  
Short Title: TECHNOLOGY FOR MUSICIANS  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 2  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will provide student musicians with the computer skills necessary for modern musical life. Computer assisted notation, the basics of audio/video production, and website creation will be covered as students learn to use a number of computer applications. Department Permission Required.

MUSI 508 - FUNDAMENTALS OF PRIVATE TEACHING  
Short Title: PRIVATE TEACHING FUNDAMENTALS  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 2  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will focus on the teaching of individual lessons to music students. It will emphasize effective ways to start a beginning student, how to develop musicianship, and how to teach good practice habits. Department Permission Required.

MUSI 510 - PROFESSIONAL DEVELOPMENT FOR MUSICIANS  
Short Title: PRO DEVELOPMENT FOR MUSICIANS  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 2  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course explores the practical aspects of building and sustaining a career in music. Using networking, self-promotion, and presentation skills, students will create projects needed for pursuing their careers. Guest speakers will offer additional resources for students as they learn how to navigate the world of the Music Business. Department Permission Required.

MUSI 511 - GRADUATE THEORY REVIEW  
Short Title: GRADUATE THEORY REVIEW  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A comprehensive review of Common Practice theory, plus a brief introduction to 20th Century analysis.

MUSI 512 - ANALYTICAL SYSTEMS  
Short Title: ANALYTICAL SYSTEMS  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Practical applications of principal analytical systems.

MUSI 513 - MODAL COUNTERPOINT  
Short Title: MODAL COUNTERPOINT  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Applied contrapuntal techniques of the 16th century, and analysis of selected works.

MUSI 514 - SCORE READING AND THEORY AT THE KEYBOARD  
Short Title: SCORE READING  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Advanced studies in reading an orchestral score at the keyboard. Department Permission Required.

MUSI 515 - MUSIC ENTREPRENEURSHIP  
Short Title: MUSIC ENTREPRENEURSHIP  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 2  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Music Entrepreneurship introduces the music student to the idea and development of a business strategy via introduction to the business plan model. Students learn to develop mission statements, analyze markets and competition, research advertising and promotional strategies and put together financial assumptions and forecast into business friendly templates. Department Permission Required.
MUSI 516 - ADVANCED ORCHESTRATION  
Short Title: ADV ORCHESTRATION  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): MUSI 416  
Description: Advanced studies in orchestrational techniques from the classical era through the present day.

MUSI 517 - EARLY MODERN MASTERS  
Short Title: EARLY MODERN MASTERS  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Analysis of music from 1900-1950. Repeatable for Credit.

MUSI 518 - THE ART AND BUSINESS OF STUDIO TEACHING  
Short Title: ART & BUSINESS STUDIO TEACHING  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 2  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Independent studio teaching offers musicians both income stability and flexibility in scheduling, but requires clarity of approach, organization, and business savvy to be effective and rewarding. In addition to practicing these skills, students will learn how to attract students and build a reputation as an exemplary teacher. Department Permission Required.

MUSI 519 - THEMATIC PROGRAMMING: THE ART OF THE RECITAL  
Short Title: THEMATIC PROGRAMMING  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 2  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course concentrates on ways to revitalize and re-invent the traditional recital so that it appeals to performer and audience alike. After gaining an understanding of innovative and thematic programming, presentational skills and production planning, students will create, produce and perform an invigorating and exiting recital program. Department Permission Required.

MUSI 520 - GRADUATE REVIEW OF MUSIC HISTORY I  
Short Title: GRAD REVIEW OF MUSIC HIST I  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Survey of Medieval, Renaissance, and Baroque music for graduate students. Assigned on the basis of placement exam only.

MUSI 521 - GRADUATE REVIEW OF MUSIC HISTORY II  
Short Title: GRAD REVIEW OF MUSIC HIST II  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Survey of Classical, Romantic and 20th century music for graduate students. Assigned on the basis of placement exam only.

MUSI 522 - BIBLIOGRAPHY AND RESEARCH METHODS  
Short Title: BIBLOG&RESEARCH METHODS  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Study of bibliography methods and techniques in research methodology.

MUSI 523 - AMERICAN MUSIC  
Short Title: AMERICAN MUSIC  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Exploration of art music in the United States, ca. 1800-ca. 1940, with reference to earlier American and European styles.

MUSI 524 - PERFORMANCE PRACTICES SEMINAR  
Short Title: PERFORMANCE PRACTICES SEMINAR  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The study of performing practices of music prior to the Romantic era. Topics will range from pre-performance considerations of pitch and tuning systems to those of performance, such as basso continuo realization, improvisation, vibrato, and articulation. Course not offered regularly.

MUSI 525 - WOMEN IN MUSIC  
Short Title: WOMEN IN MUSIC  
Department: Music  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Study of gender in music, including aesthetics and representation, and of the major roles women have assumed in music, especially as composers, performers and patrons. While the course emphasizes the western art tradition, other types of music are explored as well. Cross-list: SWGS 440.
MUSI 527 - TOPICS IN EARLY MUSIC
Short Title: TOPICS IN EARLY MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced study in selected topics in music history prior to 1600. Topics may vary. Please consult with the department for additional information. Repeatable for Credit.

MUSI 528 - TOPICS IN THE 17TH AND 18TH CENTURIES
Short Title: TOPICS IN 17TH & 18TH CENTURIES
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics in the 17th and 18th Centuries. Topics may vary. Please consult with the department for additional information. SECTION ONE - HANDEL'S OPERAS & ORATORIOS: This seminar focuses on the operas and oratorios of Handel's career in London with an emphasis on rediscovering their artistic and literary contexts. Related topics area the practices of the theater that defined Handel's operas and oratorios, such as voice types and singing styles, acting techniques, staging, theater design. SECTION TWO - MOZART: This seminar will focus on the life and works of Mozart. Stylistic and critical analysis of his music will alternate with the study of his biography. Repeatable for Credit.

MUSI 529 - TOPICS IN 19TH AND 20TH CENTURIES
Short Title: TOPICS IN 19TH & 20TH CENTURIES
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced study in selected topics in music history of the 19th and 20th centuries. Topics may vary. Please consult with the department for additional information. SECTION ONE: FOLKLOREISM IN 19TH CENTURY MUSIC: Romantic composers frequently borrowed from both native and exotic folk music. This seminar will explore the political and aesthetic motivations for this practice, its influence on musical style, and its effect on the reception of 10th century music. Repeatable for Credit.

MUSI 530 - MUSIC, MAGIC, AND SCIENCE IN THE MODERN WORLD
Short Title: MUSIC, MAGIC, AND SCIENCE
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores the place of music vis-a-vis changing conceptions of the natural and supernatural worlds in Western modernity. Topics include music and occult science in the Renaissance, the impact of the Scientific Revolution and the Enlightenment on musical thought; the development of modern acoustics, and contemporary approaches of the field of music cognition.

MUSI 531 - ORCHESTRAL REPERTOIRE
Short Title: ORCHESTRAL REPERTOIRE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore grammaticism in Western art music with a particular focus on orchestral repertoire of the nineteenth century (including works by Beethoven, Mendelssohn, Berlioz, Liszt, Tchaikovsky, Strauss, Mahler, and Debussy). Alongside formal issues, we will consider historical perspectives on this repertoire as well as long-lived aesthetic debates about music's capacity to represent the external world.

MUSI 532 - THE FELDENKRAIS METHOD AND THE MUSICIAN'S BODY
Short Title: THE FELDENKRAIS METHOD
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will experience the Feldenkrais Method through the group learning modality of "Awareness Through Movement" in order to develop a practice that will serve to mitigate stress, reduce the likelihood of repetitive use injuries and create a more easeful presence in performance. Department Permission Required.

MUSI 533 - GRADUATE CONDUCTING SEMINAR
Short Title: GRADUATE CONDUCTING SEMINAR
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 534 - PROGRAM MUSIC IN THE 19TH CENTURY
Short Title: PROGRAM MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore the history of program music in the nineteenth century, focusing on works of Mendelssohn, Berlioz, Liszt, and Mahler. We will examine the relationship between music and literature, the role of program music in shaping the modern concept of the symphony, and the influence of Mahler's symphonies on the development of contemporary music.

MUSI 535 - LEADERSHIP THROUGH THE ARTS
Short Title: LEADERSHIP THROUGH THE ARTS
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore ways in which individuals in varied disciplines can combine forces to develop a creative concept which will be performed of the public on campus. Instructor Permission Required.
MUSI 537 - SATIE, COCTEAU, & LES SIX: PARIS IN THE 1920s AND BEYOND
Short Title: SATIE, COCTEAU, AND LES SIX
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of the musical realization of Apollinaire's "new spirit" in the works of Erik Satie, as promoted by Jean Cocteau circa 1918, and the attraction that this new aesthetic had for young composers known as Les Six. With special attention to the works of Francis Poulenc, especially those represented in the Lambiote Poulenc Archive housed in the Woodson Research Center.

MUSI 540 - APPLIED JAZZ IMPROVISATION: DEVELOPING SOLO IMPROVISATIONAL SKILLS IN THE JAZZ IDIOM
Short Title: APPLIED JAZZ IMPROVISATION
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The goal of this course is to introduce and develop Jazz improvisational skills for the classically trained musician. Students will use "swing style" accompaniment to learn to develop and perform improvised Jazz solos on a variety of harmonic formats. Department Permission Required.

MUSI 543 - MUSIC AND MODERNISM IN FRANCE
Short Title: FRENCH MODERNISM
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course considers musical culture in France around the turn of the twentieth century, particularly the music of Debussy, in light of contemporaneous "modernisms" in visual art and literature (Impressionism, Post-Impressionism, Decadence, Symbolism).

MUSI 545 - LITURGICAL ORGAN PLAYING
Short Title: LITURGICAL ORGAN PLAYING
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MUSI 483 (may be taken concurrently) or MUSI 683 (may be taken concurrently)
Description: A course devoted to the service-playing skills required of a parish organist. Students will study effective techniques of accompanying congregational song from the organ. Emphasis will be placed on introductions, interludes, modulations for hymns and appropriate choices of registration, repertoire and hymnody for ceremonial occasions and liturgical year. Concurrent enrollment in MUSI 483 or MUSI 683 is required.

MUSI 546 - ACCOMPANYING AT THE ORGAN
Short Title: ACCOMPANYING AT THE ORGAN
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MUSI 483 (may be taken concurrently) or MUSI 683 (may be taken concurrently)
Description: This course explores accompanying skills essential to the professional organist using a variety of choral literature customarily accompanied from the organ. Transcribed accompaniments will be mixed with original choral or vocal works scored for organ accompaniment from a variety of styles and periods. Concurrent enrollment in MUSI 483 or MUSI 683 is required.

MUSI 547 - CHURCH MUSIC SEMINAR I
Short Title: CHURCH MUSIC SEMINAR I
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MUSI 483 (may be taken concurrently) or MUSI 683 (may be taken concurrently)
Description: A course devoted to the musical and administrative skills required of church music programs serving persons of all ages. Students will develop choral conducting techniques in addition to a knowledge of choral literature, liturgy, and the musical and theological materials available to those who create worship. Concurrent enrollment in MUSI 483 or MUSI 683 is required.

MUSI 548 - CHURCH MUSIC SEMINAR II
Short Title: CHURCH MUSIC SEMINAR II
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MUSI 483 (may be taken concurrently) or MUSI 683 (may be taken concurrently)
Description: This course will further develop choral conducting techniques and provide instruction in vocal techniques appropriate for use in choral rehearsals. Large-scale choral works will be analyzed and discussed in order to refine systems of score study and rehearsal planning. Further discussion of liturgical traditions and appropriate repertoire selection. Concurrent enrollment in MUSI 483 or MUSI 683 is required.

MUSI 549 - VOCAL PHYSIOLOGY & FUNCTION
Short Title: VOCAL PHYSIOLOGY & FUNCTION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to anatomy, physiology and function of the singing voice.
MUSI 551 - MUSIC OF RICHARD STRAUSS
Short Title: MUSIC OF RICHARD STRAUSS
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An examination of Strauss's musical style and professional reputation in the context of changing aesthetic and political perspectives from the 1880s to the 1940s. Analysis of selected lieder, symphonic poems, and operas, including "Salome" and "Der Rosenkavalier".

MUSI 552 - WORDS AND MUSIC
Short Title: WORDS AND MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of the relationship between text and music in non-operatic solo vocal repertory drawn from a wide historical range. Topics will include: correspondences between musical and poetic forms, how a song transforms the text that it sets, how text expression has led composers to experiment with musical style.

MUSI 555 - APPRENTICESHIP
Short Title: APPRENTICESHIP
Department: Music
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 559 - WOODWIND PEDAGOGY
Short Title: WOODWIND PEDAGOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 569 - BRASS PEDAGOGY
Short Title: BRASS PEDAGOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

MUSI 570 - ADVANCED OPERA STUDIES
Short Title: ADVANCED OPERA STUDIES
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced operatic techniques for the singer/actor, including acting, movement, stage combat, makeup and audition techniques and preparation. On occasion this course may require rehearsals and performances outside of class time. Repeatable for Credit.

MUSI 571 - VOCAL COACHING
Short Title: VOCAL COACHING
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 572 - GRADUATE OPERA PERFORMANCE
Short Title: GRADUATE OPERA PERFORMANCE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 1-2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: After audition, Director of Opera Studies makes role assignments and grants credit to roles. Leading roles get 2 credits, small roles and chorus in Opera get 1 credit. Instructor Permission Required. Repeatable for Credit.

MUSI 573 - ITALIAN DICTION
Short Title: ITALIAN DICTION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

MUSI 574 - GERMAN DICTION
Short Title: GERMAN DICTION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

MUSI 575 - VOICE REPERTOIRE I
Short Title: VOICE REPERTOIRE I
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
MUSI 576 - VOICE REPERTOIRE II
Short Title: VOICE REPERTOIRE II
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

MUSI 577 - ENGLISH DICTION
Short Title: ENGLISH DICTION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

MUSI 578 - FRENCH DICTION
Short Title: FRENCH DICTION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

MUSI 579 - PERCUSSION PEDAGOGY
Short Title: PERCUSSION PEDAGOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

MUSI 580 - ARIA REPERTOIRE
Short Title: ARIA REPERTOIRE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A comprehensive survey of operatic arias from the standard repertoire for pianists. The survey will be structured according to vocal Fachs and stylistic/historical perspectives. Instructor Permission Required. Repeatable for Credit.

MUSI 581 - VOICE ACCOMPANYING TECHNIQUES FOR PIANISTS
Short Title: VOCAL ACCOMP TECH FOR PIANISTS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

MUSI 584 - VOCAL ACCOMPANYING TECHNIQUES FOR PIANISTS
Short Title: VOCAL ACCOMP TECH FOR PIANISTS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course for graduate piano majors, emphasizing practical skills of accompanying singers. Instructor Permission Required.

MUSI 585 - SONATA CLASS
Short Title: SONATA CLASS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

MUSI 587 - GRADUATE DICTION FOR SINGERS
Short Title: GRADUATE DICTION FOR SINGERS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Principals of lyric diction in Italian, English, French, and German. Repeatable for Credit.

MUSI 588 - PIANO PEDAGOGY
Short Title: PIANO PEDAGOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An overview of the group piano area which includes a comprehensive study of standard methods, in-depth discussion of group vs. individual lessons, and a supervised student teaching practicum.

MUSI 589 - STRING PEDAGOGY
Short Title: STRING PEDAGOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Section 1 Violin(open to all violin students); Section 2 Viola; Section 3 Cello; Section 4 Double Bass.
MUSI 601 - COMPOSITION FOR MAJORS ADVANCED AND GRADUATES
Short Title: COMPOSITION FOR MAJORS ADV&GRAD
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 603 - GRADUATE COMPOSITION SEMINAR
Short Title: GRAD COMPOSITION SEMINAR
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced topics and applications in computer and electronic music composition. Instructor Permission Required. Repeatable for Credit.

MUSI 605 - ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS
Short Title: ADV ELECTR&COMP MUSIC SYSTEMS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced topics and applications in computer and electronic music composition. Instructor Permission Required. Repeatable for Credit.

MUSI 606 - ADVANCED COMPUTER SOUND SYNTHESIS
Short Title: ADV COMPUTER SOUND SYNTHESIS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MUSI 605
Description: Continuation of MUSI 605. Department Permission Required. Repeatable for Credit.

MUSI 608 - IMPROVISATION AT THE ORGAN
Short Title: IMPROVISATION AT THE ORGAN
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MUSI 483 (may be taken concurrently) or MUSI 683 (may be taken concurrently)
Description: A course devoted to advancing knowledge and developing skills of improvisation at the organ. Discussion and analysis of themes, modality vs. tonality, modulations, harmonizations of scales, modes, chorales and plainchant will lead to improvisations in such forms as the chorale partita, monothematic sonata, passacaglia, French suite, fugue, and other forms. Concurrent enrollment in MUSI 483 or MUSI 683 is required. Repeatable for Credit.

MUSI 611 - CLASSROOM PEDAGOGY
Short Title: CLASSROOM PEDAGOGY
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The practical application of various teaching methods, and an in depth study of college-level materials. Department Permission Required.

MUSI 613 - TONAL COUNTERPOINT
Short Title: TONAL COUNTERPOINT
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: 18th Century counterpoint in the style of J.S. Bach. Instructor Permission Required.

MUSI 614 - SPECIAL TOPICS IN MUSIC THEORY AND MUSIC THEORY COMPOSITION
Short Title: MUSIC THEORY & COMPOSITION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: SECTION 1: This course focuses on chromatic harmony as it was developed during the long 19th century. The first half of the course deals with chromaticism as a supplement to diatonicism, the second half with chromatic space on its own terms. SECTION 2: A hands-on consideration of improvised or quasi-extemporized elements in 18th century repertoire. Coursework will focus equally on analysis (examining extant musical examples and treatises from the period) and practical application (composing examples and making realizations). Repeatable for Credit.

MUSI 615 - MUSIC OF RAVEL: MUSIC THEORY AND COMPOSITION
Short Title: MUSIC OF RAVEL
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An in-depth study of Ravel's music using several approaches, including investigation of additive harmony, Ravel's use of alternative scales, and the relationship between Ravel's music and contemporary trend in poetry and psychology. Recommended prerequisite(s): Ability to read music well and some previous study in music theory.
MUSI 617 - MUSIC SINCE 1950
Short Title: MUSIC SINCE 1950
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A critical survey of the great pianists of the 20th century covering the stylistic and pianistic traits of each, including a selective discography for each pianist.

MUSI 619 - HISTORY OF THE 20TH CENTURY PIANISM
Short Title: 20TH CENTURY PIANISM HISTORY
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A survey of the teaching of piano technique from the historical perspective. The focus will be on documents and quotes from historical pedagogues such as C.P.E Bach, Clementi, Chopin, and the pianists of the 20th century.

MUSI 620 - HISTORICAL OVERVIEW OF PIANO TECHNIQUE
Short Title: HIST OVERVIEW OF PIANO TECHNIQ
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A survey of the teaching of piano technique from the historical perspective. The focus will be on documents and quotes from historical pedagogues such as C.P.E Bach, Clementi, Chopin, and the pianists of the 20th century.

MUSI 621 - SELECTED STUDIES IN MUSIC HISTORY
Short Title: MUSICAL MEDIEVALISM
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on individual topics in music history. Content varies.

MUSI 622 - EARLY OPERA
Short Title: EARLY OPERA
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of opera history from the beginning of the seventeenth Century through Mozart's early works of the 1770's. We will consider literary sources, versification, musical forms, and the periodic "reforms" within the first two centuries of opera.

MUSI 623 - J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION
Short Title: J.S. BACH: CAREER, WORKS & RECEPTION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An examination of Bach's music and the social circumstances in which he created it. A substantial portion of the course will focus on issues and controversies in recent Bach scholarship.

MUSI 624 - SEMINAR ON A SELECTED COMPOSER
Short Title: SEM ON SELECT COMPOSER
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced study of the music of a single composer. Topics may vary. Please consult with the department for additional information. Repeatable for Credit.

MUSI 625 - MOZART OPERAS
Short Title: MOZART OPERAS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of three or four of Mozart's operas in-depth, with a focus on how music shapes drama, interpretation, characterization, and meaning.

MUSI 626 - THE CLASSICAL STYLE
Short Title: THE CLASSICAL STYLE
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A study of the way in which Haydn, Mozart, and Beethoven create large musical forms that have purely musical meaning which does not derive from a text. We will consider various approaches to understanding musical meaning including rhetoric, structure, and style.

MUSI 627 - ROMANTIC SONGS AND PIANO PIECES
Short Title: ROMANTIC SONGS & PIANO PIECES
Department: Music
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of songs and piano character pieces of Schumann, Chopin, Mendelssohn, and Schubert from analytical and historical perspectives.
MUSI 631 - MOCK AUDITION
Short Title: MOCK AUDITION
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required.

MUSI 635 - ADVANCED ORCHESTRA
Short Title: ADVANCED ORCHESTRA
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.

MUSI 636 - ADVANCED CHAMBER MUSIC
Short Title: ADVANCED CHAMBER MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.

MUSI 637 - ADVANCED CONDUCTING FOR MAJORS
Short Title: ADVANCED CONDUCTING FOR MAJORS
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 640 - RICE CHORALE - ADVANCED
Short Title: RICE CHORALE - ADVANCED
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Repeatable for Credit.

MUSI 641 - MASTER'S RECITAL I
Short Title: MASTER'S RECITAL I
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required.

MUSI 642 - ACCOMPANYING
Short Title: ACCOMPANYING
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Accompanying a single student recital, including the preview, dress rehearsal, performance, their lessons with the soloist’s teacher, and practice times mutually agreeable to soloist and accompanist. OR accompanying private lessons in studios as assigned for a total of four hours per week. On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Instructor Permission Required. Repeatable for Credit.

MUSI 645 - ORGAN LITERATURE BEFORE 1750
Short Title: ORGAN LITERATURE BEFORE 1750
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A historical study of organ literature coordinated with a study of the development of the organ as a musical instrument. Students will study and research organ music before 1750, developing familiarity with the period and national styles, an understanding of characteristic instruments, as well as practices of registration and performance. Concurrent enrollment in MUSI 483 or MUSI 683 is required.

MUSI 646 - ORGAN LITERATURE SINCE 1750
Short Title: ORGAN LITERATURE SINCE 1750
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MUSI 483 (may be taken concurrently) or MUSI 683 (may be taken concurrently)
Description: Students will develop an understanding of form, interpretation and characteristic national styles through study and research of representative works composed after 1750. Trends in organ construction in France, Germany, England and North America during the 19th through 21st centuries will be discussed in relation to the compositions these instruments inspired. Concurrent enrollment in MUSI 483 or MUSI 683 is required.
MUSI 647 - MASTER'S THESIS
Short Title: MASTER'S THESIS
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Composition majors are required to attend 3 hours of orchestra rehearsal per week to satisfy the course requirement. Repeatable for Credit.

MUSI 649 - GRADUATE INDEPENDENT STUDY
Short Title: GRAD INDEPENDENT STUDY
Department: Music
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 651 - FLUTE FOR MAJORS-ADVANCED
Short Title: FLUTE FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 653 - OBOE FOR MAJORS-ADVANCED
Short Title: OBOE FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 655 - CLARINET FOR MAJORS-ADVANCED
Short Title: CLARINET FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 656 - BASSOON FOR MAJORS-ADVANCED
Short Title: BASSOON FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 661 - HORN FOR MAJORS-ADVANCED
Short Title: HORN FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 663 - TRUMPET FOR MAJORS-ADVANCED
Short Title: TRUMPET FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 665 - TROMBONE FOR MAJORS-ADVANCED
Short Title: TROMBONE FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 667 - VOICE FOR MAJORS-ADVANCED
Short Title: VOICE FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
MUSI 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Music
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

MUSI 681 - PIANO FOR MAJORS-ADVANCED
Short Title: PIANO FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 682 - ACCOMPANYING/VOCAL COACHING SEMINAR
Short Title: ACCOMP/VOCAL COACHING SEMINAR
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Intensive studies of both song art and solo opera repertoire that is limited to the individual singers who will be involved with each pianist. All facets related to preforming and coaching repertoire with upper level undergraduate and graduate level singers will be explored. Instructor Permission Required. Repeatable for Credit.

MUSI 683 - ORGAN FOR MAJORS-ADVANCED
Short Title: ORGAN FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 687 - HARP FOR MAJORS-ADVANCED
Short Title: HARP FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 690 - INDIVIDUAL INSTRUMENT COACHING FOR STRING QUARTET MAJORS
Short Title: IND INST COACH-STR QTET MAJ
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced individual instrumental coaching for students in the M.Mus. string quartet program. Repeatable for Credit.

MUSI 691 - VIOLIN FOR MAJORS-ADVANCED
Short Title: VIOLIN FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 693 - VIOLA FOR MAJORS-ADVANCED
Short Title: VIOLA FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 695 - VIOLONCELLO FOR MAJORS-ADVANCED
Short Title: VIOLONCELLO FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 697 - DOUBLE BASS FOR MAJORS-ADVANCED
Short Title: DOUBLE BASS FOR MAJORS-ADV
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 698 - ADVANCED STRING QUARTETS
Short Title: ADVANCED STRING QUARTETS
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Private lessons for graduate students enrolled in the M.Mus. string quartet program. Repeatable for Credit.
MUSI 700 - GRADUATE RESEARCH
Short Title: GRADUATE RESEARCH
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

MUSI 705 - APPRENTICESHIP - ARTISTIC OUTREACH
Short Title: APPRENTICESHIP ARTISTIC OUTRCH
Department: Music
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Corequisite: MUSI 698
Description: Repeatable for Credit.

MUSI 707 - DOCTORAL INDEPENDENT STUDY, COMPOSITION
Short Title: DOCTORAL IND.STUDY,COMPOSITION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Independent project at the doctoral level. Instructor Permission Required.

MUSI 711 - ANALYTICAL APPROACHES
Short Title: ANALYTICAL APPROACHES
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In depth exploration of tonal and post-tonal analytical procedures. Required of all doctoral students. Instructor Permission Required. Recommended prerequisite(s): MUSI 512 or equivalent.

MUSI 712 - SEMINAR IN ADVANCED ANALYSIS
Short Title: SEMINAR IN ADVANCED ANALYSIS
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MUSI 711
Description: This class will build on the concept and materials presented in MUSI 711. Students will do in-depth analyses of significant pieces from several style periods. Instructor Permission Required.

MUSI 713 - SPECIAL TOPICS IN ADVANCED ANALYSIS
Short Title: SPECIAL TOPICS: ADV. ANALYSIS
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Special topics in Advanced Analysis will be presented by a resident scholar, reflecting current trends in music theory and analysis, and discussing his or her research in these areas. Instructor Permission Required. Repeatable for Credit.

MUSI 721 - MUSIC OF SCHOENBERG
Short Title: MUSIC OF SCHOENBERG
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the music of Arnold Schoenberg in the context of the major musical centers and artistic movements that colored his works: Vienna, Berlin, romanticism, expressionism and the New Objectivity.

MUSI 722 - MUSIC OF STRAVINSKY
Short Title: MUSIC OF STRAVINSKY
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of Igor Stravinsky’s major ballets.

MUSI 723 - AESTHETICS OF MUSIC
Short Title: AESTHETICS OF MUSIC
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to music aesthetics, focusing on contemporary theories and writings.

MUSI 725 - ORGAN LITERATURE SEMINAR
Short Title: ORGAN LITERATURE SEMINAR
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): MUSI 483 (may be taken concurrently) or MUSI 683 (may be taken concurrently)
Description: This course is devoted to intensive study of an area of organ literature, design, or performance practice. Emphasis will be placed upon in-depth study or the works of a selected composer or genre. Concurrent enrollment in MUSI 483 or MUSI 683 is required.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 733</td>
<td>DOCTORAL SEMINAR I: CAREER SKILLS</td>
<td>Music</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Practical training in digital recording, editing, and producing and preparation for academic jobs. Required of, and limited to, doctoral music majors. Department Permission Required.</td>
</tr>
<tr>
<td>MUSI 735</td>
<td>DOCTORAL SEMINAR II: REPERTORY</td>
<td>Music</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>In-depth study of chamber music and concert repertory. Required of, and limited to, all doctoral music students. Department Permission Required.</td>
</tr>
<tr>
<td>MUSI 736</td>
<td>SOLO REPERTORY FOR DOCTORAL STUDENTS</td>
<td>Music</td>
<td>Standard Letter</td>
<td>Studio</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>One semester required of all doctoral students in performance areas. Additional semesters may be taken at the discretion of the major teacher. Department Permission Required. Repeatable for Credit.</td>
</tr>
<tr>
<td>MUSI 738</td>
<td>DOCTORAL INDIVIDUAL PROJECT</td>
<td>Music</td>
<td>Standard Letter</td>
<td>Independent Study</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>A substantial project in an area of the student's interest. Working with a faculty member, each doctoral music student will propose, carry out and then give a public report on the project. Proposals must be approved by the Graduate Studies Committee. Department Permission Required.</td>
</tr>
<tr>
<td>MUSI 739</td>
<td>PEDAGOGY FOR DOCTORAL STUDENTS</td>
<td>Music</td>
<td>Standard Letter</td>
<td>Lecture/Laboratory</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>The study of methods and materials specific to each student's major, focusing on the teaching of private studio lessons and instrumental or vocal classes for college-level students. Includes practical training. Each student will work with their major teacher or a faculty member designated by their department. Section 001 - PIANO; 002 - VOICE; 003 - FLUTE; 004 - CLARINET; 005 - OBOE; 006 - VIOLIN; 007 - VIOLA; 008 - CELLO; 009 - DOUBLEBASS; 010 - PERCUSSION. Department Permission Required.</td>
</tr>
<tr>
<td>MUSI 741</td>
<td>MASTER'S RECITAL II</td>
<td>Music</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Studio</td>
<td>0</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required.</td>
</tr>
<tr>
<td>MUSI 742</td>
<td>STRING QUARTET RECITAL</td>
<td>Music</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Studio</td>
<td>0</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Each recital will include a format chosen by the quartet and natural to them in which they relate to the general public in a meaningful, non-technical way (i.e., pre-concert question and answer session, etc.). These are not lecture-recitals in the traditional, academic sense: their aim is to give the quartet guidance and experience in how to impart substantive information that help non-musicians deepen their concert-going experience. On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required. Repeatable for Credit.</td>
</tr>
<tr>
<td>MUSI 747</td>
<td>SURVEY-ORCHESTRAL REPERTOIRE</td>
<td>Music</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>2</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>A survey of the techniques of orchestral playing with emphasis on preparation of orchestral excerpts for professional auditions.</td>
</tr>
</tbody>
</table>

2017-2018 General Announcements
MUSI 749 - VOCAL PHYSIOLOGY & FUNCTION FOR DOCTORAL STUDENTS
Short Title: VOCAL PHYSIOLOGY & FUNCTION
Department: Music
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to anatomy, physiology & function of the singing voice.

MUSI 750 - DOCTORAL DOCUMENT
Short Title: DOCTORAL DOCUMENT
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised research and writing of doctoral document. Repeatable for Credit.

MUSI 751 - DOCTORAL RECITAL
Short Title: DOCTORAL RECITAL
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Section 1, solo; section 2, chamber; section 3, concerto; section 4, lecture. On occasion this course may require weekend rehearsals and performances. Consult the instructor regarding possible conflicts. Department Permission Required. Repeatable for Credit.

MUSI 750 - DOCTORAL DOCUMENT
Short Title: DOCTORAL DOCUMENT
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised research and writing of doctoral document. Repeatable for Credit.

MUSI 760 - INDIVIDUAL AND COMMITTEE INSTRUCTION FOR ARTIST DIPLOMA
Short Title: INDIV & COMMITTEE INSTR FOR AD
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Weekly lessons with principal teacher as well as periodically scheduled mentoring and coaching sessions with members of Diploma Committee. Will cover all areas of performance related to chosen field. Repeatable for Credit.

MUSI 761 - ARTIST DIPLOMA RECITAL
Short Title: ARTIST DIPLOMA RECITAL
Department: Music
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Studio
Credit Hours: 0
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Public performance exhibiting highest level of technical mastery and artistic interpretation. Department Permission Required. Repeatable for Credit.

MUSI 762 - ARTIST DIPLOMA SEMINAR
Short Title: ARTIST DIPLOMA SEMINAR
Department: Music
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Instruction of matters of musical style and historically informed performance practice. Performance within the class is expected. Survey performance practices ranging from the Baroque period through 21st century.

MUSI 763 - ARTIST DIPLOMA SPECIAL PROJECT
Short Title: ARTIST DIPLOMA SPECIAL PROJECT
Department: Music
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Application of both performance and career-building skills directly in the market place. Repeatable for Credit.

MUSI 764 - ARTIST DIPLOMA PERFORMANCE
Short Title: ARTIST DIPLOMA PERFORMANCE
Department: Music
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Participation in orchestra, chamber music, sinfonietta, opera or scenes programs as determined by individual track. Repeatable for Credit.

MUSI 800 - DISSERTATION
Short Title: DISSERTATION
Department: Music
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students are required to write an original composition of substantial dimensions. The composition must be publicly defended and submitted, following the university's regulations and procedures for candidacy, oral examination, and thesis. Repeatable for Credit.
Natural Sciences (NSCI)

NSCI 111 - CONCEPTS IN PHYSICS AND ASTRONOMY
Short Title: CONCEPT IN PHYSICS & ASTRONOMY
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course is intended as an investigation of some of the major concepts in physics and astronomy that form the basis of our modern understanding of the universe. By focusing on scientific methodology and a few universal laws, the course will help students appreciate scientific discoveries and give them the conceptual understanding to form intelligent views of contemporary scientific issues. For non-science/engineering majors.

NSCI 120 - INTRODUCTION SCIENTIFIC RESEARCH CHALLENGES
Short Title: INTR SCIENTIFIC RES CHALLENGES
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Students in NSCI 120 will solve client-based problems that require the discovery or application of scientific knowledge, specifically in the fields of biology and chemistry. Students will work in interdisciplinary teams and be involved in shaping their project and implementing the scientific method to find solutions. This course is limited to first-year students only. Mutually Exclusive: Credit cannot be earned for NSCI 120 and BIOC 112.

NSCI 199 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Independent Study in an area of science with emphasis on scientific procedures and methods. Instructor Permission Required.

NSCI 230 - COMPUTATION IN SCIENCE AND ENGINEERING
Short Title: COMPUTATION IN SCI & ENGI
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The course introduces basic techniques for problem solving and visualization using computational environments such as Mathematica and MATLAB. Class will consist of a mixture of traditional lectures held in classrooms and self-paced modules covering topics in science and engineering that will be completed in Symonds II. No previous experience is required or expected. Cross-list: COMP 110. Repeatable for Credit.
Course URL: www.owlnet.rice.edu/~comp110

NSCI 305 - NEW VENTURE COMMUNICATION FOR SCIENCE AND ENGINEERING
Short Title: NEW VENTURE COMMUN FOR SCI&ENG
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Teaches students in science or engineering the skills needed to discover, communicate, and promote products and services based on technological innovation or scientific research. Students learn to innovate a product or service with social or commercial application, write an early-stage business plan, and give a 10-minute financing presentation.

NSCI 320 - PUBLIC SCIENCE COMMUNICATION SEMINAR
Short Title: PUBLIC SCIENCE COMM SEMINAR
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 or CHEM 121 or CHEM 151 or PHYS 101 or PHYS 111 or PHYS 125
Description: Scientists are increasingly expected to communicate with the public. In this course, students learn from people who regularly communicate about science with general audiences in order to gain an appreciation for the various types of public science communication, its importance to society, and techniques used in effective public science communication. Graduate/Undergraduate Equivalency: NSCI 520. Mutually Exclusive: Credit cannot be earned for NSCI 320 and NSCI 520. Repeatable for Credit.

NSCI 399 - MEDICAL PROFESSIONALISM AND OBSERVERSHIP
Short Title: MEDICAL PROFESSIONALISM
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: NSCI 399 consists of lectures to enhance your knowledge of medical professionalism, a writing experience aimed at reflecting on your experiences in both the lectures and clinical settings, and an opportunity to shadow a physician and/or observe in the operating room, intensive care unit or other clinical unit at Houston Methodist Hospital. Once enrolled, students will have the opportunity to review the experiences of past students to select a specialty that closely aligns with your goals and expectations. Please note, matching with physicians will not occur until students begin matriculating in NSCI 399. The physician selection process will be explained during class. The process and application deadlines can be found using the following link: https://goo.gl/HD7zsO. NOTE: Space is limited and registration for NSCI 009 DOES NOT GUARANTEE a seat in NSCI 399. Instructor Permission Required.
Course URL: goo.gl/HD7zsO (http://goo.gl/HD7zsO)
NSCI 410 - MEDICAL LEADERSHIP RESEARCH  
Short Title: MEDICAL LEADERSHIP RESEARCH  
Department: Natural Sciences Division  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 1-5  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Students will help in ongoing research in the health profession program with Dr. Gia Merlo. Additionally, students may conduct independent medical leadership/professionalism research upon approval. Instructor Permission Required. Repeatable for Credit.

NSCI 501 - PROFESSIONAL MASTER'S SEMINAR  
Short Title: PROFESSIONAL MASTER’S SEMINAR  
Department: Natural Sciences Division  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A weekly seminar which serves to provide exposure to local industry leaders from the areas of oil and gas exploration, nanotechnology, and environmental management; introduce career management and business relations tools; further develop written and oral communication skills; provide a forum for students to present internship project results. Repeatable for Credit.

NSCI 502 - SPACE STUDIES SEMINAR  
Short Title: SPACE STUDIES SEMINAR  
Department: Natural Sciences Division  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: A weekly space seminar held by space industry leaders and organized by faculty providing exposure on "real-world" subjects, such as general, commercial and scientific aspects of space; mission planning and design; astrodynamics/orbital mechanics; spacecraft navigation; Payload definition; Space environment; propulsion and maneuvering; human factors; risk management; export control regulations and others.

NSCI 503 - ENVIRONMENTAL LAB  
Short Title: ENVIRONMENTAL LAB  
Department: Natural Sciences Division  
Grade Mode: Standard Letter  
Course Type: Laboratory  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Laboratory module offered in conjunction with CAAM 353 that illustrates applications of numerical analysis in the solutions of common environmental science and engineering problems. Instructor Permission Required.

NSCI 506 - ENVIRONMENTAL CASE STUDIES  
Short Title: ENVIRONMENTAL CASE STUDIES  
Department: Natural Sciences Division  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Seminar bringing in outside speakers from the community to address environmental issues.

NSCI 510 - PROFESSIONAL MS INTERNSHIP  
Short Title: PROFESSIONAL MS INTERNSHIP  
Department: Natural Sciences Division  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Internship/Practicum  
Credit Hours: 12  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Supervised internship or project associated with pursued degree. Exclusively for students in the Professional Master's Program in Natural Sciences. Repeatable for Credit.

NSCI 511 - SCIENCE POLICY, AND ETHICS  
Short Title: SCIENCE POLICY, AND ETHICS  
Department: Natural Sciences Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment limited to students with a class of Graduate or Senior. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: An introduction to the policy, ethics, politics, and legal issues that relate to science and technology - discovery and application. This course presents a framework for analyzing ethical issues in business and professional work. The course then explores the ways in which government policy and business practices can promote or inhibit advances in science and technology while influencing the ethical choices of the professionals involved. Case studies will be used. Instructor Permission Required.

NSCI 512 - PROFESSIONAL MASTER'S PROJECT  
Short Title: PROFESSIONAL MASTER'S PROJECT  
Department: Natural Sciences Division  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Professional master students present the results of their internship or independent project. Recommended Prerequisite(s): NSCI 510.
NSCI 520 - PUBLIC SCIENCE COMMUNICATION SEMINAR  
Short Title: PUBLIC SCIENCE COMM SEMINAR  
Department: Natural Sciences Division  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Prerequisite(s): BIOC 201 or CHEM 121 or CHEM 151 or PHYS 101 or PHYS 111 or PHYS 125  
Description: Scientists are increasingly expected to communicate with the public. In this course, students learn from people who regularly communicate about science with general audiences in order to gain an appreciation for the various types of public science communication, its importance to society, and techniques used in effective public science communication. Graduate/Undergraduate Equivalency: NSCI 320. Mutually Exclusive: Credit cannot be earned for NSCI 520 and NSCI 320. Repeatable for Credit.

NSCI 521 - WRITING AND PUBLISHING SCIENCE  
Short Title: WRITING AND PUBLISHING SCIENCE  
Department: Natural Sciences Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 2  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: To prepare graduate students for writing and publishing independent research, this course examines the genre of the primary literature article; analyzes successful writing; explores ways of managing references and avoiding plagiarism; and addresses issues of authorship, submission, and peer review. Students will receive peer feedback on documents in preparation.

NSCI 530 - THE SHAPING OF HEALTH POLICY  
Short Title: THE SHAPING OF HEALTH POLICY  
Department: Natural Sciences Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Study of how health-care policy decisions are made and implemented, using an interdisciplinary approach involving government, law, ethics, economics, and history. Includes case discussions of major policy problems by faculty experts in these disciplines and guest speakers who are leading national figures in the shaping of public policy. Mutually Exclusive: Credit cannot be earned for NSCI 530 and POST 430/POST 530/SOSC 430.

NSCI 550 - APPLIED MATHEMATICS AND SCIENCE FOR TEACHERS  
Short Title: APPLIED MATH FOR TEACHERS  
Department: Natural Sciences Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This is a professional development course to serve high school physics teachers. It will cover topics in kinematics and mechanics with student-centered inquiry based pedagogy. Teachers will develop laboratory and hands-on activities, learn about new developments in physics research, and share best practices. The course goal is to improve teachers' science content knowledge related to the Texas Essential Knowledge and to provide teachers with tools to engage their students in science. Instructor Permission Required.

NSCI 573 - TEACHING PHYSICS VIA INQUIRY I KINEMATICS  
Short Title: TEACHING PHYSICS VIA INQUIRY I  
Department: Natural Sciences Division  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This is a professional development course to serve high school physics teachers. It will cover topics in electromagnetism with student-centered inquiry based pedagogy. Teachers will develop laboratory and hands-on activities, learn about new developments in physics research, and share best practices. The course goal is to improve teachers' science content knowledge related to the Texas Essential Knowledge and to provide teachers with tools to engage their students in science. Instructor Permission Required. Recommended Prerequisite(s): NSCI 573.

NSCI 574 - TEACHING PHYSICS VIA INQUIRY II, ELECTRICITY AND MAGNETISM  
Short Title: TEACHING PHYSICS VIA INQUIRY II  
Department: Natural Sciences Division  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This is a professional development course to serve high school physics teachers. It will cover topics in electromagnetism with student-centered inquiry based pedagogy. Teachers will develop laboratory and hands-on activities, learn about new developments in physics research, and share best practices. The course goal is to improve teachers' science content knowledge related to the Texas Essential Knowledge and to provide teachers with tools to engage their students in science. Instructor Permission Required.

NSCI 580 - CONTEMPORARY TOPICS IN ELEMENTARY SCHOOL MATHEMATICS  
Short Title: CONTEMP TOPICS IN ELEM MATH  
Department: Natural Sciences Division  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 1-6  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Mathematics topics related to and transcending elementary school mathematics. Active, student-centered, inquiry-based learning experiences using manipulatives and the latest technologies in a collaborative setting. Contemporary readings related to mathematics education. Problem-solving and motivational strategies, assessment, differentiated instruction, and questioning techniques to meet the needs of all learners. Curriculum development using the RUSMP Learning Plan.
NSCI 585 - CONTEMPORARY TOPICS IN MIDDLE SCHOOL
MATHMATICS
Short Title: CONTEMP TOPICS IN MDL SCH MATH
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mathematics topics related to and transcending middle school mathematics. Active, student-centered, inquiry-based learning experiences using manipulatives and the latest technologies in a collaborative setting. Contemporary readings related to mathematics education. Problem-solving and motivational strategies, assessment, differentiated instruction, and questioning techniques to meet the needs of all learners. Curriculum development using the RUSMP Learning Plan.

NSCI 586 - CONTEMPORARY TOPICS IN K-12 SCIENCE AND
MATHMATICS
Short Title: CONT TOPICS IN K-12 SCI & MATH
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Contemporary topics in grades K-12 science and mathematics instruction and covers both content and pedagogy. Multiple sections are offered. Each section focuses on a specific areas of instruction at specified grades. All sections include field studies, inquiry, curriculum development and implementation of instructional strategies in the classroom. Students may enroll in different sections for repeated credit. Instructor Permission Required. Repeatable for Credit.

NSCI 590 - CONTEMPORARY TOPICS IN SENIOR HIGH SCHOOL
MATHMATICS
Short Title: CONTEMP TOPICS HIGH SCHL MATH
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mathematics topics related to and transcending high school mathematics. Active, student-centered, inquiry-based learning experiences using manipulatives and the latest technologies in a collaborative setting. Contemporary readings related to mathematics education. Problem-solving and motivational strategies, assessment, differentiated instruction, and questioning techniques to meet the needs of all learners. Curriculum development using the RUSMP Learning Plan.

NSCI 592 - SEMINAR IN SCIENCE FOUNDATIONS
Short Title: SEMINAR IN SCIENCE FOUNDATIONS
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar with a team of university faculty and community-based scientists (in fields such as medicine, space, energy, and the environment) to increase understanding of scientific principles as they are applied in the scientific community of Houston and as they relate to secondary school science.

NSCI 595 - TOPICS IN CONTEMPORARY ALGEBRA FOR IN-SERVICE
TEACHERS
Short Title: TOPICS IN CONTEMP ALGEBRA
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Emphasis on function concepts through multiple representations and problem solving. Algebraic thinking and symbolic reasoning, underlying mathematical processes, and connections between algebra and the other mathematical strands. Active, student-centered, inquiry-based learning experiences using manipulatives and the latest technologies in a collaborative setting. Contemporary readings related to mathematics education.

NSCI 610 - MANAGEMENT FOR SCIENCE AND ENGINEERING
Short Title: MGT FOR SCIENCE/ENGINEERING
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is for graduate and undergraduate students who want to understand the basics of management in new and/or small technology-based businesses and is particularly relevant to students who are interested in careers in technology or entrepreneurial ventures. NSCI 610/ENGI 610 is team taught to provide insight into how technology oriented firms manage people, projects, accounting, marketing, strategy, intellectual property, organizations and entrepreneurship. Student's active participation is essential. Students who take this course are eligible for MGMT 625. Please contact Dr. Harry Wilkinson: hewilkinson@sbcglobal.net. Cross-list: ENGI 610.

Naval Science (NAVA)

NAVA 100 - NAVAL SCIENCE LABORATORY
Short Title: NAVAL SCIENCE LABORATORY
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Practical applications of leadership principles as a Junior Naval Officer. Repeatable for Credit.
NAVA 101 - NAVAL ORIENTATION
Short Title: NAVAL ORIENTATION
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to naval traditions and customs, seamanship, naval organization and missions, and the fundamental concepts of sea power.

NAVA 103 - SEA POWER AND MARITIME AFFAIRS
Short Title: SEA POWER
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to naval traditions and customs, seamanship, naval organization and missions, and the fundamental concepts of sea power.

NAVA 203 - LEADERSHIP AND MANAGEMENT I
Short Title: LEADERSHIP AND MANAGEMENT I
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to the principles and concepts of management, organization, leadership, information systems, and decision making.

NAVA 301 - NAVIGATION I
Short Title: NAVIGATION I
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Marine navigators and laws of vessel operations. Includes coastal piloting, navigational aids, nautical astronomy, satellite and inertial systems, and rules of the nautical road.

NAVA 302 - NAVAL OPERATIONS AND SEAMANSHIP
Short Title: NAVAL OPERATIONS & SEAMANSHIP
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An analysis of ship movements, formations, and fleet operations; includes Rules of the Road, maneuvering board, tactical publications and communications.

NAVA 303 - EVOLUTION OF WARFARE
Short Title: EVOLUTION OF WARFARE
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Historical survey of the evolution of the conduct of warfare. Strategy, tactics, weapons, organization, and military leaders/thinkers are studied. Course is taught in the NROTC Building.

NAVA 304 - NAVAL WEAPONS-NAVAL SHIP SYSTEMS II
Short Title: NAVAL WEAPONS
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The theory and employment of weapons systems. The student explores the processes of detection, evaluation, threat analysis, weapon selection, delivery, guidance, and explosives. The physical aspects of radar and underwater sound are described in detail.

NAVA 402 - LEADERSHIP AND ETHICS
Short Title: LEADERSHIP AND ETHICS
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): NAVA 203
Description: Leadership principles, with particular emphasis on ethics, human resources management, military law and discipline, and administration. The Capstone course for NROTC seniors. Recommended prerequisite(s): Spring semester of senior year.

NAVA 403 - NAVAL ENGINEERING
Short Title: NAVAL ENGINEERING
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Ship propulsion systems, auxiliary systems, steering systems, electrical power distribution, ship design, ship stability and damage control measures.

NAVA 410 - AMPHIBIOUS WARFARE
Short Title: AMPHIBIOUS WARFARE
Department: Naval Science
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the history of amphibious warfare, using case studies to examine doctrine tactics, and the factors necessary for successful operations.
Neuroscience (NEUR)

NEUR 111 - SCIENCE AND ART IN DIALOGUE: EXPERIMENT, IMAGINATION, AND THE INVENTION OF NEUROSCIENCE
Short Title: SCIENCE AND ART IN DIALOGUE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: We will take up the argument that "Proust was right about memory. Cezanne was uncannily accurate about the visual cortex, and Woolf pierced the mystery of consciousness," as we discuss aspects of the brain revealed by the texts, paintings, dishes and compositions of eight modern artists.

NEUR 301 - ADVANCED COGNITIVE NEUROSCIENCE: ATTENTION AND PERCEPTION
Short Title: ATTENTION AND PERCEPTION
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Overview of neuropsychological and cognitive neuroscience approaches to higher mental functions including sensation and perception, attention, motor control, and neuroplasticity. Other topics include basic neuroanatomy, experimental and clinical investigative methods, and the historical and philosophical context of contemporary neuroscience. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 501. Mutually Exclusive: Credit cannot be earned for NEUR 301 and NEUR 501.
Course URL: www.ruf.rice.edu/~neurosci

NEUR 302 - ADVANCED COGNITIVE NEUROSCIENCE: HIGHER MENTAL FUNCTIONS
Short Title: ADV COGNITIVE NEUROSCIENCE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Overview of neuropsychological and cognitive science approaches to higher mental functions, including language, memory, executive functions, reasoning, and numerical processing. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 502. Mutually Exclusive: Credit cannot be earned for NEUR 302 and NEUR 502.
Course URL: www.ruf.rice.edu/~neurosci

NEUR 304 - CELLULAR NEUROPHYSIOLOGY I&II
Short Title: CELLULAR NEUROPHYSIOLOGY I&II
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 125 and MATH 101
Description: Properties of excitable nerve membranes and chemical synapses; theory of ions in solutions, ion conduction through membranes, ion transport, linear cable theory, nonlinear properties of neurons, + stochastic properties of single ion channels, synaptic transmission, the role of calcium and transmitter release, + postsynaptic mechanism. Taught at Baylor College of Medicine; check NEUR website. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 504. Mutually Exclusive: Credit cannot be earned for NEUR 304 and NEUR 504. Repeatable for Credit.

NEUR 305 - OPTICAL IMAGING
Short Title: OPTICAL IMAGING
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course includes a theoretical portion which will introduce the fundamentals of optical imaging of neural activity, present the devices that are employed, and review applications and discuss their results. In addition, in a practical part, students will design, set up, and perform simple in vitro experiments to gain practical experience with this exciting and powerful technology. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 505. Mutually Exclusive: Credit cannot be earned for NEUR 305 and NEUR 505.
Course URL: www.ruf.rice.edu/~neurosci

NEUR 306 - CONCEPTS OF LEARNING AND MEMORY
Short Title: CONCEPT LEARNING&MEMORY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is designed to introduce students to the field of learning and memory. This field has exploded in the last few years with the introduction of new techniques, new approaches, and new concepts. The course will introduce the student to classical and modern concepts of learning and memory across all levels at which learning and memory is studied, including behavioral, anatomical, cellular, molecular and genetic levels of analysis. The basic concepts of learning and memory will also be related to known diseases of learning and memory. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 506. Mutually Exclusive: Credit cannot be earned for NEUR 306 and NEUR 506.
Course URL: www.ruf.rice.edu/~neurosci
NEUR 308 - INTRODUCTION TO COGNITIVE NEUROSCIENCE

Short Title: INTRO COGNITIVE NEUROSCIENCE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introductory graduate-level overview of cognitive neuroscience. This course will cover basics in history, neuroanatomy, methods of cognitive neuroscience, sensation and perception, control of action, learning and memory, emotion, language, attention, drugs and cognition, impulsivity, cognitive control, social cognition, and neurobiology of disease. This course is usually taught at the Texas Medical Center. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 508. Mutually Exclusive: Credit cannot be earned for NEUR 308 and NEUR 508.

NEUR 310 - INDEPENDENT RESEARCH FOR NEUROSCIENCE UNDERGRADUATES

Short Title: IND RES FOR NEUR UNDERGRADS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent research in Rice Neuroscience faculty laboratories (or other Texas Medical Center laboratories.) Students spend at least 3 hours per week in the laboratory for each semester hour of credit. If taken for 3 or more hours, counts as one required 300+ level lab course. Requires a proposal abstract, weekly reports, and a research paper (fall semester) or a proposal abstract, weekly reports, and a poster presentation (spring semesters). Students wishing to perform their research in an off-campus lab must submit a completed application to the NEUR 310 instructor at least 2 weeks prior to the start of classes and may not register for fewer than 3 credit hours. Students are strongly advised to secure research advisors and register for the class well in advance of the start of classes. Instructor Permission Required. Repeatable for Credit.

NEUR 319 - INTRODUCTION TO NEUROSCIENCE METHODS LAB

Short Title: NEUROSCIENCE METHODS LAB
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This is the laboratory course that is designed to run in parallel with the Introductory Neuroscience Methods lecture course. The lab is designed to give students hands-on experience applying the ideas for real time recording of microscopic and neurophysiological signals. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 519. Mutually Exclusive: Credit cannot be earned for NEUR 319 and NEUR 519.

NEUR 321 - ANALYSES OF NEURONAL FUNCTION

Short Title: ANALYSES OF NEURONAL FUNCTION
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will cover all basic aspects of the intrinsic electrophysiological properties of neurons and of synaptic transmission. It will also introduce principles of synaptic integration and plasticity. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 521. Mutually Exclusive: Credit cannot be earned for NEUR 321 and NEUR 521.

NEUR 322 - BRAIN CELL BIOLOGY AND DEVELOPMENT

Short Title: BRAIN CELL BIOL & DEVELOPMENT
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Anatomy and development of the nervous system is designed to introduce the student to the basic structure and function of the nervous system, and describe its rough development. It is intended for first year students without any specific advanced knowledge of neuroscience. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 522. Mutually Exclusive: Credit cannot be earned for NEUR 322 and NEUR 522. Repeatable for Credit.
NEUR 323 - GENETICS FOR NEUROSCIENCE  
**Short Title:** GENETICS FOR NEUROSCIENCE  
**Department:** Neurosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course integrates genetics into neuroscience and is intended to teach neuroscience students how to tackle neurobiological problems using genetic strategies and tools. In the introduction, students will be exposed to the basic concepts in genetics. Strategies using model organisms from C.elegans to mice will be covered. Finally we will discuss genetic approaches in humans. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 523. Mutually Exclusive: Credit cannot be earned for NEUR 323 and NEUR 523.

NEUR 335 - CELLULAR NEUROPHYSIOLOGY  
**Short Title:** CELLULAR NEUROPHYSIOLOGY  
**Department:** Neurosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course provides an upper level graduate treatment on the physiology and biophysics of nerve cell signaling. Topics to be covered include measurement and analysis of single events from ion channels to synaptic vesicle fusion, synaptic transmission and the relationship between calcium signaling and synaptic vesicle dynamics, short-term synaptic plasticity, and postsynaptic integration. This course is taught at the University of Texas Health Sciences Center. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 535. Mutually Exclusive: Credit cannot be earned for NEUR 335 and NEUR 535.

NEUR 350 - MOLECULAR NEUROBIOLOGY  
**Short Title:** MOLECULAR NEUROBIOLOGY  
**Department:** Neurosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course covers the molecular, cellular, and biochemical events that underlie neuronal function. Emphasis is placed on the basic chemistry and biology of cells residing the nervous system. The course also covers the structure and function of receptors, channels and pumps necessary for neuronal function and the neurochemistry of specific transmitter systems. The unique demand of neurons as specialized secretory cells is also covered. This course is taught at UTHSC. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 550. Mutually Exclusive: Credit cannot be earned for NEUR 350 and NEUR 550. Repeatable for Credit.

NEUR 362 - COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN  
**Short Title:** COGNITIVE NEUROSCIENCE  
**Department:** Neurosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** PSYC 101 and PSYC 203  
**Description:** Survey of theory and research on how mental processes are carried out by the human brain, with an emphasis on relating measures of brain activity to cognitive functioning, methods surveyed included electro physiological recording techniques, functional imaging techniques and methods that involve lesioning or disrupting neural activity. Cross-list: PSYC 362.

NEUR 364 - COGNITIVE NEUROSCIENCE LAB  
**Short Title:** COGNITIVE NEUROSCIENCE LAB  
**Department:** Neurosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Laboratory  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** PSYC 362 (may be taken concurrently) or NEUR 362 (may be taken concurrently)  
**Description:** The objective is to equip the students of PSYC/NEUR 362 with the tools on how to apply cognitive neuroscience techniques to health or clinical topics and to investigate sensorimotor and cognitive measures in a human model. The prerequisite may be taken the same semester as this class. Instructor Permission Required. Cross-list: PSYC 364. Graduate/Undergraduate Equivalency: NEUR 564. Mutually Exclusive: Credit cannot be earned for NEUR 364 and NEUR 564.

NEUR 376 - NEUROBIOLOGY OF DISEASE  
**Short Title:** NEUROBIOLOGY OF DISEASE  
**Department:** Neurosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Covers some of the most important disorders of nervous system function. Exposes students to incidence, clinical manifestations, pathophysiology, current scientific models of causes/mechanisms of disorders of the adult brain: stroke, Parkinson’s disease, Alzheimer’s disease, seizure disorders, brain tumors, multiple sclerosis, amyotrophic lateral sclerosis, brain/spinal cord injury, addiction, depression, and schizophrenia. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 576. Mutually Exclusive: Credit cannot be earned for NEUR 376 and NEUR 576.
NEUR 377 - NEUROANATOMY: FUNCTIONAL ORGANIZATION OF THE CENTRAL NERVOUS SYSTEM
Short Title: FUNCTIONAL NEUROANATOMY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Anatomy and function of components of the nervous system with an emphasis on the central nervous system. This course is offered for Rice psychology graduate undergraduate students. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 577. Mutually Exclusive: Credit cannot be earned for NEUR 377 and NEUR 577.

NEUR 379 - NEUROBIOLOGY OF SENSATION AND MOVEMENT
Short Title: NEUROBIO OF SENSATION/MOVEMENT
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Overview of basic systems neuroscience. The course covers sensory transductions, development, and motor programming. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 579. Mutually Exclusive: Credit cannot be earned for NEUR 379 and NEUR 579.

NEUR 380 - FUNDAMENTAL NEUROSCIENCE SYSTEMS
Short Title: NEUROSYSTEMS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will provide a broad overview of the brain's neural systems that subserve perception, learning, and behavior. The course will be highly integrative with thematic content including functional organization of the nervous system, neural encoding and decoding, sensory systems, motor systems, and high-level concept processing. Cross-list: BIOC 380, PSYC 380. Recommended Prerequisite(s): PSYC 101.

NEUR 381 - PHYSIOLOGY OF VISUAL SYSTEM
Short Title: PHYSIOLOGY OF VISUAL SYSTEM
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course provides an advanced level and comprehensive coverage of the physiology of the retina and visual cortex. Useful for graduate students and postdocs in neuroscience, physiology, biochemistry, cell biology, and molecular genetics who are interested in visual information processing and brain function. Offered every even years only. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 580. Mutually Exclusive: Credit cannot be earned for NEUR 381 and NEUR 580.

NEUR 382 - INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE
Short Title: INTRO COMPUTATIONAL NEURSCI
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to methods and theories used to describe and understand neural information processing in the brain. Models covered will range from single neuron to networks for sensory, motor and learning tasks. Programming exercises will be done using Matlab. Cross-list: ELEC 382. Graduate/Undergraduate Equivalency: NEUR 582. Recommended Prerequisite(s): CAAM 210. Mutually Exclusive: Credit cannot be earned for NEUR 382 and NEUR 582.

NEUR 383 - INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY
Short Title: INTRO TO NEUROENGINEERING
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and (PHYS 102 or PHYS 112 or PHYS 126 or PHYS 142)
Description: This course will serve as an introduction to quantitative modeling of neural activity and the methods used to stimulate and record brain activity. Cross-list: BIOE 380, ELEC 380. Mutually Exclusive: Credit cannot be earned for NEUR 383 and BIOE 480/BIOE 590/ELEC 480/ELEC 580.

NEUR 385 - FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE
Short Title: FUNDAMENTALS OF NEUROSCIENCE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Cellular, molecular, and integrative mechanisms of neural function, including membrane and axon physiology, synaptic transmission and plasticity, and sensory and motor systems. Cross-list: BIOC 385.
NEUR 401 - UNDERGRADUATE HONORS RESEARCH  
**Short Title:** UNDERGRADUATE HONORS RESEARCH  
**Department:** Neurosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Research  
**Credit Hours:** 5  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** NEUR 310 or NEUR 485  
**Description:** The Neuroscience Honors Research Program is a suite of courses offering our seniors and advanced juniors the opportunity to perform a two-semester, individual research project in a research laboratory in Neuroscience. Students having performed NEUR 310 research in an off-campus laboratory in the Texas Medical Center will also be eligible to perform honors research in that laboratory. The Honors Research Program courses function as a set and must all be taken in the same academic year. Registration for any of the courses requires a commitment to register for all three. Requires at least 15 hours of laboratory research per week, a proposal (revised from application), monthly reports, and a formal progress report (abstract, aims, progress toward aims, discussion of results, plans for the spring semester). Prerequisites: strong performance in NEUR 310 or NEUR 485. Research professor recommendation required. Application for admission required. Instructor Permission Required. Repeatable for Credit.  

NEUR 402 - UNDERGRADUATE HONORS RESEARCH  
**Short Title:** UNDERGRADUATE HONORS RESEARCH  
**Department:** Neurosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Research  
**Credit Hours:** 5  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (NEUR 310 or NEUR 485) and NEUR 401  
**Corequisite:** NEUR 412  
**Description:** The Neuroscience Honors Research Program is a suite of courses offering our seniors and advanced juniors the opportunity to perform a two-semester, individual research project in a research laboratory in Neuroscience. Students having performed NEUR 310 research in an off-campus laboratory in the Texas Medical Center will also be eligible to perform honors research in that laboratory. Registration for any of the courses requires a commitment to register for all three. Requires at least 15 hours of laboratory research per week, a proposal (revised from application), monthly reports, and a formal progress report (abstract, aims, progress toward aims, discussion of results, plans for the spring semester). Prerequisites: strong performance in NEUR 310 or NEUR 485. Research professor recommendation required. Application for admission required. Instructor Permission Required. Repeatable for Credit.  

NEUR 412 - UNDERGRADUATE RESEARCH SEMINAR  
**Short Title:** UNDERGRADUATE RESEARCH SEMINAR  
**Department:** Neurosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (NEUR 310 or NEUR 485) and NEUR 401  
**Corequisite:** NEUR 402  
**Description:** This companion seminar requires attendance at course meetings and a formal scientific presentation of research performed while enrolled in the Honors Research Program. Must register for corequisite: NEUR 402. Instructor Permission Required. Repeatable for Credit.  

NEUR 415 - THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS  
**Short Title:** THEORETICAL NEUROSCIENCE  
**Department:** Neurosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** We present the theoretical foundations of cellular and systems neuroscience from distinctly quantitative point of view. We develop the mathematical and computational tools as they are needed to model, analyze, visualize and interpret a broad range of experimental data. This course is independent, but complementary to NEUR 416. Cross-list: CAAM 415, ELEC 488. Graduate/Undergraduate Equivalency: NEUR 615. Recommended Prerequisite(s): CAAM 210 or MATH 211 or CAAM 335 or MATH 355. Mutually Exclusive: Credit cannot be earned for NEUR 415 and NEUR 615.  

NEUR 416 - NEURAL COMPUTATION  
**Short Title:** NEURAL COMPUTATION  
**Department:** Neurosciences  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** How does the brain work? Understanding the brain requires sophisticated theories to make sense of the collective actions of billions of neurons and trillions of synapses. Word theories are not enough; we need mathematical theories. The goal of this course is to provide an introduction to the mathematical theories of learning and computation by neural systems. These theories use concepts from dynamical systems (attractors, oscillations, chaos) and concepts from statistics (information, uncertainty, inference) to relate the dynamics and functions of neural networks. We will apply these theories to sensory computation, learning and memory, and motor control. Students will learn to formalize and mathematically answer questions about neural computations, including "what does a network compute?", "how does it compute?", and "why does it compute that way?" Prerequisites: knowledge of calculus, linear algebra, and probability and statistics. Cross-list: CAAM 416, ELEC 489.
NEUR 430 - FUNDAMENTALS OF HUMAN NEUROIMAGING
Short Title: HUMAN NEUROIMAGING
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A survey of methods and results for human brain imaging. Describes the physical and physiological mechanisms of image formation. Provides examples from clinical and basic research, particularly in visual cortex. Emphasis on magnetic resonance imaging, but surveys other imaging modalities including PET, optical, and EEG/MEG source localization. Course taught at Baylor College of Medicine.

NEUR 450 - ELECTRICAL SIGNALING IN THE BRAIN
Short Title: ELECTRICAL SIGNALING IN BRAIN
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Electrical Signaling in the Brain covers the basics concepts of electrical signaling from the proteins involved, biophysical principles and computational methods required to understand measure and characterize electrical signaling in the brain. Instructor Permission Required. Repeatable for Credit.

NEUR 481 - COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING
Short Title: COMP/NEUROSCIENCE/NEURAL ENGNR
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to the anatomy and physiology of the brain. Includes basic electrophysiology of nerve and muscle. Develops mathematical models of neurons, synaptic transmission and natural neural networks. Leads to a discussion of neuromorphic circuits which can represent neuron and neural network behavior in silicon. Recommendation: Knowledge of electrical circuits, operational amplifier circuits and ordinary differential equations. Involves programming Matlab. Cross-list: BIOE 481, ELEC 481. Graduate/Undergraduate Equivalency: NEUR 583. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits; and ordinary differential equations. Mutually Exclusive: Credit cannot be earned for NEUR 481 and NEUR 583.

NEUR 501 - ADVANCED COGNITIVE NEUROSCIENCE: ATTENTION AND PERCEPTION
Short Title: ATTENTION AND PERCEPTION
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of neuropsychological and cognitive neuroscience approaches to higher mental functions including sensation and perception, attention, motor control, and neuroplasticity. Other topics include basic neuroanatomy, experimental and clinical investigative methods, and the historical and philosophical context of contemporary neuroscience. Instructor Permission Required. Cross-list: PSYC 575. Graduate/Undergraduate Equivalency: NEUR 301. Mutually Exclusive: Credit cannot be earned for NEUR 501 and NEUR 301.
Course URL: www.ruf.rice.edu/~neurosci

NEUR 502 - ADVANCED COGNITIVE NEUROSCIENCE: HIGHER MENTAL FUNCTIONS
Short Title: HIGHER MENTAL FUNCTIONS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of neuropsychological and cognitive science approaches to higher mental functions, including language, memory, executive functions, reasoning, and numerical processing. Instructor Permission Required. Cross-list: PSYC 576. Graduate/Undergraduate Equivalency: NEUR 302. Mutually Exclusive: Credit cannot be earned for NEUR 502 and NEUR 302.
Course URL: www.ruf.rice.edu/~neurosci

NEUR 504 - CELLULAR NEUROPHYSIOLOGY I & II
Short Title: CELLULAR NEUROPHYSIOLOGY I&II
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PHYS 125 and MATH 101
Description: Properties of excitable nerve membranes and chemical synapses; theory of ions in solutions, ion conduction through membranes, ion transport, linear cable theory, nonlinear properties of neurons, + stochastic properties of single ion channels, synaptic transmission, the role of calcium and transmitter release, + postsynaptic mechanism. Taught at Baylor College of Medicine; check NEUR website. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 304. Mutually Exclusive: Credit cannot be earned for NEUR 504 and NEUR 304. Repeatable for Credit.
NEUR 505 - OPTICAL IMAGING
Short Title: OPTICAL IMAGING
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course includes a theoretical portion which will introduce the fundamentals of optical imaging of neural activity, present the devices that are employed, and review applications and discuss their results. In addition, in a practical part, students will design, set up, and perform simple in vitro experiments to gain practical experience with this exciting and powerful technology. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 305. Mutually Exclusive: Credit cannot be earned for NEUR 505 and NEUR 305.
Course URL: www.ruf.rice.edu/~neurosci

NEUR 506 - CONCEPTS OF LEARNING AND MEMORY
Short Title: CONCEPT LEARNING&MEMORY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is designed to introduce graduate students to the field of learning and memory. This field has exploded in the last few years with the introduction of new techniques, new approaches, and new concepts. The course will introduce the student to classical and modern concepts of learning and memory across all levels at which learning and memory is studied, including behavioral, anatomical, cellular, molecular and genetic levels of analysis. The basic concepts of learning and memory will also be related to known diseases of learning and memory. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 306. Mutually Exclusive: Credit cannot be earned for NEUR 506 and NEUR 306.
Course URL: www.ruf.rice.edu/~neurosci

NEUR 508 - INTRODUCTION TO COGNITIVE NEUROSCIENCE
Short Title: INTRO COGNITIVE NEUROSCIENCE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introductory graduate-level overview of cognitive neuroscience. The course will cover basics in history, neuroanatomy, methods of cognitive neuroscience, sensation and perception, control of action, learning and memory, emotion, language, attention, drugs and cognition, impulsivity, cognitive control, social cognition, and neurobiolgy of disease. This course is usually taught at the Texas Medical Center. Instructor Permission Required. Cross-list: PSYC 574. Graduate/Undergraduate Equivalency: NEUR 308. Mutually Exclusive: Credit cannot be earned for NEUR 508 and NEUR 308.

NEUR 510 - NEUROPHARMACOLOGY
Short Title: NEUROPHARMACOLOGY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An advanced graduate course focusing on molecular genetic studies. Integrates molecular patterning of nervous system development, and the molecular mechanism of growth core guidance and synapse formation. Course taught at Baylor College of Medicine. Instructor Permission Required.
Course URL: www.ruf.rice.edu/~neurosci

NEUR 515 - NEURAL DEVELOPMENT
Short Title: NEURAL DEVELOPMENT
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The objectives of this course are to examine how pharmacological agents have been used to elucidate the function of neurotransmitter systems in the central nervous system. In addition, the mechanism of some clinically effective drugs are reviewed in terms of the structure and function of the brain. Instructor Permission Required. Repeatable for Credit.

NEUR 516 - SENSORY SYSTEMS
Short Title: SENSORY SYSTEMS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A two-part course covering sensory transduction in audition, touch, and the chemical senses, and a detailed coverage of the visual system, including retinal structures and central pathways, phototransduction, receptive fields, and functional organization in the cortex. Course taught at Baylor College of Medicine. Instructor Permission Required.
Course URL: www.ruf.rice.edu/~neurosci

NEUR 517 - MECHANISMS OF MEMORY
Short Title: MECHANISM OF MEMORY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Synthesizes our understanding of the mechanism of higher-order memory formation covering learning theory, cellular physiology and biochemistry and discussing memory disorders. Instructor Permission Required.
Course URL: www.ruf.rice.edu/~neurosci/
NEUR 518 - INTRODUCTION TO NEUROSCIENCE METHODS
Short Title: INTRO TO NEUROSCIENCE METHODS
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an introduction to the recording of signals from live neurons using microscopic and electrophysiologic methods. The course introduces the basics of instrumentation in the recording of real time biologic signals. The course is designed to run in parallel with a lab course. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 318. Mutually Exclusive: Credit cannot be earned for NEUR 518 and NEUR 318.

NEUR 519 - INTRODUCTION TO NEUROSCIENCE METHODS LAB
Short Title: NEUROSCIENCE METHODS LAB
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is the laboratory course that is designed to run in parallel with the Introductory Neuroscience Methods lecture course. The Lab is designed to give students hands-on experience applying the ideas for real time recording of microscopic and neurophysiological signals. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 319. Mutually Exclusive: Credit cannot be earned for NEUR 519 and NEUR 319.

NEUR 520 - TEN UNSOLVED QUESTIONS IN NEUROSCIENCE
Short Title: TEN UNSOLVED QUESTIONS IN NEUR
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Neuroscience has yet to establish its general principles. This course introduces the major topics including memory, sleep, consciousness, information in neural activity, emotions, plasticity, and intelligence. Each week's lecture introduces a new problem, addressing why the question is important, its history, current thinking, and what we have learned. Course taught at Baylor College of Medicine. Instructor Permission Required.
Course URL: www.ruf.rice.edu/~neurosci

NEUR 521 - ANALYSES OF NEURONAL FUNCTION
Short Title: ANALYSES OF NEURONAL FUNCTION
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will cover all basic aspects of the intrinsic electrophysiological properties of neurons and of synaptic transmission. It will also introduce principles of synaptic integration and plasticity. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 321. Mutually Exclusive: Credit cannot be earned for NEUR 521 and NEUR 321.

NEUR 522 - BRAIN CELL BIOLOGY AND DEVELOPMENT
Short Title: BRAIN CELL BIOL & DEVELOPMENT
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Anatomy and development of the nervous system is designed to introduce the graduate student to the basic structure and function of the nervous system, and describe its rough development. It is intended for first year graduate students without any specific advanced knowledge of neuroscience. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 322. Mutually Exclusive: Credit cannot be earned for NEUR 522 and NEUR 322.

NEUR 523 - GENETICS FOR NEUROSCIENCE
Short Title: GENETICS FOR NEUROSCIENCE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course integrates genetics into neuroscience and is intended to teach neuroscience students how to tackle neurobiological problems using genetic strategies and tools. In the introduction, students will be exposed to the basic concepts in genetics. Strategies using model organisms from C.elegans to mice will be covered. Finally we will discuss genetic approaches in humans. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 323. Mutually Exclusive: Credit cannot be earned for NEUR 523 and NEUR 323.
NEUR 525 - NEUROSCIENCE AND LAW
Short Title: NEUROSCIENCE AND LAW
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: This course addresses how the modern understanding of brain function will intersect with the making of law, the punishment of criminals, and the development of new rehabilitation strategies. The readings will bring together a unique conjunction of neurobiology, legal scholarship, and policy making. The goals of the course will be to facilitate an understanding of the neurobiological underpinnings of behaviors that are subject to legal consequences for individuals and groups, and using this emerging base of scientific information to design modern, evidence-based policy.

NEUR 530 - THEORY, CONTENT, AND EXECUTION IN COGNITIVE NEUROSCIENCE
Short Title: COGNITIVE NEUROSCIENCE THEORY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: This course is designed to provide students with the skills necessary to become successful cognitive neuroscientists. Students will receive instruction in designing experiments and analyzing data, selecting research topics, relating theory to their work and how to say up to date on current research. This course is taught at the University of Texas Health Sciences Center. Instructor Permission Required. Repeatable for Credit.

NEUR 535 - CELLULAR NEUROPHYSIOLOGY
Short Title: CELLULAR NEUROPHYSIOLOGY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: This course provides an upper level graduate treatment on the physiology and biophysics of nerve cell signaling. Topics to be covered include measurement and analysis of single events from ion channels to synaptic vesicle fusion, synaptic transmission and the relationship between calcium signaling and synaptic vesicle dynamics, short-term synaptic plasticity, and postsynaptic integration. This course is taught at the University of Texas Health Sciences Center. Instructor Permission Required. Repeatable for Credit.

NEUR 540 - GRADUATE NEUROANATOMY
Short Title: GRADUATE NEUROANATOMY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: This course covers a broad overview of the structure and function of the central nervous system. The general architecture of the nervous system and its function systems are present in a series of online exercise. MRIs of brain anatomy, as commonly presented in the scientific literature, will be presented using a computerized learning system. This course is taught at the University of Texas Health Sciences Center. Instructor Permission Required. Repeatable for Credit.

NEUR 550 - MOLECULAR NEUROBIOLOGY
Short Title: MOLECULAR NEUROBIOLOGY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: This course covers the molecular, cellular, and biochemical events that underlie neuronal function. Emphasis is placed on the basic chemistry and biology of cells residing the nervous system. The course also covers the structure and function of receptors, channels and pumps necessary for neuronal function and the neurochemistry of specific transmitter systems. The unique demand of neurons as specialized secretory cells is also covered. This course is taught at UTHSC. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 350. Mutually Exclusive: Credit cannot be earned for NEUR 550 and NEUR 350. Repeatable for Credit.

NEUR 564 - COGNITIVE NEUROSCIENCE LAB
Short Title: COGNITIVE NEUROSCIENCE LAB
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Description: The objective is to equip the students of PSYC/NEUR 362 the tools on how to apply cognitive neuroscience techniques to health or clinical topics and to investigate sensorimotor and cognitive measures in a human model. Instructor Permission Required. Cross-list: PSYC 564. Graduate/Undergraduate Equivalency: NEUR 364. Mutually Exclusive: Credit cannot be earned for NEUR 564 and NEUR 364.
NEUR 576 - NEUROBIOLOGY OF DISEASE
Short Title: NEUROBIOLOGY OF DISEASE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Covers some of the most important disorders of nervous system function. Exposes students to incidence, clinical manifestations, pathophysiology, current scientific models of causes/mechanisms of disorders of the adult brain: stroke, Parkinson's disease, Alzheimer's disease, seizure disorders, brain tumors, multiple sclerosis, amyotrophic lateral sclerosis, brain/spinal cord injury, addiction, depression, and schizophrenia. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 376. Mutually Exclusive: Credit cannot be earned for NEUR 576 and NEUR 376.

NEUR 577 - NEUROANATOMY: FUNCTIONAL ORGANIZATION OF THE CENTRAL NERVOUS SYSTEM
Short Title: FUNCTIONAL NEUROANATOMY
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Anatomy and function of components of the nervous system with an emphasis on the central nervous system. This course is offered for Rice psychology graduate undergraduate students. Course taught at Baylor College of Medicine. Instructor Permission Required. Graduate/Undergraduate Equivalency: NEUR 377. Mutually Exclusive: Credit cannot be earned for NEUR 577 and NEUR 377.

NEUR 578 - HIGHER BRAIN FUNCTION
Short Title: HIGHER BRAIN FUNCTION
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Aspects of systems' neuroscience related to higher brain function: (1) role of limbic system in higher brain functions, (2) role of the extended amygdala and the mesolimbic system in reward and addiction, (3) discussion of human brain processes including decision making, goal directed learning and representation of self and others. Course taught at Baylor College of Medicine. Instructor Permission Required. Mutually Exclusive: Credit cannot be earned for NEUR 578 and NEUR 378.
Course URL: www.ruf.rice.edu/~neurosci
NEUR 583 - COMPUTATIONAL NEUROSCIENCE AND NEURAL ENGINEERING
Short Title: COMP/NEUROSCIENCE/NEURAL ENGNR
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to the anatomy and physiology of the brain. Includes basic electrophysiology of nerve and muscle. Develops mathematical models of neurons, synaptic transmission and natural neural networks. Leads to a discussion of neuromorphic circuits which can represent neuron and neural network behavior in silicon.
Recommendation: Knowledge of electrical circuits, operational amplifier circuits and ordinary differential equations. Cross-list: BIOE 583, ELEC 583. Graduate/Undergraduate Equivalency: NEUR 481. Recommended Prerequisite(s): Knowledge of basic electrical and operational amplifier circuits; and ordinary differential equations. Mutually Exclusive: Credit cannot be earned for NEUR 583 and NEUR 481.

NEUR 615 - THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS
Short Title: THEORETICAL NEUROSCIENCE
Department: Neurosciences
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: We present the theoretical foundations of cellular and systems neuroscience from distinctly quantitative point of view. We develop the mathematical and computational tools as they are needed to model, analyze, visualize and interpret a broad range of experimental data. Additional course work required beyond the undergraduate course requirements. Cross-list: CAAM 615, ELEC 588. Graduate/Undergraduate Equivalency: NEUR 415. Mutually Exclusive: Credit cannot be earned for NEUR 615 and NEUR 415.

Philosophy (PHIL)

PHIL 100 - PROBLEMS OF PHILOSOPHY
Short Title: PROBLEMS OF PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to philosophy through such fundamental problems as the basis of morality, the foundation of state authority, determinism and freedom, and the possibility of knowledge.

PHIL 101 - CONTEMPORARY MORAL ISSUES
Short Title: CONTEMPORARY MORAL ISSUES
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Examination of moral issues surrounding such topics as abortion, euthanasia, war, capital punishment, justice, and equality.

PHIL 103 - PHILOSOPHICAL ASPECTS OF COGNITIVE SCIENCE
Short Title: PHIL ASPECT COGNITIVE SCIENCE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An examination of current research in cognitive science and its philosophical implications. Topics include whether the mind is a computational system, how the mind is organized, what relations minds bear to brains.

PHIL 104 - INTRODUCTION TO PHILOSOPHY OF SCIENCE
Short Title: INTRO TO PHILOSOPHY OF SCIENCE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines core features of scientific method and philosophical accounts of scientific knowledge. Topics include: discovery, explanation, evidence, theories and models.

PHIL 105 - HISTORICAL INTRODUCTION TO PHILOSOPHY
Short Title: HIST INTRO TO PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Study and discussion of central issues of Western philosophy as developed by its original thinkers from the ancient Greeks to the twentieth century.

PHIL 106 - LOGIC
Short Title: LOGIC
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the formal theory of reasoning, which will be used to assess the validity of arguments in natural languages. Study of general properties of logical implication and logical truth.
PHIL 109 - PHILOSOPHY OF ART
Short Title: PHILOSOPHY OF ART
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to central issues in contemporary philosophy of art through the lens of artistic works and practice. Students investigate what constitutes a work of art, artistic representation, the nature of aesthetic qualities, and the relevance of artists’ intentions to the evaluation of works of art, with close attention to visual, performance, literary, and experimental art forms.

PHIL 111 - INTRODUCTION TO FEMINIST PHILOSOPHY
Short Title: INTRO TO FEMINIST PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Feminist philosophy both uses philosophical methods to investigate feminism, and critiques philosophy from a feminist perspective. This course introduces the student to feminist philosophy from historical and contemporary perspectives, investigating topics of both feminist and philosophical interest such as gender, sexuality, family, class, race, equality, justice, politics, science, and knowledge. Cross-list: SWGS 111.

PHIL 116 - INTRODUCTION TO THE PHILOSOPHY OF LAW
Short Title: INTRO TO THE PHILOSOPHY OF LAW
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The course will discuss the nature of law in general as well as discrete topics in legal philosophy. How is a legal rule different from an order backed by a terrorist threat? Is retroactive legislation legal? What are legal rights? Is there a general moral duty to obey the law?

PHIL 201 - HISTORY OF PHILOSOPHY I
Short Title: HISTORY OF PHILOSOPHY I
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of the major philosophers and philosophical systems of ancient Greece, from Parmenides to the Stoics. Cross-list: CLAS 201, MDEM 201.

PHIL 202 - HISTORY OF PHILOSOPHY II
Short Title: HIST OF PHILOSOPHY II
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A survey of the history of philosophy from the 17th- to the 20th century. Leading philosophers discussed include Descartes, Locke, Hume, Kant, Mill, Nietzsche and Quine.

PHIL 301 - ANCIENT AND MEDIEVAL PHILOSOPHY
Short Title: ANCIENT & MEDIEVAL PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics in the history of philosophy from the 4th century B.C. through the 14th century. Graduate students require permission of instructor. Cross-list: CLAS 301, MDEM 301. Graduate/Undergraduate Equivalency: PHIL 501. Mutually Exclusive: Credit cannot be earned for PHIL 301 and MDEM 481. Repeatable for Credit.

PHIL 302 - MODERN PHILOSOPHY
Short Title: MODERN PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examination of themes or authors in 17th- and 18th-century philosophy. Topics vary from year to year. Normally offered every year. Graduate/Undergraduate Equivalency: PHIL 502. Recommended Prerequisite(s): Majors should take PHIL 202 before PHIL 302. For non-majors one previous course in philosophy is recommended. Mutually Exclusive: Credit cannot be earned for PHIL 302 and PHIL 502. Repeatable for Credit.

PHIL 303 - THEORY OF KNOWLEDGE
Short Title: THEORY OF KNOWLEDGE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the question: What is knowledge, and how is it possible that we have it? Topics include: analysis of knowledge, justification and evidence, skeptical challenges, and relativism.
PHIL 304 - METAPHYSICS
Short Title: METAPHYSICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examination of metaphysical theories in the works of historical and contemporary thinkers. Topics may include: free will, the identity of persons over time, causation, possibility and necessity, design and chance, the nature of existence, the nature of time. Recommended prerequisite(s): A previous course in philosophy.

PHIL 305 - MATHEMATICAL LOGIC
Short Title: MATHEMATICAL LOGIC
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: We study formal languages and methods for assessing correctness of arguments, including a brief look at modal and many-valued logics. We also consider their relations to natural languages and reflect on the techniques required to prove theorems about languages. A previous logic course is helpful, though the course is self-contained. Graduate/Undergraduate Equivalency: PHIL 505. Mutually Exclusive: Credit cannot be earned for PHIL 305 and PHIL 505.

PHIL 306 - ETHICS
Short Title: ETHICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course deals with fundamental questions of value and morality-questions such as: What sort of life is best? What kind of person is it best to be? What does morality require of us? It also deals with important second-order questions about these fundamental questions-for example: Can morality be justified? How can we know what's right or good? Is there moral truth? What is the relation between morality and self-interest? Readings are drawn from both classical and contemporary sources.

PHIL 307 - SOCIAL AND POLITICAL PHILOSOPHY
Short Title: SOCIAL & POLITICAL PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines some philosophical problems raised by society and the state. Topics to be discussed include the sources of political authority, the justification of punishment, the significance of national boundaries, and the distribution of wealth.

PHIL 308 - CONTINENTAL PHILOSOPHY
Short Title: CONTINENTAL PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of philosophical movements in 20th-century European philosophy-including phenomenology, existentialism, hermeneutics, critical theory, deconstruction, and postmodernism. Repeatable for credit with consent of instructor. Graduate/Undergraduate Equivalency: PHIL 508. Repeatable for Credit.

PHIL 309 - AESTHETICS
Short Title: AESTHETICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An approach to the philosophy of art drawing upon traditional and contemporary philosophical theories, artist's manifestos, and reflection upon exemplary art works. Topics include: What is a work of art? What is artistic genius? What makes an artwork good? What is the place of art within morality and society?

PHIL 310 - PHILOSOPHY OF BIOLOGY
Short Title: PHILOSOPHY OF BIOLOGY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course examines philosophical issues that emerge in biological science, with emphasis on evolutionary theory, genetics and development, and systems biology. Recommended Prerequisite(s): BIOS 201 and BIOS 202.

PHIL 311 - PHILOSOPHY OF RELIGION
Short Title: PHILOSOPHY OF RELIGION
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examination of God's existence, the problem of evil, the relation between faith and reason, the meaning of death, the relation between religion and morality, and tolerance/respect for differing religions.
PHIL 312 - PHILOSOPHY OF MIND
Short Title: PHILOSOPHY OF MIND
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Inquiry into the nature of mind. Questions include: how should we conceive of the relationship of mind and body? What is consciousness, and how might it be explained? How can mental states be caused? Can one's mind and its contents die outside one's brain? Recommended Prerequisite(s): One course in philosophy or permission of the instructor.

PHIL 313 - PHILOSOPHY OF SCIENCE
Short Title: PHILOSOPHY OF SCIENCE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course treats topics of central importance to general philosophy of science. We ask what makes something a scientific explanation, what is required for observations to support (confirm) scientific theories, the nature of evidence, and how experiments relate to theories and models of the world. Topics covered include logical empiricism, the problem of induction, theory-laden observation, relativism, and the role of social values in science. Repeatable for Credit.

PHIL 314 - THE PHILOSOPHY OF MEDICINE
Short Title: THE PHILOSOPHY OF MEDICINE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The biomedical sciences, the practice of medicine, and health care policy employ concepts of health, disease, disability, and defect in explanatory accounts, intermixing factual claims with moral and other evaluations. This course explores the interplay of evaluation and explanation in medicine's models of disease and health.

PHIL 315 - ETHICS, MEDICINE, AND PUBLIC POLICY
Short Title: ETHICS, MEDICINE & PUB POLICY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of fundamental philosophical problems in criminal law, property law, contract law and the law of torts.

PHIL 316 - PHILOSOPHY OF LAW
Short Title: PHILOSOPHY OF LAW
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examination of fundamental philosophical problems in criminal law, property law, contract law and the law of torts.

PHIL 317 - ETHICS AND EXISTENCE
Short Title: ETHICS AND EXISTENCE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of the concept of ethical obligation from an existential point of view. Readings from Kierkegaard, Husserl, Heidegger, Sartre, Derrida, Levinas, and Apel.

PHIL 319 - FEMINIST PHILOSOPHY
Short Title: FEMINIST PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Feminism investigates every kind of boundary and identity, including sex, race, and class, finding and questioning them. We will explore how feminists have reshaped traditional philosophical debates about knowledge, ethics, science, politics, and technology. Class will tend away from traditional lectures and exams, and toward active independent thinking. Cross-list: SWGS 319. Recommended Prerequisite(s): Either one previous philosophy course, or enrollment in the CSWG&S minor, or instructor approval.

PHIL 321 - KANT AND 19TH CENTURY PHILOSOPHY
Short Title: KANT & 19TH CENTURY PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of Kant's philosophical revolution in his "Critique of Pure Reason," and of the development and criticism of conceptions of self-consciousness, autonomy, sociality, and history in the later post-Kantian philosophical tradition, which may include works by Hegel, Schopenhauer, Marx, Kierkegaard, Nietzsche, or others. Recommended prerequisite(s): One previous course in philosophy.
PHIL 326 - HISTORY OF ETHICS
Short Title: HISTORY OF ETHICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: An introduction to the major issues of ethical theory through
the reading and discussion of such classical figures as Plato, Aristotle,
the Stoics, the Epicureans, St. Augustine, St. Thomas, Maimonides,
Bishop Butler, David Hume, Adam Smith, J.S. Mill, and I. Kant. Graduate/
Undergraduate Equivalency: PHIL 526. Recommended Prerequisite(s):
One previous course in Philosophy. Mutually Exclusive: Credit cannot be
earned for PHIL 326 and PHIL 526.

PHIL 327 - HISTORY OF SOCIAL AND POLITICAL PHILOSOPHY
Short Title: HIST SOCIAL & POLITICAL PHILOS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A survey of classic texts in the history of social and political
philosophy, from Plato to Machiavelli to Mill.

PHIL 331 - MORAL PSYCHOLOGY
Short Title: MORAL PSYCHOLOGY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of the role of intellect, emotion, and
character as they contribute to the moral (and immoral) life, and as they
pertain to rationality and moral responsibility.

PHIL 334 - ACHIEVEMENT AND THE MEANING OF LIFE
Short Title: ACHIEVEMENT & MEANING OF LIFE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course looks at the value of achievements in a rigorous
philosophical manner. We examine approaches to the meaning of
life and the value of achievement in the works of great philosophers,
current philosophy, and draw from literature, history, current events, and
psychology.

PHIL 335 - ADVANCED TOPICS IN VALUE THEORY
Short Title: ADV TOPICS IN VALUE THEORY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A philosophical examination of some of the fundamental
issues in clinical ethics, including informed consent, competency,
confidentiality, end of life decision making, the definition of death,
allocating scarce medical resources, and the role of economic analysis
in clinical decision making. Readings drawn from the clinical and
philosophical literature. Graduate/Undergraduate Equivalency: PHIL 536.
Mutually Exclusive: Credit cannot be earned for PHIL 335 and PHIL 536.

PHIL 336 - TOPICS IN MEDICAL ETHICS
Short Title: TOPICS IN MEDICAL ETHICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Philosophy.
Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A philosophical examination of some of the major issues related to research on human and animal subjects. A
general framework will be introduced and it will be applied to research on
new technologies, research on special populations, and research in an
international setting.

PHIL 337 - RESEARCH ETHICS
Short Title: RESEARCH ETHICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A philosophical and ethical examination of some of the major issues related to research on human and animal subjects. A
general framework will be introduced and it will be applied to research on
new technologies, research on special populations, and research in an
international setting.

PHIL 338 - METAETHICS
Short Title: METAETHICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Metaethics studies higher-order questions about morality. Its
questions include: What reasons do we have to do the right thing? What
do claims about rightness and goodness mean? Can those claims be true
or false? Are there objective moral truths, and if so, how can we know them?
PHIL 339 - DEATH AND DYING: METAPHYSICS AND ETHICS
Short Title: DEATH AND DYING
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How are we to respond to the fact of death? This course examines the moral, metaphysical and personal issues surrounding the death of persons. Readings from analytic philosophy and the bioethics literature.

PHIL 341 - TOPICS IN PHILOSOPHY OF MIND
Short Title: TOPICS IN PHILOSOPHY OF MIND
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A focused examination of a selected topic in the philosophy of mind. Topics vary each semester and might include the nature of consciousness, mental representation, rationality, and/or the various interconnections between perception, emotion, thought and action. For details in a specific year, consult with the instructor and/or department. Repeatable for Credit.

PHIL 352 - PHILOSOPHY OF PSYCHOLOGY
Short Title: PHILOSOPHY OF PSYCHOLOGY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course covers a selection of central issues in the philosophy of psychology. Questions include: Can the mind be studied scientifically? What role, if any, does introspection play in gathering data? Are there any psychological laws? How does psychological evidence bear on philosophical issues - Such as the existence of free will and moral responsibility? Repeatable for Credit.

PHIL 353 - PHILOSOPHY OF LANGUAGE
Short Title: PHILOSOPHY OF LANGUAGE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Philosophical investigation of relations among language, thought, and reality with emphasis on what makes a string of symbols and sounds meaningful. Recommended prerequisite(s): One course in philosophy or permission of the instructor.

PHIL 354 - PHILOSOPHICAL TOPICS IN ADVANCED LOGIC
Short Title: PHILOSOPHICAL TOPICS IN ADVANCED LOGIC
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHIL 305 or PHIL 505
Description: This course explores various philosophical questions raised by neuroscience. How does experimental brain imaging and real-time feedback change the way we think about the brain? Do psychological explanations ultimately 'reduce' to neuroscience? Are mental states nothing more than electro-chemical states of the brain? Does the brain literally perform computations on internal representations? Could neuroscience ever explain consciousness? Repeatable for Credit.

PHIL 355 - PHILOSOPHY OF NEUROSCIENCE
Short Title: PHILOSOPHY OF NEUROSCIENCE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores various philosophical questions raised by neuroscience. How do we investigate and explain the brain? Do psychological explanations ultimately 'reduce' to neuroscience? Are mental states nothing more than electro-chemical states of the brain? Does the brain literally perform computations on internal representations? Could neuroscience ever explain consciousness? Repeatable for Credit.

PHIL 357 - INCOMPLETENESS, UNDECIDABILITY, AND COMPUTABILITY
Short Title: INCOMPL, UNDECIDED&COMPUTBLTY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores various philosophical questions raised by neuroscience. How do we investigate and explain the brain? Do psychological explanations ultimately 'reduce' to neuroscience? Are mental states nothing more than electro-chemical states of the brain? Does the brain literally perform computations on internal representations? Could neuroscience ever explain consciousness? Repeatable for Credit.

PHIL 358 - PHILOSOPHY OF NEUROSCIENCE
Short Title: PHILOSOPHY OF NEUROSCIENCE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores various philosophical questions raised by neuroscience. How do we investigate and explain the brain? Do psychological explanations ultimately 'reduce' to neuroscience? Are mental states nothing more than electro-chemical states of the brain? Does the brain literally perform computations on internal representations? Could neuroscience ever explain consciousness? Repeatable for Credit.

PHIL 359 - ANIMAL MINDS
Short Title: ANIMAL MINDS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine various philosophical questions raised by the science of animal cognition: What is it to have a mind? How can we learn about animal minds? Are animals conscious? Do they have beliefs or concepts? What does this tell us about the nature and value of animal minds? Repeatable for Credit.
PHIL 390 - TOPICS IN PHILOSOPHY
Short Title: TOPICS IN PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics may vary. Please consult with department for additional information. Repeatable for credit with consent of the instructor. Instructor Permission Required. Repeatable for Credit.

PHIL 401 - INDEPENDENT READING I
Short Title: INDEPENDENT READING I
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course for undergraduate students to pursue independent research projects under direction of a philosophy department faculty member. Instructor Permission Required. Repeatable for Credit.

PHIL 402 - INDEPENDENT READING II
Short Title: INDEPENDENT READING II
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: See PHIL 401. Instructor Permission Required. Repeatable for Credit.

PHIL 407 - UNDERGRADUATE RESEARCH SEMINAR
Short Title: UG RESEARCH SEMINAR
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Emphasis is on the skills of critical reading, careful discussion, writing clear and well-argued essays, and making lucid and engaging oral presentations. The course is organized around a family of topics: students also, in consultation with the instructor, select issues for independent research, and produce a final essay and presentation. Repeatable for Credit.

PHIL 411 - SENIOR THESIS
Short Title: SENIOR THESIS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent research course for undergraduate philosophy majors who wish to write a senior thesis and become eligible for honors in the major. Students may enroll in PHIL 411 only with consent of a faculty advisor and the department, and only if they intend to enroll in PHIL 412 as well. Senior Thesis is a year-long research course. Instructor Permission Required.

PHIL 412 - SENIOR THESIS
Short Title: SENIOR THESIS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent research course for undergraduate philosophy majors who wish to write a senior thesis and become eligible for honors in the major. Students may enroll in PHIL 412 only with consent of a faculty advisor and the department, and only if they intend to enroll in PHIL 411 as well. Senior Thesis is a year-long research course. Instructor Permission Required.

PHIL 501 - ANCIENT AND MEDIEVAL PHILOSOPHY
Short Title: ANCIENT & MEDIEVAL PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics in the history of philosophy from the 4th century B.C. through the 14th century. Graduate/Undergraduate Equivalency: PHIL 301. Repeatable for Credit.

PHIL 502 - SEMINAR IN MODERN PHILOSOPHY
Short Title: SEMINAR IN MODERN PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level examination of topics and figures of 17th and 18th century history of philosophy. Topics vary from year to year. Graduate/Undergraduate Equivalency: PHIL 302. Mutually Exclusive: Credit cannot be earned for PHIL 502 and PHIL 302. Repeatable for Credit.

PHIL 503 - SEMINAR IN EPISTEMOLOGY
Short Title: SEMINAR IN EPISTEMOLOGY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate level examination of topics and figures of 17th and 18th century history of philosophy. Topics vary from year to year.

PHIL 504 - SEMINAR IN METAPHYSICS
Short Title: SEMINAR IN METAPHYSICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
PHIL 505 - MATHEMATICAL LOGIC
Short Title: MATHEMATICAL LOGIC
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A version of PHIL 305 for philosophy graduate students which includes further reading of material on philosophy of logic. Graduate/Undergraduate Equivalency: PHIL 305. Mutually Exclusive: Credit cannot be earned for PHIL 505 and PHIL 305.

PHIL 506 - SEMINAR IN ETHICS
Short Title: SEMINAR IN ETHICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

PHIL 507 - SEMINAR IN SOCIAL AND POLITICAL PHILOSOPHY
Short Title: SEM SOCIAL &POLITICAL PHILO
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

PHIL 508 - SEMINAR IN CONTINENTAL PHILOSOPHY
Short Title: SEM CONTINENTAL PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The study of selected topics and figures in 20th and 21st century European philosophy. Repeatable for credit with consent of the instructor. Graduate/Undergraduate Equivalency: PHIL 308. Repeatable for Credit.

PHIL 509 - SEMINAR IN AESTHETICS
Short Title: SEMINAR IN AESTHETICS
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A focused seminar on one aspect of aesthetics, either topical or historical, to include, e.g., the 18th century theories of taste, beauty and the sublime, environmental aesthetics, or the nature of artistic expression. Repeatable for credit with consent of the instructor. Repeatable for Credit.

PHIL 510 - SEMINAR IN PHENOMENOLOGY
Short Title: PHENOMENOLOGY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar devoted to selected historical and contemporary work in the phenomenological tradition, focused each year on a specific philosophical topic such as meaning, truth, action, embodiment, ethics, other minds, etc. Repeatable for Credit.

PHIL 512 - SEMINAR PHILOSOPHY OF MIND
Short Title: SEMINAR PHILOSOPHY OF MIND
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

PHIL 513 - SEMINAR IN PHILOSOPHY OF SCIENCE
Short Title: SEM PHILOSOPHY OF SCIENCE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focused consideration of either core issues in general philosophy of science (e.g. explanation, experiment, confirmation, realism vs. anti-realism, values in science) or special topics of current interest in the field.

PHIL 516 - SEMINAR IN PHILOSOPHY OF LAW
Short Title: SEMINAR IN PHILOSOPHY OF LAW
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The seminar will concentrate on one or more of such central topics in the philosophy of law as the normative foundations of contracts, criminal responsibility, theories of corrective justice, and the right to property ownership.

PHIL 522 - TOPICS IN MODERN PHILOSOPHY
Short Title: TOPICS IN MODERN PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics in early modern philosophy: a focused, more advanced seminar on select problems or figures in the 17th and 18th centuries. Repeatable for credit with consent of the instructor. Repeatable for Credit.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL 523</td>
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<td>SEMINAR IN KANT</td>
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<td>Standard Letter</td>
<td>Seminar</td>
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<td>Graduate</td>
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<td>HISTORY OF ETHICS</td>
<td>HISTORY OF ETHICS</td>
<td>Philosophy</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
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<td>PHIL 529</td>
<td>SEMINAR IN RESEARCH ETHICS</td>
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<td>Philosophy</td>
<td>Standard Letter</td>
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<td>Graduate</td>
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<tr>
<td>PHIL 530</td>
<td>SEMINAR IN HISTORY OF ANALYTIC PHILOSOPHY</td>
<td>SEMINAR IN HISTORY OF ANALYTIC PHILOSOPHY</td>
<td>Philosophy</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
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<td>Graduate</td>
</tr>
<tr>
<td>PHIL 531</td>
<td>SEMINAR IN MORAL PSYCHOLOGY</td>
<td>MORAL PSYCHOLOGY</td>
<td>Philosophy</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
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<td>Graduate</td>
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<tr>
<td>PHIL 534</td>
<td>LIBERALISM</td>
<td>LIBERALISM</td>
<td>Philosophy</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
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<td>PHIL 535</td>
<td>ADVANCED TOPICS IN VALUE THEORY</td>
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<td>Philosophy</td>
<td>Standard Letter</td>
<td>Seminar</td>
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<td>PHIL 536</td>
<td>TOPICS IN MEDICAL ETHICS</td>
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<td>Philosophy</td>
<td>Standard Letter</td>
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<td>SEMINAR IN RESEARCH ETHICS</td>
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<tr>
<td>PHIL 540</td>
<td>SEMINAR ON RATIONAL PRACTICES</td>
<td>RATIONAL PRACTICES</td>
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<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
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**PHIL 530 - SEMINAR IN HISTORY OF ANALYTIC PHILOSOPHY**

Description: Intensive examination of a topic of contemporary or historical interest in ethics or social and political philosophy. Graduate/Undergraduate Equivalency: PHIL 335. Mutually Exclusive: Credit cannot be earned for PHIL 535 and PHIL 335.

**PHIL 534 - LIBERALISM**

Description: An examination of the philosophical foundations of liberalism, with emphasis on the thesis that government should be neutral toward competing conceptions of the good life.
PHIL 542 - TOPICS IN PHILOSOPHY OF MIND
Short Title: TOPICS IN PHILOSOPHY OF MIND
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An in-depth look at different topics in contemporary philosophy of mind. Some sample topics: consciousness, mental representation, innateness, modularity, and the role of language in thought. Repeatable for credit with consent of the instructor. Repeatable for Credit.

PHIL 553 - SEMINAR IN PHILOSOPHY OF LANGUAGE
Short Title: SEM PHILOSOPHY LANGUAGE
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

PHIL 590 - TOPICS IN PHILOSOPHY
Short Title: TOPICS IN PHILOSOPHY
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics may vary: Please consult with the department for additional information. Repeatable for Credit.

PHIL 598 - ADVANCED INDEPENDENT READING
Short Title: ADVANCED INDEPENDENT READING
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Directed reading and research. Repeatable for Credit.

PHIL 599 - ADVANCED INDEPENDENT READING
Short Title: ADVANCED INDEPENDENT READING
Department: Philosophy
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Directed reading and research. Repeatable for Credit.

PHIL 651 - MASTERS THESIS RESEARCH
Short Title: MASTERS THESIS RESEARCH
Department: Philosophy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research course for graduate students preparing a masters thesis. Repeatable for Credit.

PHIL 652 - MASTERS THESIS RESEARCH
Short Title: MASTERS THESIS RESEARCH
Department: Philosophy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research course for graduate students preparing a Masters thesis. Repeatable for Credit.

PHIL 701 - READING AND RESEARCH FOR QUALIFYING EXAMINATION AND THESIS PROPOSAL
Short Title: RESEARCH QUALIFYING & THESIS
Department: Philosophy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Reading course in preparation for the comprehensive examination and thesis proposal defense. Repeatable for Credit.

PHIL 702 - READING AND RESEARCH FOR QUALIFYING EXAMINATION AND THESIS PROPOSAL
Short Title: RESEARCH QUALIFYING & THESIS
Department: Philosophy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Reading course in preparation for the comprehensive examination and thesis proposal defense. Repeatable for Credit.

PHIL 800 - RESEARCH AND THESIS
Short Title: RESEARCH AND THESIS
Department: Philosophy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to students with a major in Philosophy. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
Photography (FOTO)

FOTO 200 - PHOTOGRAPHY IN THE COMMUNITY
Short Title: PHOTOGRAPHY IN THE COMMUNITY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course offers students the opportunity to use photography as a means to interact with the community through public schools and other institutions. After receiving instruction in digital photography, students will go into the community to conceive and execute original projects.

FOTO 205 - INTRODUCTION TO PHOTOGRAPHY
Short Title: INTRODUCTION TO PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to black and white photography through exploration of light-sensitive materials, film and digital cameras, and computers. Assignments include viewing analysis, discussion, and writing about pictures to improve visual awareness, technical skills, and understanding of meaning in photography's continuing history.

FOTO 206 - PHOTOGRAPHY II
Short Title: PHOTOGRAPHY II
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ARTS 205 or FOTO 205
Description: Continued exploration of the basic materials and processes of the photographic medium. Includes viewing, analysis, and discussion of the medium's history and current trends. Space in studio class is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor.

FOTO 210 - BEGINNING DIGITAL PHOTOGRAPHY
Short Title: BEGINNING DIGITAL PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to digital photography through exploration of light, camera, and computer. Assignments include looking, taking, discussing, adjusting, printing and writing about photographs. The class is a balance of visual awareness, technical skills and meaning in the context of photography's continuing history. Primary software application is Adobe Lightroom which is provided on computer in the VADA Digital Lab in the Rice Media Center; students must provide their own digital camera. Instructor Permission Required. Cross-list: HART 209.

FOTO 216 - 35MM PHOTOGRAPHY
Short Title: 35MM PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to 35mm photography. Space in studio class is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor.

FOTO 263 - EPISODES IN THE HISTORY OF PHOTOGRAPHY: FROM INVENTION TO THE PRESENT
Short Title: HISTORY OF PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class aims to examine the history of photography in the nineteenth century as it develops within a number of specific thematics, from medium's conception in the late eighteenth-century through to debates in the twentieth century about photography's relationship to artistic and social issues. Instructor Permission Required. Cross-list: HART 263. Mutually Exclusive: Credit cannot be earned for FOTO 263 and HART 363.

FOTO 295 - SPECIAL PROBLEMS IN PHOTOGRAPHY
Short Title: SPEC PROB PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Study of problems at the introductory level in creative art. Topics may vary. Please consult with department for additional information. May be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.
FOTO 304 - PHOTOGRAPHIC MEDIA FOR ARTISTS
Short Title: PHOTOGRAPHIC MEDIA FOR ARTISTS
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): FOTO 205 or ARTS 205 or ARTS 225 or ARTS 301
Description: Guided exploration of traditional and non-traditional photographic media for students with prior experience in drawing, painting, printmaking, sculpture, or photography. Photographic media open for students’ exploration will include, but not limited to, black and white silver printing, traditional photographic color printing, digital printing, and oil pigment on photographic images. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor.

FOTO 305 - PHOTOGRAPHY III
Short Title: PHOTOGRAPHY III
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of advanced problems in photography, with emphasis on the independent pursuit of projects submitted by the students. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Instructor Permission Required.

FOTO 306 - PHOTOGRAPHY IV
Short Title: PHOTOGRAPHY IV
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of advanced problems in photography with emphasis on the independent pursuit of projects submitted by the students. Continuation of FOTO 305 (formerly ARTS 305). Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Instructor Permission Required.

FOTO 310 - INTERMEDIATE DIGITAL PHOTOGRAPHY
Short Title: INTERMEDIATE DIGITAL PHOTO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): FOTO 205 or FOTO 210
Description: A continuation of FOTO 210, which is a prerequisite for this course. The emphasis is on making photographs as distinct from taking them. The course explores the malleability of the digital medium through the use of digital tools in Adobe Photoshop, which is provided on the computers in the VADA Digital Lab in the Rice Media Center. Students must provide their own digital camera.

FOTO 332 - CRITICAL STUDIES OF MULTIMEDIA ARTS
Short Title: CRITICAL STU OF MULTIMEDIA ART
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Critical Studies for Multimedia Arts is a course designed to familiarize art and non-art majors with key theories and core concepts in modern and contemporary multimedia art. Students will examine a broad spectrum of specific topics in contemporary artwork related conceptually to: space/time; bodies and performance; “sculptural” studies in an expanded field and video & film space. This is a multi-dimensional class consisting of guest lectures, artist-speakers, and field trips to local museums, galleries and alternative art spaces. This course will include discussions on readings, writings and special projects. This promises to be a fun and thought-provoking class and is designed to enhance studio practice and encourage interest in the visual arts. Cross-list: ARTS 332, FILM 332, THEA 332.

FOTO 345 - COLOR PHOTOGRAPHY I
Short Title: COLOR PHOTOGRAPHY I
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ARTS 205 or FOTO 205) and (ARTS 206 or FOTO 206)
Description: Study in the fundamentals of color photography. Includes problems in exposing color negative and transparency film, as well as photographic and digital color printing. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor.
FOTO 346 - COLOR PHOTOGRAPHY II
Short Title: COLOR PHOTOGRAPHY II
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ARTS 205 or FOTO 205) and (ARTS 206 or FOTO 206)
Description: Study in the fundamental techniques of color photography. Includes special problems in color camera work, color negative and transparency processing, and color printing. Continuation of FOTO 345 (formerly ARTS 345). Space in studio class is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor.

FOTO 366 - THE ROAD AS EXPERIENCE AND METAPHOR IN PHOTOGRAPHIC PRACTICE
Short Title: ROAD TRIP PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): FOTO 205 or FOTO 210
Description: A search for America and the self through the written and visual literature of moving through the American landscape. This course will search for motifs to emulate in small formats and short distances, as preamble to the culmination recorded in a self-designed book of each personal odyssey. Repeatable for Credit.

FOTO 383 - PHOTOGRAPHY BOOKMAKING
Short Title: PHOTOGRAPHY BOOKMAKING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 205 or FOTO 205 or FOTO 210 or HART 209 or FOTO 310
Description: Intermediate problems in photography culminating in the production of an original book. Students will pursue a project involving either film-based or digital photography, edit, layout, and then produce their own book. Students will participate in scheduled critiques. Priority will be given to students who have taken two or more semesters of photography at Rice.

FOTO 385 - PHOTOGRAPHY SEMINAR
Short Title: PHOTOGRAPHY SEMINAR
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced problems in photography including, but not limited to, color and black and white film-based photography, view camera, and alternative processes. Students will be given advanced assignments tailored to the format and medium they wish to pursue will participate in scheduled critiques of the full class. Space in the class is limited. Registration does not guarantee a place in the course. Priority will be given to students who have taken two or more semesters of photography at Rice. The class roster will be formulated by the instructor on the first day of class. Repeatable for Credit.

FOTO 388 - PHOTOGRAPHY IN CHINA
Short Title: PHOTOGRAPHY IN CHINA
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3,4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Open to all students within the university who are interested in deepening their understanding of China and improving their photography skills. This course will study China through the history of photography, looking at ways in which China has been viewed by both Chinese and visiting photographers. Students will learn documentary skills and travel to China during spring break to gather materials for their own projects. Instructor Permission Required. Cross-list: ASIA 388.

FOTO 390 - VISUALIZING NATURE
Short Title: VISUALIZING NATURE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An experimental course combining the scientific disciplines of the earth sciences with the artistic disciplines of creative photography to study the natural landscape and related ecosystems. The course will combine classroom lectures and laboratory demonstrations in geoscience with classes in the use of digital and film-based cameras and illustrated lectures on recognized achievements in landscape photography. Extensive field trips will be scheduled. Students will travel frequently, at times in pairs, other times in larger groups and as a full class, accompanied by one or both professors. The budget for the course includes funding both for travel and for photography expenses. Instructor Permission Required. Cross-list: ESCI 380.
FOTO 395 - SPECIAL PROBLEMS IN PHOTOGRAPHY
Short Title: SPEC PROB: PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of problems in creative art. Topics may vary. Please consult with the department for additional information. May be used in awarding transfer credit. Prerequisite: permission of instructor. Instructor Permission Required. Repeatable for Credit.

FOTO 410 - ADVANCED DIGITAL PHOTOGRAPHY
Short Title: ADVANCED DIGITAL PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A continuation of FOTO 310, this course offers advanced photo-art students a chance to develop a personal body of artwork supported by digital image processing. Student-driven projects will influence the choice of technical topics covered in class. For example, some techniques covered may include digital animation, digital painting, 3D compositing, or master printing. Students will be expected to critique their work and that of other artists shown on Rice campus and in Houston. Students entering the course should be proficient in the use of Adobe Photoshop. A semester-long project is due at the end of the class.

FOTO 454 - SPECIAL PROBLEMS - PHOTOGRAPHY
Short Title: SPECIAL PROBLEMS - PHOTOGRAPHY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of advanced problems in creative art. Topics may vary. Please consult with the department for additional information. May be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.

Physics (PHYS)

PHYS 101 - MECHANICS (WITH LAB)
Short Title: MECHANICS (WITH LAB)
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Corequisite: PHYS 103
Description: A calculus-based introduction to mechanics. Includes classes and lab exercises on kinematics, Newton's Laws, work and energy, conservation laws and rotational motion. Primarily for physical science and engineering students. May receive credit for only one of PHYS 101, 111, 125, AP-Physics-B (PHYS 141 and 142) and AP Physics-C MECH. Students must register for PHYS 103.

PHYS 102 - ELECTRICITY & MAGNETISM (WITH LAB)
Short Title: ELECTRICITY & MAGNETISM W/LAB
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Corequisite: PHYS 104
Description: A calculus-based introduction to electricity and magnetism. Includes classes and lab exercises on electric and magnetic fields, Maxwell's equations in integral form, and AC and DC circuits. Primarily for physical science and engineering students. May receive credit for only one of PHYS 102, 112, 126, AP-Physics-B (PHYS 141 and 142) and AP Physics-C E&M. Students must also register for PHYS 104.

PHYS 103 - MECHANICS DISCUSSION
Short Title: MECHANICS DISCUSSION
Department: Physics and Astronomy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 0
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Corequisite: PHYS 101
Description: Small group discussion section to extend and reinforce concepts presented in PHYS 101. Students must also register for PHYS 101.

PHYS 104 - ELECTRICITY AND MAGNETISM DISCUSSION
Short Title: E&M DISCUSSION
Department: Physics and Astronomy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 0
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Corequisite: PHYS 102
Description: Small group discussion section to extend and reinforce concepts presented in PHYS 102. Students must also register for PHYS 102.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Department</th>
<th>Course Type</th>
<th>Grade Mode</th>
<th>Credit Hours</th>
<th>Distribution Group</th>
<th>Restrictions</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
<td>Physics and Astronomy</td>
<td>Lecture/Laboratory</td>
<td>Standard Letter</td>
<td>4</td>
<td>Distribution Group III</td>
<td>Graduate level students may not enroll.</td>
<td>PHYS 125 or PHYS 101 or PHYS 111 or PHYS 141 and 142, and AP Physics-C MECH.</td>
</tr>
<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
<td>Physics and Astronomy</td>
<td>Lecture/Laboratory</td>
<td>Standard Letter</td>
<td>4</td>
<td>Distribution Group III</td>
<td>Graduate level students may not enroll.</td>
<td>PHYS 125 or PHYS 101 or PHYS 111 or PHYS 141 and 142, and AP Physics-C MECH.</td>
</tr>
<tr>
<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
<td>Physics and Astronomy</td>
<td>Lecture/Laboratory</td>
<td>Standard Letter</td>
<td>4</td>
<td>Distribution Group III</td>
<td>Graduate level students may not enroll.</td>
<td>PHYS 125 or PHYS 101 or PHYS 111 or PHYS 141 and 142, and AP Physics-C MECH.</td>
</tr>
<tr>
<td>PHYS 126</td>
<td>GENERAL PHYSICS II (WITH LAB)</td>
<td>Physics and Astronomy</td>
<td>Lecture/Laboratory</td>
<td>Standard Letter</td>
<td>4</td>
<td>Distribution Group III</td>
<td>Graduate level students may not enroll.</td>
<td>PHYS 125 or PHYS 101 or PHYS 111 or PHYS 141 and 142, and AP Physics-C MECH.</td>
</tr>
<tr>
<td>PHYS 141</td>
<td>CONCEPTS IN PHYSICS I</td>
<td>Physics and Astronomy</td>
<td>Lecture</td>
<td>Standard Letter</td>
<td>3</td>
<td>Distribution Group III</td>
<td>Graduate level students may not enroll.</td>
<td>PHYS 125 or PHYS 101 or PHYS 111 or PHYS 141 and 142, and AP Physics-C MECH.</td>
</tr>
<tr>
<td>PHYS 142</td>
<td>CONCEPTS IN PHYSICS II</td>
<td>Physics and Astronomy</td>
<td>Lecture</td>
<td>Standard Letter</td>
<td>3</td>
<td>Distribution Group III</td>
<td>Graduate level students may not enroll.</td>
<td>PHYS 125 or PHYS 101 or PHYS 111 or PHYS 141 and 142, and AP Physics-C MECH.</td>
</tr>
<tr>
<td>PHYS 143</td>
<td>PHYSICS FOR CITIZENSHIP</td>
<td>Physics and Astronomy</td>
<td>Lecture</td>
<td>Standard Letter</td>
<td>3</td>
<td>Distribution Group III</td>
<td>Graduate level students may not enroll.</td>
<td>PHYS 125 or PHYS 101 or PHYS 111 or PHYS 141 and 142, and AP Physics-C MECH.</td>
</tr>
<tr>
<td>PHYS 144</td>
<td>THE PHYSICS OF MUSIC AND SOUND</td>
<td>Physics and Astronomy</td>
<td>Lecture</td>
<td>Standard Letter</td>
<td>3</td>
<td>Distribution Group III</td>
<td>Graduate level students may not enroll.</td>
<td>PHYS 125 or PHYS 101 or PHYS 111 or PHYS 141 and 142, and AP Physics-C MECH.</td>
</tr>
</tbody>
</table>

**Description:**
- PHYS 111: A more intensive treatment of topics covered in PHYS 101, intended for physical science and engineering students with strong high school backgrounds in physics and particularly calculus. May receive credit for only one of PHYS 101, 111, 125, AP Physics-B (PHYS 141 and 142) and AP Physics-C MECH.
- PHYS 112: A more intensive treatment of topics covered in PHYS 102, intended for physical science and engineering students with strong high school backgrounds in physics and particularly calculus. May receive credit for only one of PHYS 102, 112, 126, AP Physics-B (PHYS 141 and 142), and AP Physics-C, E&M.
- PHYS 125: A calculus-based survey of mechanics primarily intended for bioscience and premedical students. Includes classes and lab exercises on kinematics, Newton's Laws, work and energy, rotational motion, fluids, oscillations and waves. May receive credit for only one of PHYS 101, 111, 125, AP Physics-B (PHYS 141 and 142), and AP Physics-C, E&M.
- PHYS 126: A calculus-based survey of E&M and optics primarily intended for bioscience and premedical students. Includes classes and lab exercises on wave and ray optics, electric field and potential, magnetic fields and induction, and DC circuits. May receive credit for only one of PHYS 102, 112, 126, AP Physics B (PHYS 141 and 142), and AP Physics-C, E&M.
- PHYS 141: For AP credit only. May receive credit for only one of PHYS 102, PHYS 112, PHYS 126, AP Physics-B, and AP Physics-C (E&M).
- PHYS 142: For AP credit only. May receive credit for only one of PHYS 102, PHYS 112, PHYS 126, AP Physics-B, and AP Physics-C (E&M).
- PHYS 143: Physics is critical to our understanding of nuclear weapons, radiation, electronics, energy and global warming. The most interesting and important topics in physics, with applications to current events will be presented. Topics covered may include energy and conservation, radioactivity, nuclear physics, the Theory of Relativity, lasers, explosions and quantum physics.
- PHYS 144: This course explores our scientific understanding of sound and music by studying the properties of sound and its production by a variety of musical instruments. Additional topics include an analysis of musical scales, the physiology of hearing, and the technology of sound reproduction. For non-science and non-engineering majors.
PHYS 201 - WAVES, LIGHT, AND HEAT
Short Title: WAVES, LIGHT, AND HEAT
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Mathematical descriptions of fundamental topics of classical physics: oscillations, mechanical waves, electromagnetic waves, physical optics and thermodynamics.

PHYS 202 - MODERN PHYSICS
Short Title: MODERN PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (PHYS 101 or PHYS 111 or PHYS 125 or PHYS 141) and (PHYS 102 or PHYS 112 or PHYS 126 or PHYS 142)
Description: An introductory course in modern physics. Topics include special relativity, early quantum theory, quantum mechanics, atomic physics, statistical physics, nuclear and particle physics. The course is descriptive in nature with emphasis on phenomena rather than on calculations.

PHYS 231 - ELEMENTARY PHYSICS LAB
Short Title: ELEMENTARY PHYSICS LAB
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Laboratory on waves, optics and modern physics.

PHYS 301 - INTERMEDIATE MECHANICS
Short Title: INTERMEDIATE MECHANICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 201
Description: Classical mechanics and appropriate mathematical methods. Emphasis on problem solving.

PHYS 302 - INTERMEDIATE ELECTRODYNAMICS
Short Title: INTERMEDIATE ELECTRODYNAMICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 201
Description: Classical electrodynamics and appropriate mathematical methods. Emphasis on problem solving.

PHYS 311 - INTRODUCTION TO QUANTUM PHYSICS I
Short Title: INTRO TO QUANTUM PHYSICS I
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 202
Description: Fundamentals of quantum mechanics and applications to atomic and molecular structure.

PHYS 312 - INTRODUCTION TO QUANTUM PHYSICS II
Short Title: INTRO TO QUANTUM PHYSICS II
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 311
Description: Continuation of PHYS 311.

PHYS 331 - JUNIOR PHYSICS LAB I
Short Title: JUNIOR PHYSICS LAB I
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Lab exercises in electronics, noise reduction, statistics and particle counting.

PHYS 332 - JUNIOR PHYSICS LAB II
Short Title: JUNIOR PHYSICS LAB II
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Lab exercises illustrating topics in the upper-division physics curriculum.

PHYS 355 - INTRODUCTION TO BIOLOGICAL PHYSICS
Short Title: INTRO TO BIOLOGICAL PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
PHYS 411 - INTRODUCTION TO NUCLEAR & PARTICLE PHYSICS
Short Title: INTRO NUCLEAR&PARTIC PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 311
Description: Survey of history and current state of nuclear and particle physics. The emphasis is on experimental results and how they led to our current understanding of the strong and electroweak interactions. Some recent advances are discussed in detail. Graduate/Undergraduate Equivalency: PHYS 542. Mutually Exclusive: Credit cannot be earned for PHYS 411 and PHYS 542.

PHYS 412 - SOLID STATE PHYSICS
Short Title: SOLID STATE PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (PHYS 311 and PHYS 425) or ELEC 361
Description: Introduction to topics in solid state physics, including crystal structure, lattice vibrations, electronic band structure and transport.

PHYS 416 - COMPUTATIONAL PHYSICS
Short Title: COMPUTATIONAL PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 311 and PHYS 425 or ELEC 361
Description: Use of computational techniques to solve selected physics problems. Examine benefits and pitfalls of doing physics by computation. Graduate/Undergraduate Equivalency: PHYS 517. Mutually Exclusive: Credit cannot be earned for PHYS 416 and PHYS 517.

PHYS 425 - STATISTICAL & THERMAL PHYSICS
Short Title: STATISTICAL & THERMAL PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 301 and PHYS 311
Description: Includes classical thermodynamics; classical & quantum statistical mechanics; Fermi, Bose, and classical gases; magnetic systems; and phase equilibria.

PHYS 461 - INDEPENDENT RESEARCH
Short Title: INDEPENDENT RESEARCH
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Mentored research under the supervision of a Physics and Astronomy faculty member. To register, students must provide a research plan approved by the faculty mentor. Instructor Permission Required. Repeatable for Credit.

PHYS 462 - INDEPENDENT RESEARCH
Short Title: INDEPENDENT RESEARCH
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Mentored research under the supervision of a Physics and Astronomy faculty member. To register, students must provide a research plan approved by the faculty mentor. Instructor Permission Required. Repeatable for Credit.

PHYS 465 - REU RESEARCH IN PHYSICS AND ASTRONOMY
Short Title: REU RESEARCH IN PHYS & ASTR
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

PHYS 480 - INTRODUCTION TO PLASMA PHYSICS
Short Title: INTRODUCTION TO PLASMA PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 302
Description: Fundamental processes in cosmic and laboratory plasmas. Basic plasma characteristics, charged particle motion, waves in plasmas, magnetohydrodynamics, kinetic theory. Graduate/Undergraduate Equivalency: PHYS 580. Mutually Exclusive: Credit cannot be earned for PHYS 480 and PHYS 580.
PHYS 491 - UNDERGRADUATE RESEARCH
Short Title: UNDERGRADUATE RESEARCH
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 2
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to students with a major in Astronomy, Astrophysics, Chemical Physics or Physics. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 301 and PHYS 302 and PHYS 311
Description: Research projects conducted under supervision of departmentally approved faculty. Open to juniors and seniors majoring in physics and astronomy. May be repeated for credit. PHYS 493/494 must be taken concurrently with PHYS 491/492 when used in partial fulfillment of B.S. degree requirements. Repeatable for Credit.

PHYS 492 - UNDERGRADUATE RESEARCH
Short Title: UNDERGRADUATE RESEARCH
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 2
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to students with a major in Astronomy, Astrophysics, Chemical Physics or Physics. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 491
Description: Research projects conducted under supervision of departmentally approved faculty culminating in a thesis. Open to juniors and seniors majoring in physics and astronomy. May be repeated for credit. PHYS 493/494 must be taken concurrently with PHYS 491/492 when used in partial fulfillment of B.S. degree requirements. Repeatable for Credit.

PHYS 493 - UNDERGRADUATE RESEARCH SEMINAR
Short Title: UNDERGRADUATE RESEARCH SEMINAR
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to students with a major in Astronomy, Astrophysics, Chemical Physics or Physics. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 301 and PHYS 302 and PHYS 311
Description: Weekly seminar for juniors and seniors in which presentations on research topics and/or topics in the scientific literature will be given. Open to juniors and seniors majoring in physics and astronomy. Repeatable for Credit.

PHYS 494 - UNDERGRADUATE RESEARCH SEMINAR
Short Title: UNDERGRADUATE RESEARCH SEMINAR
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to students with a major in Astronomy, Astrophysics, Chemical Physics or Physics. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PHYS 493
Description: Weekly seminar for juniors and seniors in which presentations on research topics and/or topics in the scientific literature will be given. Open to juniors and seniors majoring in physics and astronomy. Repeatable for Credit.

PHYS 501 - PHYSICS OF THE RADIO
Short Title: PHYSICS OF HAM RADIO
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to Graduate level students.
Course Level: Graduate
Description: Fundamentals of electromagnetic waves and propagation, the ionosphere and space weather. Basic electronics, antenna design and safety, magnetism. Provides information necessary to pass the "Technician" level of ham radio license. Non-calculus mathematics. Other topics include: use of GPS, geocaching. Mutually Exclusive: Credit cannot be earned for PHYS 501 and PHYS 401.

PHYS 510 - MAGNETOSPHERIC PHYSICS
Short Title: MAGNETOSPHERIC PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to Graduate level students.
Course Level: Graduate
Description: Plasma physics of the earth's magnetosphere, including interactions of the magnetosphere with the solar wind and the ionosphere. The emphasis is on large-scale phenomena, but small scale (kinetic) physics is discussed in cases where it affects the large-scale phenomena.

PHYS 515 - CLASSICAL DYNAMICS
Short Title: CLASSICAL DYNAMICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to Graduate level students.
Course Level: Graduate
Description: Lagrangian and Hamiltonian mechanics.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Short Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 516</td>
<td>MATHEMATICAL METHODS</td>
<td>Survey of analytical methods used by research physicists and astronomers. Includes complex variables, ordinary differential equations, infinite series, evaluation of integrals, integral transforms, normal-mode analysis, special functions, partial differential equations, eigenfunctions, Green's functions, and variational calculus.</td>
</tr>
<tr>
<td>PHYS 522</td>
<td>QUANTUM MECHANICS II</td>
<td>Continuation of PHYS 521.</td>
</tr>
<tr>
<td>PHYS 535</td>
<td>CRYSTALLOGRAPHY AND DIFFRACTION</td>
<td>Study of crystals by diffraction techniques, focusing on x-ray, with an overview of electron and neutron diffraction as well as complementary techniques. Provides mathematical foundations and nomenclature for diffraction and related phenomena. Includes basics of crystallographic analysis and surface/point/group symmetry, experiment design (courses, geometry, detectors), and data analysis and interpretation. Required for undergraduate MSNE major. Meets with MSNE 435 (additional work for the graduate version). Cross-list: MSNE 535.</td>
</tr>
</tbody>
</table>
PHYS 537 - METHODS OF EXPERIMENTAL PHYSICS I
Short Title: METHODS EXPERIMENTAL PHYSICS I
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course to familiarize students with basic experimental techniques that are common in academic and industrial laboratories. Topics will include lab safety, mechanical design, LabVIEW(TM) programming, statistics, laboratory electronics, particle detection and vacuum technology. PHYS 537 and PHYS 538 may be taken independently of each other.

PHYS 538 - METHODS OF EXPERIMENTAL PHYSICS II
Short Title: METH EXPERIMENTAL PHYSICS II
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course to familiarize students with basic experimental techniques that are common in academic and industrial laboratories. Topics will include computer interfacing and data acquisition, charged particle optics, light optics, thermal measurement and control, and cryogenics. PHYS 537 and PHYS 538 may be taken independently of each other.

PHYS 539 - CHARACTERIZATION AND FABRICATION AT THE NANOSCALE
Short Title: CHARACTER&FABRICATN NANOSCALE
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to study and creation of nanoscale structures, emphasizing relevant physical principles. Techniques covered include optical, X-ray, electron-based and scanned-probe characterization, as well as patterning, deposition and removal of material.

PHYS 541 - RADIATIVE PROCESSES
Short Title: RADIATIVE PROCESSES
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Radiation processes and their applications to astrophysical phenomena and space science. The course treats radiative transfer, radiation from moving charges, relativistic covariance and kinematics, bremsstrahlung, synchrotron radiation, Compton scattering, some plasma effects, and radiative transitions in atoms and molecules.

PHYS 542 - INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS
Short Title: INTRO NUCLEAR&PARTIC PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PHYS 311
Description: Survey of history and current state of nuclear and particle physics with the emphasis on experimental results and how they led to our current understanding of the strong and electroweak interactions. Some recent advances are discussed in detail. Requires completion of a Monte Carlo simulation project. Graduate/Undergraduate Equivalency: PHYS 411. Mutually Exclusive: Credit cannot be earned for PHYS 542 and PHYS 411.

PHYS 543 - PHYSICS OF QUARKS AND LEPTONS
Short Title: PHYSICS OF QUARKS AND LEPTONS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A continuation of PHYS 542.

PHYS 551 - BIOLOGICAL PHYSICS
Short Title: BIOLOGICAL PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

PHYS 552 - TOPICS IN BIOLOGICAL PHYSICS
Short Title: TOPICS IN BIOLOGICAL PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics will be selected based on special or current research interests.

PHYS 556 - GENERAL RELATIVITY
Short Title: GENERAL RELATIVITY
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PHYS 532
Description: Study of Einstein's theory of gravitation, including cosmological models.
PHYS 563 - INTRODUCTION TO SOLID STATE PHYSICS I
Short Title: INTRO TO SOLID STATE PHYSICS I
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Fundamental concepts of crystalline solids, including crystal structure, band theory of electrons, and lattice vibration theory. Cross-list: ELEC 563.

PHYS 564 - INTRODUCTION TO SOLID STATE PHYSICS II
Short Title: INTRO SOLID STATE PHYSICS II
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of PHYS 563, including scattering of waves by crystals, transport theory, and magnetic phenomena. Cross-list: ELEC 564.

PHYS 566 - SURFACE PHYSICS
Short Title: SURFACE PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to surface- and low-dimensional physics covering experimental surface physics and ultra-high vacuum technology, crystal structure, chemical analysis, epitaxy, nanoscale electronic and magnetic structures and devices, elementary excitations, optical properties and nanoscale sensitive magnetic and non-magnetic spectroscopies.

PHYS 567 - QUANTUM MATERIALS
Short Title: QUANTUM MATERIALS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (PHYS 425 or PHYS 526) and (PHYS 311 or PHYS 521)
Description: This course uses real data on archetypal materials to illustrate the thermodynamic and transport properties of solids, and principles of materials synthesis. The goal is building a phenomenological understanding of topics including the origin of magnetism; interactions and long range order; phase transitions (magnetism; superconductivity); quantum oscillations and Landau levels.

PHYS 568 - QUANTUM PHASE TRANSITIONS
Short Title: QUANTUM PHASE TRANSITIONS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introductory course for graduate students. Topics include the concepts of classical and quantum phase transitions, mean field theory, renormalization group and quantum phase transitions in magnetic, fermionic, and bosonic systems.

PHYS 569 - ULTRAFAST OPTICAL PHENOMENA
Short Title: ULTRAFAST OPTICAL PHENOMENA
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers the generation, propagation, and measurement of short laser pulses, of duration less than one picosecond. Concepts include mode locking, the effects of dispersion, optical pulse amplification, and time-domain non-linear optical phenomena. Intended as an introduction to ultrafast phenomena for graduate students or advanced undergraduates; a basic understanding of electromagnetic waves and of quantum mechanics is assumed. Cross-list: ELEC 569.
Course URL: www.ece.rice.edu/~daniel/569/569files.html

PHYS 571 - MODERN ATOMIC PHYSICS
Short Title: MODERN ATOMIC PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is an introductory course at the graduate level. Topics to be discussed include: atomic structure, principles of lasers, fundamental interactions of atoms with electro-magnetic radiation, including coherent effects, laser spectroscopy, quantum optics, and laser cooling and trapping of atoms, and Bose-Einstein condensation.

PHYS 572 - FUNDAMENTALS OF QUANTUM OPTICS
Short Title: FUNDAMENTALS OF QUANTUM OPTICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion of quantization and statistical properties of light fields; interaction between atoms and light; non-classical states; basic laser theory; quantum effects of nonlinear optics; introduction to atom optics.
PHYS 580 - INTRODUCTION TO PLASMA PHYSICS
Short Title: INTRODUCTION TO PLASMA PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Fundamental processes in cosmic and laboratory plasmas. Basic plasma characteristics, charged particle motion, waves in plasmas, magnetohydrodynamics, kinetic theory. Includes a substantial computational project related to plasma physics. Graduate/Undergraduate Equivalency: PHYS 480. Mutually Exclusive: Credit cannot be earned for PHYS 580 and PHYS 480.

PHYS 600 - ADVANCED TOPICS IN PHYSICS
Short Title: ADVANCED TOPICS IN PHYSICS
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Lecture/seminars which treat topics of departmental interest. Repeatable for Credit.

PHYS 601 - FRONTIERS IN CONDENSED MATTER PHYSICS
Short Title: FRONTIERS IN CONDENSED MATTER
Department: Physics and Astronomy
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will serve as an introduction to current research topics in modern condensed matter physics. Lectures will be given by experts in condensed matter physics at Rice, Columbia University, and other international locations. Repeatable for Credit.

PHYS 605 - COMPUTATIONAL ELECTRODYNAMICS AND NANOPHOTONICS
Short Title: ELECTRODYNAMICS & NANOPHOTONIC
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers computational and numerical methods for calculating electromagnetic fields and propagation in complex geometries on the nano and microscale. Methods include the finite difference time domain method, boundary element methods, Greens functions methods, finite element methods, the discrete dipole approximation and relaxation methods. Cross-list: ELEC 605. Repeatable for Credit.

PHYS 610 - BIOLOGICAL AND MOLECULAR SIMULATION
Short Title: METHODS OF MOLECULAR SIMUL
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): CHBE 611 or BIOC 589 or BIOE 589 or BIOS 589 or CHEM 520 or PHYS 526
Description: Modern simulation techniques for classical atomic systems. Review of statistical mechanical systems. Monte Carlo and molecular dynamics simulation techniques. Extensions of the basic methods to various ensembles. Applications to simulations of large molecules such as proteins. Advanced techniques for simulation of complex systems, including constraint satisfaction, cluster moves, biased sampling, and random energy models. Cross-list: BIOE 610.

PHYS 622 - QUANTUM FIELD THEORY
Short Title: QUANTUM FIELD THEORY
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to relativistic quantum field theory. Topics include: quantization of scalar, spinor, and vector fields; Feynman diagrams; gauge theories, including QED and QCD; renormalization; and functional-integral methods.

PHYS 643 - CELL MECHANICS, MECHANOTRANSDUCTION AND THE CELL MICROENVIRONMENT
Short Title: MECHANOTRANSDUCTION
Department: Physics and Astronomy
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mechanotransduction is a fundamental process essential for living systems and plays a fundamental role in cell signaling, cancer metastasis and stem cell differentiation. Additionally, fundamental biological processes such as endocytosis cell fusion and cell migration are driven by a coordinated interplay of molecular interactions that drive membrane deformation. This course will survey the current understanding of mechanotransduction and the mechanical properties of cells and their microenvironment, including membrane and cytoskeletal mechanics. Experimental approaches for measuring and manipulating the material properties of cells and their environment; including optical, electrical and magnetic techniques will be covered. A variety of application will be covered, including manipulation in engineering of mechanotransduction pathways to drive cell migration and stem cell differentiation. Instructor Permission Required. Cross-list: BIOC 643, BIOE 643.
Political Science (POLI)

POLI 110 - AP/OTH CREDIT IN AMERICAN GOVERNMENT
Short Title: AP/OTH CREDIT AMER GOVERNMENT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

POLI 112 - AP/OTH CREDIT IN COMPARATIVE GOVERNMENT
Short Title: AP/OTH CREDIT COMPAR GOVERNMT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 3
Course Level: Undergraduate Lower-Level
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation.

POLI 209 - INTRODUCTION TO CONSTITUTIONALISM AND MODERN POLITICAL THOUGHT
Short Title: INTRO TO CONST & POLI THOUGHT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Study of constitutionalism and authoritarianism from Machiavelli to Marx. Includes an introduction to contemporary ideologies. With POLI 210 meets state professional requirements for teachers.

POLI 210 - AMERICAN GOVERNMENT AND POLITICS
Short Title: AMERICAN GOVT AND POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Major topics in American politics: public opinion, group politics, political parties, elections, congressional-presidential-bureaucratic politics, and judicial politics. Together with POLI 209 meets state professional requirements for teachers.
POLI 211 - INTRODUCTION TO INTERNATIONAL RELATIONS
Short Title: INTRO INTERNATIONAL RELATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to the study of international relations. The course examines topics including the causes of war, political dimensions of the international economy, the role of international organizations, and cooperation to address contemporary global challenges.

POLI 212 - INTRODUCTION TO COMPARATIVE POLITICS
Short Title: INTRO TO COMPARATIVE POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An examination of political institutions and behavior in selected democratic and authoritarian countries. Examples will include wealthy as well as developing countries. One recurring theme will be the conditions under which democracy emerges and survives.

POLI 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

POLI 250 - SEX, MONEY, AND POWER AROUND THE WORLD
Short Title: SEX, MONEY, AND POWER
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An interdisciplinary course exploring lives and well-being in the context of gendered international and domestic politics and economic processes. Emphasis on the implications of power relations at levels from the household to the global for women and men around the world (with particular attention to Asia). Cross-list: ASIA 251, SWGS 250.

POLI 260 - ADVOCATING FOR IDEAS TO CHANGE THE WORLD
Short Title: ADVOCATING FOR CHANGE
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Advocating for change is an experiential learning course that teaches students how to engage in issue advocacy as a method of social change. Students work in teams with faculty mentors to develop and implement an advocacy plan for a particular cause or policy of interest.

POLI 301 - STATE POLITICS
Short Title: STATE POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course comparatively examines state governments and political institutions in the U.S. states. We will also focus on how state political institutions and organizations influence the creation, adoption, and implementation of public policy.

POLI 305 - DIRECTED READING I
Short Title: DIRECTED READING I
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent reading under the supervision of a member of the department. Open to junior majors in the honors program and to others in special cases with the permission of the instructor. Instructor Permission Required. Repeatable for Credit.

POLI 306 - DIRECTED READING II
Short Title: DIRECTED READING II
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: See POLI 305. Instructor Permission Required. Repeatable for Credit.

POLI 307 - POLITICAL SCIENCE INTERNSHIP I
Short Title: POLITICAL SCIENCE INTERNSHIP I
Department: Political Science
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is the in-class component of the political science internship program. Students will read both a common set of materials and a set that is oriented to their forthcoming internship. A final paper is required. Instructor Permission Required.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Prerequisite(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLI 308</td>
<td>POLITICAL SCIENCE INTERNSHIP II</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Internship/Practicum</td>
<td>1-2</td>
<td>Graduate level students may not enroll.</td>
<td>POLI 307</td>
<td>This course is the work component of the political science internship program. Students will be required to submit weekly progress reports and a final portfolio. Instructor Permission Required.</td>
</tr>
<tr>
<td>POLI 310</td>
<td>THE BIOLOGY OF POLITICS</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td></td>
<td>This course is an interdisciplinary survey of the role that human biology plays in our political behavior. The biology covered ranges from genes to neural structures to neuro-chemistry, while the political behavior covered ranges from levels of participation to political beliefs to left/right ideology.</td>
</tr>
<tr>
<td>POLI 315</td>
<td>ELECTIONS AND VOTING BEHAVIOR</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td></td>
<td>Exploration of voting behavior and elections. Includes consideration of both individual level behavior and aggregate level patterns of election results.</td>
</tr>
<tr>
<td>POLI 317</td>
<td>THE CONGRESS</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td></td>
<td>Examines the role of Congress in the American political system. Attention is given to the historical development of Congress, the current status of the Congress, and the functions of Congress in the American political system.</td>
</tr>
<tr>
<td>POLI 318</td>
<td>THE PRESIDENCY</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td></td>
<td>Analysis of presidential powers and behavior in the context of legal, electoral, personal, and other forces that shape and limit the actions of the President.</td>
</tr>
<tr>
<td>POLI 320</td>
<td>THE LEGAL FRAMEWORK OF RELIGIOUS TOLERANCE</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>2</td>
<td>Graduate level students may not enroll.</td>
<td></td>
<td>The American Constitution embodies a complex experiment in religious tolerance, including the promise of &quot;free exercise of religion&quot; and the prohibition of laws &quot;respecting an establishment of religion.&quot; In this class we will primarily seek a critical understanding of our tolerance-rich legal invocations of religious freedom and address fundamental issues such as how can we distinguish &quot;religious&quot; actions and commitments from other morally important beliefs and activities. Cross-list: RELI 320.</td>
</tr>
<tr>
<td>POLI 321</td>
<td>AMERICAN CONSTITUTIONAL LAW</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td></td>
<td>Interpretation of the Constitution by the Supreme Court. (Juniors and Seniors preferred).</td>
</tr>
<tr>
<td>POLI 322</td>
<td>POLITICS OF INFLUENCE IN THE UNITED STATES</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td></td>
<td>The aim of this course is to acquaint students with the major influences upon who gets what, when and how from American government. Major issues (e.g., health care, immigration, agriculture) covered will vary by semester. One component of the course will be devoted to assessing the impact of money on elections and the policy process.</td>
</tr>
<tr>
<td>POLI 324</td>
<td>FROM DECOLONIZATION TO GLOBALIZATION</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td></td>
<td>Taught in English. Novels, and films, from North and West Africa, and the immigrant population in France, from 1960 to 2010. Emphasis on the tensions between narratives of political emancipation, modernity, secularism, and religious fundamentalism and mysticism. Extra reading for graduate students in theories of colonialism, postcolonialism, globalization. Cross-list: FREN 324, RELI 476. Recommended Prerequisite(s): Any 200 level course or above in English or French, or HUMA 101 or HUMA 102, or a FWIS course.</td>
</tr>
</tbody>
</table>
### POLI 325 - AFRICAN AMERICAN POLITICS
**Short Title:** AFRICAN AMERICAN POLITICS  
**Department:** Political Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Examination of the political and social position of minority groups (African Americans, Asian Americans, Native Americans, Latinos, and women) in the U.S. This course explores the political power and behavior of these groups. The key concepts include racism, discrimination, resources, political power, culture, leadership, class, and inequality.

### POLI 328 - LATINO POLITICS IN THE UNITED STATES
**Short Title:** LATINO POLITICS IN THE US  
**Department:** Political Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Latinos and public policies affecting Latinos have become a major part of the discourse taking place in American politics as a result of current and projected demographic trends. After reviewing the demographic, historic, and social factors distinctive to the Latino population in the United States, this course examines how Latinos have interacted with political institutions to shape politics and public policy.

### POLI 329 - HEALTH POLICY
**Short Title:** HEALTH POLICY  
**Department:** Political Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Applies an interdisciplinary approach to the study of health policy. Objectives are to provide students with a broad introduction to the healthcare system, identify stresses on the current system, and explore possible public policy decisions that may transform the healthcare system.

### POLI 330 - MINORITY POLITICS
**Short Title:** MINORITY POLITICS  
**Department:** Political Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Examination of the political and social position of minority groups (African Americans, Asian Americans, Native Americans, Latinos, and women) in the U.S. This course explores the political power and behavior of these groups. The key concepts include racism, discrimination, resources, political power, culture, leadership, class, and inequality.

### POLI 331 - ENVIRONMENTAL POLITICS AND POLICY
**Short Title:** ENVIRONMENTAL POLITICS & POLICY  
**Department:** Political Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course considers the major issues in the increasingly important public policy area of the environment. It emphasizes the American experience, but also considers certain crucial international aspects of these issues. Cross-list: ENST 331.

### POLI 332 - URBAN POLITICS
**Short Title:** URBAN POLITICS  
**Department:** Political Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Exploration of issues of political behavior and public policy in urban and metropolitan areas. Includes urban decline, regional governance, revitalization, and issues of ethnic and racial conflict.

### POLI 333 - COMPARATIVE LEGISLATURES
**Short Title:** COMPARATIVE LEGISLATURES  
**Department:** Political Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Examination of similarities and differences of legislatures in different countries. Includes the causes and consequences of these differences.

### POLI 334 - AMERICAN POLITICAL PARTIES
**Short Title:** AMERICAN POLITICAL PARTIES  
**Department:** Political Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Examination of the American political party system both historically and contemporarily, with important emphasis on the nomination, campaign, and election functions of political parties. Party organization in government will also be explored.

### POLI 335 - POLITICAL ENVIRONMENT OF BUSINESS
**Short Title:** POLI ENVIRONMENT OF BUSINESS  
**Department:** Political Science  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Study of the foundation of government involvement in public policy and the institutional process guiding executive, legislative, and bureaucratic officials. Includes theories of collective action and their application in the political world.
POLI 336 - POLITICS OF REGULATION
Short Title: POLITICS OF REGULATION
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will focus principally on government regulation of business and the political factors that shape its content.

POLI 337 - PUBLIC POLICY
Short Title: PUBLIC POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Exploration of the role that public bureaucracy plays in national policy making. Includes an examination of sources of agency power, which are linked to different policy outcomes.

POLI 338 - POLICY ANALYSIS
Short Title: POLICY ANALYSIS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Familiarizes students with the analytical tools necessary for evaluating and analyzing public policies. Cross-list: SOSC 301. Mutually Exclusive: Credit cannot be earned for POLI 338 and POST 338.

POLI 339 - SOUTHERN POLITICS
Short Title: SOUTHERN POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examination of selected political patterns and trends in the modern South. Includes political developments within the region and the impact of the South on American politics generally.

POLI 340 - ANCIENT AND MEDIEVAL POLITICAL THEORY
Short Title: ANCIENT & MEDIEVAL POLI THEORY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the sources of ancient and medieval political thought, with emphasis on the historical analysis of political philosophy and mythology and the influence of Plato and Aristotle.

POLI 342 - POLITICS OF THE JUDICIARY
Short Title: POLITICS OF THE JUDICIARY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explores the role of courts and judges in American politics. Will illustrate major characteristics of judicial institutions in the U.S. and provide understanding of forces influencing judicial decisions. Will cover federal and state organization of trial and appellate courts, judicial selection methods, and the politics of judicial decision-making.

POLI 343 - MEDIA AND POLITICS
Short Title: MEDIA AND POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examines the role of media in politics. Attention is given to the media as a quasi-political institution. It elaborates the role the media plays in elections and the policy process.

POLI 345 - URBAN LAB MIDDLE EAST
Short Title: URBAN LAB MIDDLE EAST
Department: Political Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 355 (may be taken concurrently) or POLI 362 (may be taken concurrently) or POLI 464 (may be taken concurrently) or POLI 562 (may be taken concurrently) or POLI 361 (may be taken concurrently)
Description: The course examines the dynamics of urban politics and policy in the Middle East. We will focus on social, political, and economic issues, as well as history, culture, architecture and the arts. Weekly classes will include case studies, guest lectures, and work on research projects. The lab also features a field research trip to one or more cities (Dubai, Abu Dhabi, Muscat, Doha, etc.) during Spring Break. Prerequisites may be taken the same semester with POLI 345/ASIA 345. Department Permission Required. Cross-list: ASIA 345.
POLI 347 - URBAN LAB SHANGHAI
Short Title: URBAN LAB SHANGHAI
Department: Political Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 362 (may be taken concurrently) or POLI 562 (may be taken concurrently) or POLI 464
Description: This course examines the dynamics of urban politics and policy in an emerging global city - Shanghai. In addition to social, political and economic issues, we will focus on history, culture, language, architecture and the arts. Weekly class sessions will include lectures, case studies, guest lectures, and group work on research projects. The lab also features an 8-day field research trip to Shanghai. Prerequisite(s) POLI 362 or POLI 562 may be taken concurrently. Instructor Permission Required. Cross-list: ASIA 347.

POLI 348 - URBAN LAB BUENOS AIRES
Short Title: URBAN LAB BUENOS AIRES
Department: Political Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 362 (may be taken concurrently) or POLI 562 (may be taken concurrently) or POLI 464
Description: This course examines the dynamics of urban politics and policy in an emerging global city - Buenos Aires. In addition to social, political and economic issues, we will also focus on history, culture, language, architecture and the arts. Weekly class sessions will include lectures, case studies, guest lectures, and group work on research projects. The lab also features 8-day field research trip to Buenos Aires. Prerequisite(s) POLI 362 or POLI 562 may be taken concurrently. Instructor Permission Required.

POLI 349 - URBAN LAB ISTANBUL
Short Title: URBAN LAB ISTANBUL
Department: Political Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 355 (may be taken concurrently) or POLI 362 (may be taken concurrently) or POLI 464 (may be taken concurrently) or POLI 562 (may be taken concurrently)
Description: This course examines the dynamics of urban politics and policy in an emerging global city - Istanbul. In addition to social, political and economic issues, we will also focus on history, culture, language, architecture and the arts. Weekly class sessions will include lectures, case studies, guest lecturers, and group work on research projects. The lab also features an 8-day field research trip to Istanbul. Prerequisites may be taken the same semester as POLI 349/ASIA 349. Instructor Permission Required. Cross-list: ASIA 349.

POLI 350 - URBAN LAB HOUSTON
Short Title: URBAN LAB HOUSTON
Department: Political Science
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 332 (may be taken concurrently)
Description: This course examines the dynamics of urban politics and policy in an emerging global city - Houston. The lab is project-based and allows students to engage in hands-on, policy-focused research under the guidance of the faculty instructor. Weekly sessions will include lectures, case studies, guest lecturers, site visits, and work on research projects. POLI 350 requires either POLI 332 as a pre-requisite, which can be taken concurrently. POLI 337 may serve as a Co-Requisite for this course. Department Permission Required.

POLI 352 - THE POLITICS AND CULTURE OF MEXICO
Short Title: POLITICS & CULTURE OF MEXICO
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Mexico entered the 21st Century as one of the most dynamic societies in Latin America. But Mexico’s fast-paced and chaotic transformation cannot be understood without a look at its past and its diverse cultural makeup. This course explores the weight of Mexico’s history and culture as it seeks to forge ahead economically, socially, and politically.

POLI 353 - EAST ASIAN DEMOCRACIES
Short Title: EAST ASIAN DEMOCRACIES
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the functioning of the political system and policy in three principal East Asian democracies: Japan, South Korea, and Taiwan. Particular focus is paid to each country’s democratic institutions, electoral politics, and political party system. Cross-list: ASIA 353.

POLI 354 - LATIN AMERICAN POLITICS
Short Title: LATIN AMERICAN POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the political process in contemporary Latin America, with emphasis on selected major countries.
POLI 355 - GOVERNMENT AND POLITICS OF THE MIDDLE EAST
Short Title: GOVERNMENT&POLITICS MID EAST
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Provides an introduction to politics in the Middle East. Brief historical overview is combined with detailed description of political systems in the area. The region is then used to examine empirically, critique, and revise theories of comparative politics. Emphasis on whether the region would be considered unique or exceptional.

POLI 356 - REPRESENTATION AND POLICY MAKING
Short Title: REPRESENTATION & POLICY MAKING
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course seeks to understand the relationship between political institutions and the representation of social interests in the policy-making process across a variety of national contexts. The course focuses on the politics behind policy choices and how policy-makers are held accountable in democratic contexts. Case studies will draw upon examples in the United States, Latin America, Europe and Asia.

POLI 357 - DEMOCRACY AND DEMOCRATIZATION
Short Title: DEMOCRACY AND DEMOCRATIZATION
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine the theory of democracy and the functioning of democratic institutions around the world. Themes covered in the course will include: What is democracy? How does democracy arise? Can institutions influence the survival and consolidation of democracy?

POLI 358 - COMPARATIVE POLITICAL BEHAVIOR
Short Title: COMPARATIVE POLITICAL BEHAVIOR
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores the nature and sources of cross-national differences and similarities in mass political behavior. Topics include contextual and individual level factors that influence public opinion, voting behavior, and political participation. Graduate/Undergraduate Equivalency: POLI 567. Mutually Exclusive: Credit cannot be earned for POLI 358 and POLI 567.

POLI 359 - GOVERNMENT & POLITICS OF THE MIDDLE EAST
Short Title: GOVERNMENT & POLITICS MID EAST
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Provides an introduction to politics in the Middle East. Brief historical overview is combined with detailed description of political systems in the area. The region is then used to examine empirically, critique, and revise theories of comparative politics. Emphasis on whether the region would be considered unique or exceptional.

POLI 360 - WESTERN EUROPEAN DEMOCRACIES
Short Title: WESTERN EUROPEAN DEMOCRACIES
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A survey of government and politics in Western European democracies, with primary emphasis on Great Britain, France, and Germany.

POLI 362 - COMPARATIVE URBAN POLITICS AND POLICY
Short Title: COMPARATIVE URBAN POL & PLCY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course offers a broad overview of urban politics and policies in cities around the world. We will examine how national, regional, and local forces shape the processes and outcomes governance within and across cities and metropolitan areas, paying particular attention to critical problems and policies that affect urban centers: growth, immigration, class conflict, public order, service management, education, housing transportation, environmental protection, sustainability, land-use planning and spatial competition.

POLI 365 - BRITISH POLITICS
Short Title: BRITISH POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An examination of British politics and government, with emphasis on both the contemporary and historical setting. This course also emphasizes a comparison of the British political system with the American political system.

POLI 367 - TRANSITIONS TO DEMOCRACY
Short Title: TRANSITIONS TO DEMOCRACY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course uses recent examples from East-Central Europe to illustrate a variety of transitions to democracy. Procedures which are vital to a successful transition, such as setting up electoral laws, economic reform, constitution-making, and transitional justice are discussed from an institutional design perspective.
POLI 371 - CIVIL WARS
Short Title: CIVIL WARS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course seeks to examine the origins and dynamics of civil war, including civil war onset, duration, outcome, termination, why people join rebellions, the effectiveness of various forms of civil war management and resolution, and more. It aims to impart to students a solid understanding of theories and empirical evidence regarding the causes, conduct, and termination of civil wars in general.

POLI 372 - AMERICAN FOREIGN POLICY
Short Title: AMERICAN FOREIGN POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examination of internal and external aspects of foreign policy leadership, presidential initiative, congressional control, press, public opinion, and crisis management. Not a Managerial Studies elective.

POLI 373 - WAR AND POLITICS
Short Title: WAR AND POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Exploration of the theoretical basis of, and empirical evidence for, a number of explanations for interstate war. Includes contemporary theories dealing with dispute escalation, arms races, deterrence, crisis management, and low-intensity conflict.

POLI 374 - STRATEGIC INTERACTIONS IN INTERNATIONAL RELATIONS
Short Title: STRATEGIC INTERACTIONS IN INTERNATIONAL RELATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to the uses of game theory in the study of international relations.
POLI 395 - INTRODUCTION TO STATISTICS
Short Title: INTRO TO STATISTICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to research design and quantitative methods used in contemporary political science research. Students will apply the tools of social science inquiry in a series of assignments designed to examine political attitudes and behavior, gaining experience with quantitative analysis in the R software package.

POLI 401 - STATE POLITICS RESEARCH SEMINAR
Short Title: STATE POLITICS RESEARCH SEM
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: A research seminar in state politics and policy with an emphasis on state institutions.

POLI 405 - SENIOR THESIS
Short Title: SENIOR THESIS
Department: Political Science
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 405 and 406
Description: Open to senior honors majors with the permission of the department. Students must complete both POLI 405 and 406 to obtain credit. Instructor Permission Required.

POLI 406 - SENIOR THESIS
Short Title: SENIOR THESIS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: See POLI 405. Instructor Permission Required.

POLI 416 - SURVEY RESEARCH IN AMERICAN POLITICS
Short Title: SURVEY RSRCH AMERICAN POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: The major objectives of this course are to introduce students to the skills and resources needed to design and conduct a survey. The principle substantive focus of the course will be public opinion surveys on topics of politics, public policy and individual political behavior.

POLI 417 - CONGRESS AND THE CONSTITUTION
Short Title: CONGRESS & THE CONSTITUTION
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine the constitutional relationship between the Congress, the Executive branch, and the federal courts, evaluating constitutional challenges to current Congressional initiatives in health care, immigration reform, campaign financing, and authorizations for war. We will also discuss the role of congressional oversight and the influence of money and the media in determining the laws of the land.

POLI 418 - SEMINAR ON THE PRESIDENCY
Short Title: SEMINAR ON THE PRESIDENCY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Provides students with a broad introduction to the presidency. Topics include a review of the executive's constitutional powers and their changes over time; processes and politics of presidential nomination and election; struggles between the president and other political elites and dynamics of White House decision-making.

POLI 419 - POLITICAL PARTIES AND INTEREST GROUPS IN AMERICAN POLITICS
Short Title: PARTIES AND INTEREST GROUPS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: The goal of this seminar is to provide the student with knowledge of the formation, organization, activity, and impact of political parties and interest groups in the United States. Special attention will be given to changes in the operation of these two types of organizations over the last 20 years.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Prerequisite(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLI 420</td>
<td>ELECTION SYSTEMS, TECHNIQUES, AND ADMINISTRATION</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>POLI 395</td>
<td>This course will teach students how elections are conducted to enhance participation and accurately measure the will of the electorate and to be sufficiently rigorous to convince all parties that the results are legitimate. This course will consider the design and evaluation of election technologies, ranging from voter registration through the polling booth and vote tabulation. The course will consider three questions: how do individual voters interact with the voting technology, how are voting technologies engineered to be accurate and secure, and how do the social aspects of voting fulfill democratic goals for elections? A central requirement for this course will be group research projects, many operating in our community, built around the November election. Cross-list: COMP 435, PSYC 420.</td>
</tr>
<tr>
<td>POLI 421</td>
<td>CONTEMPORARY ISSUES IN AMERICAN POLITICS</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>POLI 395</td>
<td>This seminar will focus on major issues (e.g., immigration, voting rights, budget deficits, healthcare) in American society. After examining the history of national and state policies, seminar participants will discuss social science contributions to the ongoing policy discussions. Specific topics covered will vary by semester.</td>
</tr>
<tr>
<td>POLI 429</td>
<td>BIOLOGICAL FOUNDATIONS OF POLITICS</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>POLI 395</td>
<td>This course is an introduction to the biological underpinnings of political behavior. The influence of genes and evolution are covered, as well as the relevance of neural structures, brain organization, and neuro-chemistry for both universal political traits and individual variation in political orientations. NOTE: This seminar is in the theory and methods field. It is not an American politics seminar.</td>
</tr>
<tr>
<td>POLI 430</td>
<td>SEMINAR IN TEXAS POLITICS</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>POLI 395</td>
<td>Research seminar in the history of Texas politics. Instructor Permission Required.</td>
</tr>
<tr>
<td>POLI 431</td>
<td>ELECTORAL CAMPAIGNS</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>POLI 395</td>
<td>This course teaches students how campaigns are conducted to enhance participation, to accurately measure the will of the electorate, and to be sufficiently rigorous to convince all parties that the results are legitimate. This course will consider the design and evaluation of election technologies, ranging from voter registration through the polling booth and vote tabulation. This course will consider three questions: how do individual voters interact with the voting technology, how are voting technologies engineered to be accurate and secure, and how do the social aspects of voting fulfill democratic goals for elections? A central requirement for this course will be group research projects, many operating in our community, built around the November election. Cross-list: COMP 435, PSYC 420.</td>
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<tr>
<td>POLI 432</td>
<td>URBAN POLITICS</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>POLI 395</td>
<td>This course examines the market-like relationship among metropolitan area governments. It will focus on urban/suburban relationships as well as policy topics such as education and local service provision.</td>
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<tr>
<td>POLI 433</td>
<td>COMPARATIVE LEGISLATURES</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>POLI 395</td>
<td>This course will examine the role of campaigns in determining the outcome of political races.</td>
</tr>
<tr>
<td>POLI 434</td>
<td>PUBLIC POLICY AND METROPOLITAN AREA GOVERNANCE</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>POLI 395</td>
<td>This course is an introduction to the biological underpinnings of public policy. It will address questions of urban/suburban relationships as well as policy topics such as education and local service provision.</td>
</tr>
<tr>
<td>POLI 435</td>
<td>PUBLIC POLICY&amp;METRO AREA GOVT</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>POLI 395</td>
<td>This course is an introduction to the biological underpinnings of political behavior. The influence of genes and evolution are covered, as well as the relevance of neural structures, brain organization, and neuro-chemistry for both universal political traits and individual variation in political orientations. NOTE: This seminar is in the theory and methods field. It is not an American politics seminar.</td>
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<td>POLI 436</td>
<td>ELECTORAL CAMPAIGNS</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>POLI 395</td>
<td>This course teaches students how campaigns are conducted to enhance participation, to accurately measure the will of the electorate, and to be sufficiently rigorous to convince all parties that the results are legitimate. This course will consider the design and evaluation of election technologies, ranging from voter registration through the polling booth and vote tabulation. This course will consider three questions: how do individual voters interact with the voting technology, how are voting technologies engineered to be accurate and secure, and how do the social aspects of voting fulfill democratic goals for elections? A central requirement for this course will be group research projects, many operating in our community, built around the November election. Cross-list: COMP 435, PSYC 420.</td>
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<td>POLI 437</td>
<td>URBAN POLITICS</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll</td>
<td>Undergraduate Upper-Level</td>
<td>POLI 395</td>
<td>This course examines the market-like relationship among metropolitan area governments. It will focus on urban/suburban relationships as well as policy topics such as education and local service provision.</td>
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<tr>
<td>POLI 438</td>
<td>COMPARATIVE LEGISLATURES</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
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<td>Political Science</td>
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<td>This course is an introduction to the biological underpinnings of public policy. It will address questions of urban/suburban relationships as well as policy topics such as education and local service provision.</td>
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</tbody>
</table>
| POLI 440    | PUBLIC POLICY&METRO AREA GOVT                    | Political Science | Standard Letter | Seminar    | 3            | Graduate level students may not enroll | Undergraduate Upper-Level | POLI 395       | This course is an introduction to the biological underpinnings of political behavior. The influence of genes and evolution are covered, as well as the relevance of neural structures, brain organization, and neuro-chemistry for both universal political traits and individual variation in political orientations. NOTE: This seminar is in the theory and methods field. It is not an American politics seminar.
POLI 435 - SEMINAR ON MONEY AND POLITICS
Short Title: SEMINAR ON MONEY AND POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course explores the possible ways money may affect American politics and public policy at the national, state, and local levels of government. In addition to discussing the strategies used in allocating money in campaigns, we will examine the impact of money on elections and on the legislative process.

POLI 436 - POLITICS OF REGULATION
Short Title: POLITICS OF REGULATION
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Study of the government’s regulation of business and the political factors that shape its content.

POLI 437 - EDUCATION POLICY
Short Title: EDUCATION POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Examines educational politics and policy from micro and macro perspectives. We will focus on school governance, structure, and finance at the federal, state, and local levels and examine the design, implementation and effects of various school reform initiatives in U.S., and to a more limited extent in other countries.

POLI 438 - RACE AND PUBLIC POLICY
Short Title: RACE AND PUBLIC POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Study of minority group politics and how race structures contemporary U.S. politics. Includes myths and realities of minority groups, symbolic politics and race, pluralism as a model of U.S. democracy, the intersection of class, race, and gender, civil rights movements, group consciousness, public opinion regarding minorities, and responses of national institutions to race issues.

POLI 439 - RESEARCH SEMINAR ON SOUTHERN POLITICS
Short Title: RSRCH SEM ON SOUTHERN POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Examination of political behavior and political institutions in the southern states, with emphasis on contemporary Texas politics.

POLI 440 - RESEARCH SEMINAR ON PUBLIC POLICY
Short Title: RESEARCH SEM ON PUBLIC POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395 and (POLI 335 or POLI 336 or POLI 337 or POLI 338)
Description: This course provides students an opportunity to conduct original research on wide range of public policy questions. Students will be provided specific research questions to investigate over the course of the semester for which they will design and complete an original program of research.

POLI 441 - GOVERNING THE ENVIRONMENTAL COMMONS
Short Title: GOVERNING ENVIRONMNTL COMMONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Common Property Resources (CPRs), such as fisheries, aquifers, and the Internet, appear in many guises and pose a fundamental problem for governing. Exploration of theoretical underpinnings for CPRs, their growing literature, and the political and economic institutions mediating CPR dilemmas. Included is an original research project in conjunction with the instructor. Cross-list: ENST 441.

POLI 442 - SUBNATIONAL POLITICS
Short Title: SUBNATIONAL POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Examines the role of subnational political institutions in the development and implementation of policy. It compares the myriad of subnational institutions.
POLI 444 - PRACTICUM IN LEGISLATIVE RESEARCH
Short Title: LEGISLATIVE RESEARCH
Department: Political Science
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course will teach students how to design and conduct original empirical research on US, state or world legislatures. Students will conduct original quantitative research and produce a research paper.

POLI 445 - SEMINAR IN JUDICIAL PROCESS AND BEHAVIOR
Short Title: SEM JUDICIAL PROCESS & BEHAVR
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Thinking about law school? This seminar explores social scientific literature in judicial process and behavior and examines selected controversies in the study of judicial processes. Learning is based on active participation in seminars covering assigned readings and a research project on a related topic selected by the student.

POLI 450 - ELECTIONS IN THE AMERICAS
Short Title: ELECTIONS IN THE AMERICAS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course will teach students how to design and conduct original empirical research on US, state or world legislatures. Students will conduct original quantitative research and produce a research paper.

POLI 457 - CONDITIONS OF DEMOCRACY
Short Title: CONDITIONS OF DEMOCRACY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course starts with definitions and theories/preconditions of democracy and then looks at specific cases of democratic transition throughout the world, democratic consolidation, reaction, and the prospects for the future.

POLI 458 - GENDER AND POLITICS IN THE MIDDLE EAST
Short Title: GENDER & POLITICS MIDDLE EAST
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Seminar will provide understanding of intertwined relationship between gender and politics in contemporary Middle East and North Africa. Will focus on the region's historical, sociopolitical, and cultural contexts that have contributed to the current discourse on gender in the Arab World. Will explore the role of Arab women in the political processes across the Middle East. Concrete examples given.

POLI 459 - SEX, GENDER, AND POLITICAL REPRESENTATION IN LATIN AMERICA
Short Title: GENDER & REP IN LATIN AMERICA
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course will teach students how to design and conduct original empirical research on US, state or world legislatures. Students will conduct original quantitative research and produce a research paper.

POLI 460 - SEMINAR IN COMPARATIVE GOVERNMENT
Short Title: SEM IN COMPARATIVE GOVERNMENT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This seminar will analyze authoritarian regimes from a comparative perspective.
POLI 461 - POLITICS, RISK, AND ENERGY
Short Title: POLITICS, RISK, AND ENERGY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course develops various linkages between the concepts of risk identification and mitigation, the political realm and the energy sector. Building from mainstream literature, The Black Swan and Outliers, and distribution theory, the concept of risk is defined and applied to Political and Energy Markets using case studies and data analysis.

POLI 462 - COMPARATIVE PUBLIC POLICY
Short Title: COMPARATIVE PUBLIC POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Seminar examining the process and substance of public policy across nations, with emphasis on social policy in industrialized democracies. Instructor Permission Required.

POLI 463 - COMPARATIVE POLITICAL ECONOMY
Short Title: COMPARATIVE POLITICAL ECONOMY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Seminar exploring the interrelationship of economics and politics in advanced industrial societies. Includes economic policy making, political behavior and economic conditions, and the role of institutions in channeling conflicts between democracy and capitalism.

POLI 464 - RESEARCH SEMINAR ON COMPARATIVE URBAN POLITICS AND POLICY
Short Title: SEM COMP URBAN POL & PLCY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course offers a broad overview of urban politics and policies in cities around the world. We will examine how national, regional and local forces shape the processes and outcomes governance within and across cities and metropolitan areas, paying particular attention to critical problems and policies that affect urban centers: growth, immigration, class conflict, public order, service management, education, housing transportation, environmental protection, sustainability, land-use planning and spatial competition. Instructor Permission Required. Graduate/Undergraduate Equivalency: POLI 562. Mutually Exclusive: Credit cannot be earned for POLI 464 and POLI 562. Repeatable for Credit.

POLI 466 - POLITICAL PARTIES AND VOTING BEHAVIOR IN WESTERN DEMOCRACIES
Short Title: PARTIES & VOTING BEHAVIOR
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Seminar on the determinants of party systems, the structure and functions of parties, and theories of voting behavior in Western democracies.

POLI 469 - CIVIL WAR AND TERRORISM
Short Title: CIVIL WAR AND TERRORISM
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Seminar on causes, consequences and dynamics of civil wars. Will analyze why they break out, how sustained, how ended, thinking conceptually, theoretically, empirically about conflict dynamics and processes. Explores transnational dynamics, terrorism, roles of groups, organizations, insurgency-counterinsurgency dynamics and how these affect the evolution of civil conflicts. Graduate/Undergraduate Equivalency. POLI 571. Mutually Exclusive: Credit cannot be earned for POLI 469 and POLI 571.

POLI 470 - INTERNATIONAL RELATIONS
Short Title: INTERNATIONAL RELATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Topic varies from year to year. Instructor Permission Required. Repeatable for Credit.

POLI 471 - POLITICS OF THE UNITED NATIONS
Short Title: POLITICS OF UNITED NATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Provide students with a broad introduction to the politics of the United Nations. Topics include roll-call voting, policy choices of the security council, and issues of membership and representation.
POLI 472 - AMERICAN FOREIGN POLICY
Short Title: AMERICAN FOREIGN POLICY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: The content of American foreign policy, its sources, and the process of policy formulation.

POLI 473 - THE CRAFT OF INTELLIGENCE ANALYSIS, PREDICTION AND CONNECTING THE DOTS
Short Title: THE CRAFT OF INTELLIGENCE
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is designed to introduce students to the problems faced by intelligence analysts. Students will study examples of intelligence analysis and hear from current and former analysts. Placed in multidisciplinary teams, students will monitor streams of actual events and provide assessments of these events. Instructor Permission Required.

POLI 474 - INTERNATIONAL ORGANIZATIONS: THEORIES AND PRACTICE
Short Title: INTERNATIONAL ORGANIZATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course has two goals: First to introduce students to the current theoretical debates in the field of international organizations and to assess the value and limitations of these theories; second, to understand the working of important world organizations, including (but not limited to) the UN, the WTO, and IMF. The course assumes some basic knowledge of IR theory and previous debates about the origin and impact of international organizations on world politics. It is designed for students at an advanced stage in the study of political science and International Relations.

POLI 475 - INTERNATIONAL COOPERATION
Short Title: INTERNATIONAL COOPERATION
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Research seminar on theories and evidence of international cooperation. The course will explore conditions conducive to establishing and maintaining cooperation in international politics, the design of international agreements and institutions, and the influence of international agreements and institutions on international relations.

POLI 476 - INTERNATIONAL POLITICAL ECONOMY
Short Title: INTERNAT'L POLITICAL ECONOMY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course is designed to survey the theoretical and empirical analysis of the politics of international economic relations. In particular, the course is designed to examine the interrelationships of economics and politics by applying economic theory to the study of politics.

POLI 477 - US - CHINA: CONFLICT AND COOPERATION
Short Title: US-CHINA: CONFLICT & COOPRTN
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course is designed to introduce students to the problems faced by intelligence analysts. Students will study examples of intelligence analysis and hear from current and former analysts. Placed in multidisciplinary teams, students will monitor streams of actual events and provide assessments of these events. Instructor Permission Required.

POLI 478 - US - CHINA: CONFLICT AND COOPRTN
Short Title: SEM-QUANT INTERN'L RELATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course is designed to introduce students to the current theoretical debates in the field of international organizations and to assess the value and limitations of these theories; second, to understand the working of important world organizations, including (but not limited to) the UN, the WTO, and IMF. The course assumes some basic knowledge of IR theory and previous debates about the origin and impact of international organizations on world politics. It is designed for students at an advanced stage in the study of political science and International Relations.

POLI 479 - SEMINAR IN QUANTITATIVE INTERNATIONAL RELATIONS
Short Title: SEM-QUANT INTERN'L RELATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course is designed to introduce students to the current theoretical debates in the field of international organizations and to assess the value and limitations of these theories; second, to understand the working of important world organizations, including (but not limited to) the UN, the WTO, and IMF. The course assumes some basic knowledge of IR theory and previous debates about the origin and impact of international organizations on world politics. It is designed for students at an advanced stage in the study of political science and International Relations.

POLI 480 - SEMINAR IN POLITICAL BEHAVIOR
Short Title: SEM IN POLITICAL BEHAVIOR
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: Undergraduate research seminar covering the field of political behavior with special emphasis on the application of social and cognitive psychology to the study of mass political behavior. Topics include political socialization, models of voting behavior, and political participation.
POLI 481 - UNDERSTANDING WAR AND PEACE
Short Title: UNDERSTANDING WAR AND PEACE
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395 or POLI 374
Description: Introduces students to current research on the causes and consequences of international conflict. Students are expected to identify a novel research question, develop an appropriate research design to address the question, and carry out the research. The emphasis is on developing rigorous theory and using systematic evidence.

POLI 482 - THE CAUSES OF WAR AND THE WAR IN IRAQ
Short Title: CAUSES OF WAR / IRAQ
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Why do states fight wars? Moreover, what can existing theories of war tell us about the causes of modern conflicts such as the 2003 invasion of Iraq? We will begin this course by examining several prominent theories of the causes of war. We will then turn to a number of specific questions related to the recent war in Iraq.

POLI 483 - U.S.: MEXICO BORDER ISSUES IN COMPARATIVE PERSPECTIVE
Short Title: US: MEXICO BORDER ISSUES
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): POLI 395
Description: This course is designed to explore the problems of bordering, debordering and rebordering today. Specifically, the course deals with the problem of borders in an increasingly integrated world, where borders represent the symbol of sovereignty at the edges of the nation-state in open contradiction to the growing desire for human, economic and technological mobility and the need to deal with globalized crises in fragmented spaces and policy processes. To understand these tensions the class explores the issues border flows, border security, immigration, human rights, and borders functions and processes.

POLI 489 - CHINESE POLITICS IN COMPARATIVE PERSPECTIVE
Short Title: CHINESE POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores the range of theories and empirical research methodologies from comparative political science, political-economy and Asian studies commonly applied to understanding Chinese politics: political participation, political organizations, collective action and popular protest, political culture and political institutional change. This course will be a seminar requiring weekly presentations extensive readings at the graduate level in social science, and an original research paper. There is no prerequisite for this course but participants are assumed to already possess extensive knowledge of Chinese history, culture and society. Cross-list: ASIA 489.

POLI 490 - POLITICS AND THE ARTS
Short Title: POLITICS AND THE ARTS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the development of modern political theory and its relevance to contemporary problems. NOTE: This seminar is in the theory and methods field. It is not an American politics seminar.

POLI 500 - SOCIAL SCIENTIFIC THINKING I
Short Title: SOCIAL SCIENTIFIC THINKING I
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces students to the practice of social science research including empirical description, theoretical development, and hypothesis generation and testing. It includes projects on the design and implementation of surveys, controlled experiments, archival data collection, fieldwork, case studies, and qualitative analysis.

POLI 501 - SOCIAL SCIENTIFIC THINKING II
Short Title: SOCIAL SCIENTIFIC THINKING II
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): POLI 500
Description: This course is a continuation of POLI 500. Students will plan and execute an original research project and write a paper reporting the results.
POLI 502 - INTRODUCTION TO STATISTICS
Short Title: INTRODUCTION TO STATISTICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course aims at providing students with a working knowledge of statistics in political science. It involves the study of descriptive and inferential statistics, as well as hands-on experience with computer statistical packages.

POLI 503 - TOPICS IN METHODS AND DATA ANALYSIS
Short Title: TOPICS METHODS & DATA ANALYSIS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Applications of least squares and general linear model. Cross-list: STAT 503.

POLI 504 - INTRODUCTION TO MAXIMUM LIKELIHOOD ESTIMATION
Short Title: INTRO MAX LIKELIHOOD EST
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of applications of maximum likelihood estimation.

POLI 505 - ADVANCED MAXIMUM LIKELIHOOD ESTIMATION
Short Title: ADV MAXIMUM LIKELIHOOD EST
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): POLI 504
Description: Special topics in political methodology. Instructor Permission Required. Repeatable for Credit.

POLI 506 - ADVANCED TOPICS IN POLITICAL METHODOLOGY I
Short Title: ADV TOPICS POLI METHODS I
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): POLI 505
Description: Advanced topics in statistical methods, with an emphasis on Bayesian statistics and R-programming.

POLI 507 - ADVANCED TOPICS IN POLITICAL METHODOLOGY II
Short Title: ADV TOPICS POL METHODS II
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): POLI 505
Description: Advanced topics in political methodology, with an emphasis on non-parametric statistical models, causal inference, and machine learning techniques.

POLI 511 - MEASUREMENT AND RESEARCH DESIGN
Short Title: MEASUREMENT & RESEARCH DESIGN
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of advanced topics in research design and measurement theory.

POLI 512 - EXPERIMENTAL DESIGN AND SOCIAL BEHAVIOR
Short Title: EXPERIMENTAL DESIGN & SOCIAL BEHAVIOR
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar develops tools for the design and conduct of experiments in the social sciences. At the conclusion of the course each student will have developed and implemented an experiment testing some aspect of human social behavior.

POLI 520 - APPROACHES TO COMPARATIVE GOVERNMENT
Short Title: APPROACHES TO COMPARATIVE GOVT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Core graduate course analyzing basic approaches to the study of comparative government.

POLI 527 - INSTITUTIONAL ANALYSIS
Short Title: INSTITUTIONAL ANALYSIS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Theories of institutional analysis and design.
<table>
<thead>
<tr>
<th>Course Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLI 530 - APPROACHES TO AMERICAN GOVERNMENT</td>
<td>APPROACHES TO AMERICAN GOVT</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Core graduate course. Includes an analysis of basic approaches to the study of American politics.</td>
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<tr>
<td>POLI 531 - STATE POLITICS</td>
<td>STATE POLITICS</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Course examines similarities and differences in the organization of state politics. Major issues include state legislative organization, state elite behavior, and policy implementation.</td>
</tr>
<tr>
<td>POLI 532 - COMPARATIVE LEGISLATURES</td>
<td>COMPARATIVE LEGISLATURES</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Provides the student with the basic concepts and theories necessary to understand the functions and organization of legislatures/assemblies in democratic societies. This course takes a broad-based perspective, including research that focuses on national parliaments and U.S. state legislatures.</td>
</tr>
<tr>
<td>POLI 533 - ADVANCED TOPICS IN POLITICAL BEHAVIOR</td>
<td>ADV TOPIC POLITICAL BEHAVIOR</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Graduate seminar in the subfield of political behavior. Content varies from year to year. Instructor Permission Required. Repeatable for Credit.</td>
</tr>
<tr>
<td>POLI 534 - INTEREST GROUPS AND POLITICAL PARTIES</td>
<td>INTEREST GROUP&amp;POLITICAL PARTY</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Graduate research seminar in the subfields of interest groups and political behavior.</td>
</tr>
<tr>
<td>POLI 535 - RACE, ETHNICITY, AND AMERICAN POLITICS</td>
<td>RACE,ETHNICITY&amp;AMER POLITICS</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Course explores patterns of cf, explanations for representation of women and minority groups in many world countries, including the US. Evaluates the vast theoretical and empirical research on underrepresented group representation. Maps future paths for the study of group representation in politics.</td>
</tr>
<tr>
<td>POLI 536 - WOMEN AND MINORITY REPRESENTATION</td>
<td>WOMEN &amp; MINORITY REPRESENTATION</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Course explores patterns of cf, explanations for representation of women and minority groups in many world countries, including the US. Evaluates the vast theoretical and empirical research on underrepresented group representation. Maps future paths for the study of group representation in politics.</td>
</tr>
<tr>
<td>POLI 537 - PUBLIC POLICY AND BUREAUCRACY</td>
<td>PUBLIC POLICY AND BUREAUCRACY</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Study of the administration and implementation of public policies across federal, state, and substate governments.</td>
</tr>
<tr>
<td>POLI 538 - POLITICAL ECONOMY OF POLICY CHANGE</td>
<td>POL ECONOMY OF POLICY CHANGE</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>This course will explore policy and political change primarily, but not exclusively, in the United States. Using a political economy approach, we will explore different models of change and identify the actors, institutions, and conditions that facilitate stability in change in state, local and national policymaking.</td>
</tr>
<tr>
<td>POLI 539 - POLITICAL PSYCHOLOGY</td>
<td>POLITICAL PSYCHOLOGY</td>
<td>Political Science</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Broad survey of the theoretical and methodological approaches used in political psychology. Topics include political information processing, knowledge, attitudes, political trust, emotions, and personality.</td>
</tr>
</tbody>
</table>

2017-2018 General Announcements
POLI 540 - INTERNATIONAL RELATIONS
Short Title: INTERNATIONAL RELATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Core graduate course. Includes an analysis of basic approaches to the study of international relations.

POLI 541 - INTERNATIONAL COOPERATION
Short Title: INTERNATIONAL COOPERATION
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar on theories and evidence of international cooperation. Discussion of the difficulties in establishing cooperation under anarchy and the conditions under which international cooperation is most likely to occur.

POLI 542 - SUBNATIONAL POLITICS
Short Title: SUBNATIONAL POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examines the role of subnational political institutions in the development and implementation of policy. It compares the myriad of subnational institutions.

POLI 544 - PRACTICUM IN LEGISLATIVE RESEARCH
Short Title: LEGISLATIVE RESEARCH
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will teach graduate students how to design and conduct original empirical research on US, state, or world legislatures. Students will conduct original quantitative research and produce a publishable research paper. Instructor Permission Required.

POLI 549 - RESEARCH SEMINAR ON COMPARATIVE URBAN POLITICS AND POLICY
Short Title: SEM COMP URBAN POL & PLCY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers a broad overview of urban politics and policies in cities around the world. We will examine how national, regional and local forces shape the processes and outcomes governance within and across cities and metropolitan areas, paying particular attention to critical problems and policies that affect urban centers: growth, immigration, class conflict, public order, service management, education, housing transportation, environmental protection, sustainability, land-use planning and spatial competition. Graduate/Undergraduate Equivalency: POLI 464. Mutually Exclusive: Credit cannot be earned for POLI 562 and POLI 464.

POLI 552 - COALITION POLITICS AND PARLIAMENTARY GOVERNMENT
Short Title: COALITION POLI & PRLMTRY GOVT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the extensive scholarship on coalition politics in parliamentary democracies. Topics include coalition formation, the allocation of government ministries, coalition termination, coalition policymaking, and the interaction between coalition governance, party competition, and mass voting behavior.

POLI 554 - POLITICAL ECONOMY OF DEVELOPMENT
Short Title: POLI ECONOMY OF DEVELOPMENT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers a broad overview of urban politics and policies in cities around the world. We will examine how national, regional and local forces shape the processes and outcomes governance within and across cities and metropolitan areas, paying particular attention to critical problems and policies that affect urban centers: growth, immigration, class conflict, public order, service management, education, housing transportation, environmental protection, sustainability, land-use planning and spatial competition. Graduate/Undergraduate Equivalency: POLI 464. Mutually Exclusive: Credit cannot be earned for POLI 562 and POLI 464.

POLI 562 - RESEARCH SEMINAR ON COMPARATIVE URBAN POLITICS AND POLICY
Short Title: SEM COMP URBAN POL & PLCY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers a broad overview of urban politics and policies in cities around the world. We will examine how national, regional and local forces shape the processes and outcomes governance within and across cities and metropolitan areas, paying particular attention to critical problems and policies that affect urban centers: growth, immigration, class conflict, public order, service management, education, housing transportation, environmental protection, sustainability, land-use planning and spatial competition. Graduate/Undergraduate Equivalency: POLI 464. Mutually Exclusive: Credit cannot be earned for POLI 562 and POLI 464.

POLI 563 - COALITION POLITICS AND PARLIAMENTARY GOVERNMENT
Short Title: COALITION POLI & PRLMTRY GOVT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines the extensive scholarship on coalition politics in parliamentary democracies. Topics include coalition formation, the allocation of government ministries, coalition termination, coalition policymaking, and the interaction between coalition governance, party competition, and mass voting behavior.

POLI 564 - POLITICAL ECONOMY OF DEVELOPMENT
Short Title: POLI ECONOMY OF DEVELOPMENT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course offers a broad overview of urban politics and policies in cities around the world. We will examine how national, regional and local forces shape the processes and outcomes governance within and across cities and metropolitan areas, paying particular attention to critical problems and policies that affect urban centers: growth, immigration, class conflict, public order, service management, education, housing transportation, environmental protection, sustainability, land-use planning and spatial competition. Graduate/Undergraduate Equivalency: POLI 464. Mutually Exclusive: Credit cannot be earned for POLI 562 and POLI 464.

POLI 565 - POLITICAL PROTEST
Short Title: POLITICAL PROTEST
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course looks at various theories of collective action and social movements. It will examine theoretical debates about why individuals and groups occasionally redress their grievances through protest and more often endure hardships passively. It will evaluate the relative merit of these theories in explaining cases of protest and passivity worldwide.
POLI 566 - POLITICAL PARTIES
Short Title: POLITICAL PARTIES
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar that examines the theoretical and empirical literature on party development, organization, and change.

POLI 567 - COMPARATIVE POLITICAL BEHAVIOR
Short Title: COMPARATIVE POLITICAL BEHAVIOR
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course we will explore the nature and sources of cross-national differences in mass political behavior. Graduate/Undergraduate Equivalency: POLI 358. Mutually Exclusive: Credit cannot be earned for POLI 567 and POLI 358.

POLI 568 - COMPARATIVE POLITICAL INSTITUTIONS
Short Title: COMP POLITICAL INSTITUTIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examines the design of political institutions in democracies, and their effect on elections, governance, and representation. Explores topics such as the presidential-parliamentary debate, electoral laws and party systems, political parties, electoral institutions and the election of women and minorities, institutional engineering, and U.S. experiences with alternative electoral systems.

POLI 569 - REPRESENTATION IN CONTEMPORARY DEMOCRACIES
Short Title: REP. CONTEMPORARY DEMOCRACIES
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this course, we explore the conceptual meanings of democracy and representation, and then examine the theoretical and empirical linkages between citizen preferences, electoral systems, executive and legislative institutions, policymaking and advance industrial democracies. The aim of the course is to understand how citizen preferences ultimately get translated into policy outcomes and how political institutions shape this relationship.

POLI 570 - SEMINAR IN INTERNATIONAL CONFLICT
Short Title: SEM IN INTERNATIONAL CONFLICT
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar in international conflict. Emphasis on formal theories and quantitative analysis of the causes of war.

POLI 571 - CIVIL WAR AND TERRORISM
Short Title: CIVIL WAR AND TERRORISM
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on causes, consequences and dynamics of civil wars. Will analyze why they break out, how sustained, how ended, thinking conceptually, theoretically, empirically about conflict dynamics and processes. Explores transnational dynamics, terrorism, roles of groups, organizations, insurgency-counterinsurgency dynamics and how these affect the evolution of civil conflicts. More work will be required of the Graduate level. Graduate/Undergraduate Equivalency: POLI 469. Mutually Exclusive: Credit cannot be earned for POLI 571 and POLI 469.

POLI 572 - FOREIGN POLICY DECISION MAKING
Short Title: FOREIGN POLICY DECISION MAKING
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on causes, consequences and dynamics of civil wars. Will analyze why they break out, how sustained, how ended, thinking conceptually, theoretically, empirically about conflict dynamics and processes. Explores transnational dynamics, terrorism, roles of groups, organizations, insurgency-counterinsurgency dynamics and how these affect the evolution of civil conflicts. More work will be required of the Graduate level. Graduate/Undergraduate Equivalency: POLI 469. Mutually Exclusive: Credit cannot be earned for POLI 571 and POLI 469.

POLI 574 - COLLECTIVE SOCIAL CHOICE
Short Title: COLLECTIVE SOCIAL CHOICE
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of foreign policy, its sources, and the process of policy formulation. Instructor Permission Required.

POLI 575 - GAME THEORY
Short Title: GAME THEORY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examination of current developments in game theory with application to political science.
POLI 576 - INTERNATIONAL POLITICAL ECONOMY
Short Title: INTERNATIONAL POLITICAL ECONOMY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Seminar surveying some of the primary theoretical perspectives and analytical approaches for studying international political economy. Includes a survey of contemporary literature, with special emphasis on theory and research, as well as instructions in how to critically evaluate research and set up a research project.

POLI 577 - DOMESTIC POLITICS AND INTERNATIONAL RELATIONS
Short Title: DOMESTIC POLITICS & INTERNATIONAL RELATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Graduate research seminar on the influence of domestic politics on international relations. The course will explore when, why, and how the political structures and conditions within countries affect foreign policy and international relations.

POLI 580 - SEMINAR IN AMERICAN POLITICS
Short Title: SEMINAR IN AMERICAN POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Topics vary from year to year. Instructor Permission Required. Repeatable for Credit.

POLI 581 - SEMINAR IN COMPARATIVE POLITICS
Short Title: SEMINAR IN COMPARATIVE POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Topics vary from year to year. Instructor Permission Required. Repeatable for Credit.

POLI 591 - DIRECTED READING-METHODOLOGY
Short Title: DIRECTED READING-METHODOLOGY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Repeatable for Credit.

POLI 592 - DIRECTED READING METHODOLOGY
Short Title: DIRECTED READING METHODOLOGY
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

POLI 593 - DIRECTED READING-AMERICAN POLITICS
Short Title: DIRECTED READING-AMERICAN POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

POLI 594 - DIRECTED READING-AMERICAN POLITICS
Short Title: DIRECTED READING-AMERICAN POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

POLI 595 - DIRECTED READING-INTERNATIONAL RELATIONS
Short Title: DIRECTED READING-INTERNATIONAL RELATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

POLI 596 - DIRECTED READING-INTERNATIONAL RELATIONS
Short Title: DIRECTED READING-INTERNATIONAL RELATIONS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

POLI 597 - DIRECTED READING-COMPARATIVE POLITICS
Short Title: DIRECTED READING-COMPARATIVE POLITICS
Department: Political Science
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
POLI 598 - DIRECTED READING-COMPARATIVE POLITICS  
Short Title: DIR READ-COMPARATIVE POLITICS  
Department: Political Science  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Repeatable for Credit.

POLI 599 - TEACHING POLITICAL SCIENCE  
Short Title: TEACHING POLITICAL SCIENCE  
Department: Political Science  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course prepares graduate students to design and teach classes at the college level. Repeatable for Credit.

POLI 600 - MA RESEARCH AND THESIS  
Short Title: MA RESEARCH AND THESIS  
Department: Political Science  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Research  
Credit Hours: 1-15  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Research and thesis for resident students. Repeatable for Credit.

POLI 800 - PH.D. RESEARCH AND THESIS  
Short Title: PH.D. RESEARCH AND THESIS  
Department: Political Science  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Research  
Credit Hours: 1-15  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Repeatable for Credit.

Politics, Law, Social Thought (PLST)  

PLST 301 - MODERN POLITICAL THOUGHT: MACHIAVELLI TO RAWLS  
Short Title: MODERN POLITICAL THOUGHT  
Department: Politics Law Social Thought  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Introduction to political theory and political philosophy from the Renaissance to the present: Machiavelli, Hobbes, Pufendorf, Montesquieu, Kant, Hegel, Constant, Mill Marx, Nietzsche, Weber, Habermas, and Rawls. Topics include human rights, political power, citizenship, democracy, the modern state. Required core course for minor in Politics, Law, and Social Thought.

PLST 302 - CONTEMPORARY POLITICAL THEORY  
Short Title: CONTEMPORARY POLITICAL THEORY  
Department: Politics Law Social Thought  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Introduction to contemporary political theory. Topics include freedom, democracy, empire, citizenship, human rights, radical democracy, protest and civil disobedience, multiculturalism, cosmopolitanism, postcolonial political thought, transnational and global governance.

PLST 303 - HOW DEMOCRACY FAILS  
Short Title: HOW DEMOCRACY FAILS  
Department: Politics Law Social Thought  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Course examines the conditions under which democracies and republics can fail. Draws on political theory, constitutional debates, and historical examples. Topics include: constitutional crises, states of emergency, popular sovereignty, populism, nationalism, revolution, political violence, civil disobedience, post-democracy, illiberal democracy, and neoliberalism.

PLST 316 - DEMOCRACY AND POLITICAL THEORY IN ANCIENT GREECE  
Short Title: DEMOCRACY & POLITICAL THEORY  
Department: Politics Law Social Thought  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: The Greeks created political society and studied political society in order to understand and improve it. One particular form of political society, democracy, reached its pinnacle in Athens. We shall attempt to understand how ancient Greeks thought about politics from the rudimentary beginnings in Homer to the complex, incisive arguments of Aristotle. Cross-list: CLAS 316.

Portuguese (PORT)  

PORT 106 - ACCELERATED FIRST YEAR PORTUGUESE FOR SPANISH SPEAKERS  
Short Title: ACCEL FIRST YEAR PORTUGUESE  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Alternate first year Portuguese for students who have good command of Spanish. This is an intensive course covering the equivalents of PORT 141 and 142. Students will be prepared for PORT 263 upon completion of the course. Placement Test is required. Mutually Exclusive: Credit cannot be earned for PORT 106 and PORT 141/PORT 142.  
Course URL: clicportuguese.blogs.rice.edu
PORT 141 - FIRST YEAR PORTUGUESE I
Short Title: FIRST YEAR PORTUGUESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Development of interactional competence in Portuguese (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Portuguese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Mutually Exclusive: Credit cannot be earned for PORT 141 and PORT 106.
Course URL: clicportuguese.blogs.rice.edu

PORT 142 - FIRST YEAR PORTUGUESE II
Short Title: FIRST YEAR PORTUGUESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): PORT 141
Description: Continuation of PORT 141. Development of interactional competence in Portuguese (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Portuguese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for PORT 142 and PORT 106/PORT 262.
Course URL: clicportuguese.blogs.rice.edu

PORT 206 - ACCELERATED SECOND YEAR PORTUGUESE FOR SPANISH SPEAKERS
Short Title: ACCEL SECOND YEAR PORTUGUESE
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): PORT 106
Description: Alternate second year Portuguese for students who have a very good command of Spanish. This intensive course covers the equivalent of PORT 263 and PORT 264. It will focus on the development of interactional competence in Portuguese to communicate satisfactorily with Portuguese speakers.
Course URL: clicportuguese.blogs.rice.edu

PORT 263 - SECOND YEAR PORTUGUESE I
Short Title: SECOND YEAR PORTUGUESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): PORT 142
Description: Continuation of PORT 142. Development of interactional competence in Portuguese (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Portuguese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for PORT 263 and PORT 201.
Course URL: clicportuguese.blogs.rice.edu

PORT 264 - SECOND YEAR PORTUGUESE II
Short Title: SECOND YEAR PORTUGUESE II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): PORT 263
Description: Continuation of PORT 263. Development of interactional competence in Portuguese (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Portuguese. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for PORT 264 and PORT 202.
Course URL: clicportuguese.blogs.rice.edu

PORT 301 - THIRD YEAR PORTUGUESE I
Short Title: THIRD YEAR PORTUGUESE I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PORT 264
Description: Continuation of PORT 264. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.
Course URL: clicportuguese.blogs.rice.edu
PORT 302 - BRASIL: CULTURA E SOCIEDADE  
Short Title: BRASIL: CULTURE AND SOCIETY  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): PORT 202 or PORT 364  
Description: The purpose of this course is to develop speaking, reading, and writing skills via the analysis of Brazilian literary and cultural texts. Through a multidisciplinary approach, students will be introduced to cultural analysis using a broad range of sources such as literature, film, and other audio-visual materials.

Psychology (PSYC)

PSYC 101 - INTRODUCTION TO PSYCHOLOGY  
Short Title: INTRODUCTION TO PSYCHOLOGY  
Department: Psychology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Survey of topics, problems, and approaches in contemporary psychology. Includes the biological basis of behavior, sensation, perception, attention, learning and memory, thinking, language, abnormal behavior and therapies, personality, and individual differences. Required for psychology majors.

PSYC 102 - READINGS IN INTRODUCTORY PSYCHOLOGY  
Short Title: READINGS IN INTRO PSYCHOLOGY  
Department: Psychology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group II  
Credit Hour: 1  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Corequisite: PSYC 101  
Description: This is an accompaniment to PSYC 101 and provides the opportunity for students to delve deeper into various topics through reading and discussion of research. This course will expand on the topics discussed in PSYC 101 and help students to develop the skills necessary for reading, evaluating, and discussing psychological research.

PSYC 202 - INTRODUCTION TO SOCIAL PSYCHOLOGY  
Short Title: INTRO TO SOCIAL PSYCHOLOGY  
Department: Psychology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): PSYC 101  
Description: Overview of topics in social psychology. Includes conformity and social influence, attitude formation and change, aggression, altruism, relationships, liking and loving, and prejudice and stereotyping, as well as applications to other disciplines (e.g. law, marketing, the workplace, etc.). Required for psychology majors.

PSYC 203 - INTRODUCTION TO COGNITIVE PSYCHOLOGY  
Short Title: INTRO TO COGNITIVE PSYCHOLOGY  
Department: Psychology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: An introduction to topics in cognitive psychology, including perception, attention, language, memory, and decision making. Required for psychology majors.

PSYC 231 - INDUSTRIAL AND ORGANIZATIONAL PSYCHOLOGY  
Short Title: INDUS & ORGANIZATIONAL PSYC  
Department: Psychology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): PSYC 101  
Description: An overview of the principles, techniques, and theories of psychology applied in the industrial setting.

PSYC 260 - UNDERGRADUATE PROFESSIONAL ISSUES IN PSYCHOLOGY  
Short Title: UNDERGRAD PROF ISSUES IN PSYC  
Department: Psychology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This seminar will provide students interested in psychology with an opportunity to explore psychology as a major and a career. Through guest lecturers, group discussions, and class projects, students will learn about diverse fields and potential career paths in psychology. Instructor Permission Required.
PSYC 308 - MEMORY
Short Title: MEMORY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203
Description: Critical review of traditional and contemporary approaches to the study of remembering and forgetting.

PSYC 309 - PSYCHOLOGY OF LANGUAGE
Short Title: PSYCHOLOGY OF LANGUAGE
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203
Description: Study of human and other animal communication. Includes the structure of human language, word meaning and semantic memory, psychological studies of syntax, bilingualism, language and thought, and language errors and disorders. Cross-list: LING 309.

PSYC 315 - INTRODUCTION TO SEMANTICS
Short Title: INTRODUCTION TO SEMANTICS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203
Description: Introduction to basic approaches to the study of meaning in linguistics and related fields. Includes the cognitive representation of meaning, lexical categorization, conceptual structures, metaphor/metonymy, meaning change, pragmatic inference, and the relation of language and mind. Cross-list: LING 315. Recommended Prerequisite(s): LING 200 or ANTH 200.

PSYC 321 - DEVELOPMENTAL PSYCHOLOGY
Short Title: DEVELOPMENTAL PSYCHOLOGY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 202 or PSYC 203
Description: Study of behavioral changes with age in both human and nonhuman species. Recommended Prerequisite(s): PSYC 202 and PSYC 203.

PSYC 325 - LANGUAGE ACQUISITION
Short Title: LANGUAGE ACQUISITION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101
Description: The aim of this course is to explore language development closely through a variety of theories and research findings. Students will become familiar with different theories concerning language development, and develop an understanding of relevant issues, theoretical positions and relevant methodologies in language development using critical thinking skills. Cross-list: LING 325.

PSYC 329 - PSYCHOLOGICAL TESTING
Short Title: PSYCHOLOGICAL TESTING
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 339
Description: Offers a detailed examination of psychological test development and analysis. Topics include an exploration of different forms of psychological tests (e.g. intelligence, attitudes, personality, clinical), reliability and validity of tests, and practical issues in testing such as test bias (e.g. gender differences).

PSYC 330 - PERSONALITY THEORY AND RESEARCH
Short Title: PERSONALITY THEORY & RESEARCH
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 340
Description: Examination of those aspects of personality emphasized by major theorists past and present.

PSYC 331 - PSYCHOLOGY OF GENDER
Short Title: PSYCHOLOGY OF GENDER
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Overview of research and theory on gender in psychology. Cross-list: SWGS 331.
PSYC 332 - ABNORMAL BEHAVIOR  
Short Title: ABNORMAL BEHAVIOR  
Department: Psychology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): PSYC 202 or PSYC 203  
Description: Study of the diagnosis and treatment of mental disorders.

PSYC 333 - MULTICULTURAL PSYCHOLOGY  
Short Title: MULTICULTURAL PSYCHOLOGY  
Department: Psychology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): PSYC 101  
Description: This seminar examines psychological research and theories that address important issues in the lives of diverse individuals. Readings, discussions, and films will be used to explore the acculturation process; stereotyping, prejudice, discrimination and racism; racial/ethnic identity development; and multicultural competence. Students are required to participate in a service learning project. Recommended Prerequisite(s): PSYC 202 and PSYC 321.

PSYC 339 - STATISTICAL METHODS-PSYCHOLOGY  
Short Title: STATISTICAL METHODS-PSYCHOLOGY  
Department: Psychology  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 4  
Restrictions: Enrollment is limited to students with a major in Cognitive Sciences or Psychology. Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): PSYC 101 or PSYC 203  
Description: Introduction to quantitative and computer methods applicable to the analysis of experimental and correlational data. Required for psychology majors. Psychology and Cognitive Science Majors only or Permission of Instructor(s).

PSYC 340 - RESEARCH METHODS - PSYCHOLOGY  
Short Title: RESEARCH METHODS - PSYCHOLOGY  
Department: Psychology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 4  
Restrictions: Enrollment is limited to students with a major in Cognitive Sciences or Psychology. Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): PSYC 101 and PSYC 339  
Description: A continuation of PSYC 339, with emphasis on individual student experiments and the writing of research reports. Required for psychology majors. Psychology and Cognitive Science Majors only or Permission of Instructor(s).

PSYC 341 - HUMAN-COMPUTER INTERACTION  
Short Title: HUMAN-COMPUTER INTERACTION  
Department: Psychology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): PSYC 101 and PSYC 203  
Description: Study of the design and evaluation of interactive computing systems for human use and the major phenomena surrounding them.

PSYC 342 - COMPUTER APPLICATIONS IN PSYCHOLOGY  
Short Title: COMPUTER APPLICATIONS IN PSYC  
Department: Psychology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): PSYC 203  
Description: The use of computers in psychological research and in usability engineering. The emphasis will be on dynamic HTML and JavaScript. Topics will include designing and running web-based psychology experiments and the use of web-based video. Graduate/Undergraduate Equivalency: PSYC 504. Mutually Exclusive: Credit cannot be earned for PSYC 342 and PSYC 504.

PSYC 345 - HEALTH PSYCHOLOGY  
Short Title: HEALTH PSYCHOLOGY  
Department: Psychology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): PSYC 101 and PSYC 202 and PSYC 203  
Description: Contemporary theory and research in health psychology, including topics such as health behaviors, stress and coping, pain and its management, heart disease, psychoneuroimmunology, chronic illness, and dying. Recommended Prerequisite(s): PSYC 332 and PSYC 340.

PSYC 346 - STRESS AND HEALTH ACROSS THE LIFESPAN  
Short Title: STRESS/HEALTH ACROSS LIFESPAN  
Department: Psychology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): PSYC 101 and PSYC 203  
Description: This is an introductory course on psychobiological processes in animals and humans as they pertain to the development of stress responses and disease. In this course, we will review models of stress as well as the physiological processes implicated in bodily diseases. We will also review behavioral, psychological and pharmacological variables involved in stress processes. Recommended Prerequisite(s): PHYS 345.
PSYC 351 - PSYCHOLOGY OF PERCEPTION
Short Title: PERCEPTION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101 and PSYC 203
Description: An introductory survey of sensation and perception, both human and animal. Covers all sensory systems but focuses on vision and audition. Includes the philosophy of perception; measurement and methods; neuroanatomy of visual and auditory systems; computational models of vision, motion, depth, and color; illusions and perceptual organization; and perceptual development. Graduate/Undergraduate Equivalency: PSYC 521.

PSYC 353 - PSYCHOLOGY OF EMOTION AND MOTIVATION
Short Title: PSYC OF EMOTION & MOTIVATION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101 and PSYC 202
Description: Study of motives and emotions as causes of human behavior; includes biological motives, aggression, emotions and emotional expression, and individual differences in motivation. Recommended Prerequisite(s): PSYC 203.

PSYC 354 - INTRODUCTION TO SOCIAL AND AFFECTIVE NEUROSCIENCE
Short Title: INTRO TO SOC/AFFECTIVE NEURO
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 202
Description: Overview of social and affective neuroscience research, including examination of the neurobiological mechanisms supporting social cognition; inter-personal processes; emotion and motivation; and emotion regulation. These topics will be examined in both healthy and affectively-disordered populations, with links made to the fields of health psychology and clinical neuroscience.

PSYC 362 - COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN
Short Title: COGNITIVE NEUROSCIENCE
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203
Description: Survey of theory and research on how mental processes are carried out by the human brain, with an emphasis on relating measures of brain activity to cognitive functioning, methods surveyed included electrophysiological recording techniques, functional imaging techniques and methods that involve lessening or disrupting neural activity. Cross-list: NEUR 362.

PSYC 364 - COGNITIVE NEUROSCIENCE LAB
Short Title: COGNITIVE NEUROSCIENCE LAB
Department: Psychology
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 362 (may be taken concurrently) or NEUR 362 (may be taken concurrently)
Description: The objective is to equip the students of PSYC/NEUR 362 the tools on how to apply cognitive neuroscience techniques to health or clinical topics and to investigate sensorimotor and cognitive measures in a human model. The prereq may be taken the same semester as this class. Instructor Permission Required. Cross-list: NEUR 364. Graduate/Undergraduate Equivalency: PSYC 564. Mutually Exclusive: Credit cannot be earned for PSYC 364 and PSYC 564.

PSYC 370 - INTRODUCTION TO HUMAN FACTORS AND ERGONOMICS
Short Title: INTRO TO HUMAN FACTORS & ERGO
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101 and PSYC 203
Description: Application of principles of psychology and human performance to the design of modern systems.
PSYC 375 - NEUROPSYCHOLOGY OF LANGUAGE AND MEMORY

Short Title: NEUROPSY OF LANGUAGE/MEMORY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203 and (PSYC 309 or LING 309 or LING 200 or ANTH 200) and (PSYC 362 or NEUR 362 or NEUR 380 or BIOE 380 or PSYC 380)
Description: An introduction to the neural basis of language and memory, covering patient-based and neuroimaging approaches. Topics include the neural basis of speech perception, language comprehension, language production, short-term memory, working memory, semantic and episodic memory, and domain-specific memory (e.g., verbal, spatial, and emotional memory).

PSYC 380 - FUNDAMENTAL NEUROSCIENCE SYSTEMS

Short Title: NEUROSYSTEMS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will provide a broad overview of the brain's neural systems that subserve perception, learning, and behavior. The course will be highly integrative with thematic content including functional organization of the nervous system, neural encoding and decoding, sensory systems, motor systems, and high-level concept processing. Cross-list: BIOC 380, NEUR 380. Graduate/Undergraduate Equivalency: PSYC 584. Recommended Prerequisite(s): PSYC 101.
Mutually Exclusive: Credit cannot be earned for PSYC 380 and PSYC 584.

PSYC 409 - METHODS IN HUMAN-COMPUTER INTERACTION

Short Title: METHODS HUMAN-COMP INTERACTION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101 and PSYC 203
Description: Introduction to methods for developing and testing user interfaces to computer systems. The focus is on web-based applications. Graduate/Undergraduate Equivalency: PSYC 609. Recommended Prerequisite(s): PSYC 370. Mutually Exclusive: Credit cannot be earned for PSYC 409 and PSYC 609.

PSYC 411 - HISTORY OF PSYCHOLOGY

Short Title: HISTORY OF PSYCHOLOGY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101 and PSYC 202 and PSYC 203
Description: Survey of evolution of psychological theory from the Greeks to the present. Includes development of scientific approaches to the study of human thought and behavior. Graduate/Undergraduate Equivalency: PSYC 511. Mutually Exclusive: Credit cannot be earned for PSYC 411 and PSYC 511.

PSYC 420 - ELECTION SYSTEMS, TECHNOLOGIES, AND ADMINISTRATION

Short Title: ELECTION SYSTEMS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This multidisciplinary course will consider how elections are conducted to enhance participation, to accurately measure the will of the electorate, and to be sufficiently rigorous to convince all parties that the results are legitimate. This course will consider the design and evaluation of election technologies, ranging from voter registration through the polling booth and vote tabulation. This course will consider three questions: how do individual voters interact with the voting technology, how are voting technologies engineered to be accurate and secure, and how do the social aspects of voting fulfill democratic goals for elections? A central requirement for this course will be group research projects, many operating in our community, built around the November election. Cross-list: COMP 435, POLI 420.

PSYC 430 - COMPUTATIONAL MODELING OF COGNITIVE PROCESSES

Short Title: COMP MODELING OF COG PROCESSES
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A survey of computational approaches to modeling cognitive processes. The emphasis will be on recent production system models, but other approaches will also be covered. The course will involve evaluation of existing models and hands-on experience in modeling. Graduate/Undergraduate Equivalency: PSYC 543. Recommended Prerequisite(s): PSYC 203 and COMP 200 (or equivalent). Mutually Exclusive: Credit cannot be earned for PSYC 430 and PSYC 543.
PSYC 431 - ADVANCED INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY
SEMINAR
Short Title: ADVANCED I/O PSYCHOLOGY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 231
Description: An emphasis on reading original published research. Topics covered include personnel selection, training, motivation, job attitudes, and groups. Instructor Permission Required. Mutually Exclusive: Credit cannot be earned for PSYC 431 and PSYC 530.

PSYC 432 - BRAIN AND BEHAVIOR
Short Title: BRAIN AND BEHAVIOR
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101 and PSYC 203 and PSYC 362
Description: An in-depth examination of the neural basis of higher mental functions in humans, including perception, attention, memory, motor skill, and language. Claims and controversies in cognitive neuroscience will be discussed. Recommended Prerequisite(s): PSYC 339 and PSYC 340.

PSYC 435 - POLLUTION AND PSYCHOLOGICAL DEVELOPMENT
Short Title: POLLUTION & PSYCHOLOGICAL DEV
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this course, we will consider research on the effects of various pollutants and toxic substances on the cognitive, social, and emotional development of children. Expert guest speakers will contribute to the course as well. Recommended Prerequisite(s): PSYC 339 and PSYC 340.

PSYC 436 - ADVANCED ORGANIZATIONAL PSYCHOLOGY
Short Title: ADVANCED ORGANIZATIONAL PSYC
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 231 and PSYC 431
Description: Contemporary theory and research in organizational psychology, including topics such as motivation, leadership, job satisfaction, occupational stress, social cognition in work organizations, and group processes. Graduate/Undergraduate Equivalency: PSYC 636. Mutually Exclusive: Credit cannot be earned for PSYC 436 and PSYC 636.

PSYC 438 - GROUP DYNAMICS
Short Title: GROUP DYNAMICS
Department: Psychology
Grade Mode: Standard
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines current psychological theory and literature concerning intra- and inter-group phenomena within organizational contexts. This course will cover topics such as the unique methodological challenges of studying group-level phenomena; individual-, group-, and organizational-level inputs; group processes; and the assessment of group-level outcomes. Graduate/Undergraduate Equivalency: PSYC 551. Recommended Prerequisite(s): PSYC 339 and PSYC 340 and should be majoring in Psychology or Business. Mutually Exclusive: Credit cannot be earned for PSYC 438 and PSYC 551.

PSYC 439 - ADVANCED STATISTICAL METHODS FOR PSYCHOLOGY UNDERGRADUATES
Short Title: ADV STATISTICAL METHODS-PSYC
Department: Psychology
Grade Mode: Standard
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 339
Description: This course is intended as a second course in statistics for psychology and the social sciences. It builds on PSYC 339. Advanced factorial ANOVA designs, mixed between- and within-subject designs, and multiple regression will be covered. This course is primarily for advanced psychology undergraduates contemplating enrollment in graduate school.

PSYC 440 - RESEARCH SEMINAR: INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY
Short Title: RESEARCH IN I/O PSYCHOLOGY
Department: Psychology
Grade Mode: Standard
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 231
Description: An examination of selected topics in industrial/organizational psychology, focusing on published and ongoing research by contemporary scholars. Topics will vary. Instructor Permission Required.

PSYC 441 - HUMAN-COMPUTER INTERACTION
Short Title: HUMAN-COMPUTER INTERACTION
Department: Psychology
Grade Mode: Standard
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203
Description: Study of the design and evaluation of interactive computing systems for human use and the major phenomena surrounding them. Graduate/Undergraduate Equivalency: PSYC 541. Mutually Exclusive: Credit cannot be earned for PSYC 441 and PSYC 541.
PSYC 445 - ADVANCED SEMINAR IN HEALTH PSYCHOLOGY
Short Title: ADV SEM IN HEALTH PSYCHOLOGY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Enrollment is limited to students with a major in Psychology. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 202 and PSYC 339 and PSYC 340 and PSYC 332
Description: Consideration of research on psychological factors and health, with special consideration to the role of health beliefs in people’s practice and nonpractice of health, illness, and sick-role behaviors. Topics will vary. Repeatable for credit with Permission of Department.

PSYC 452 - EMOTION REGULATION
Short Title: EMOTION REGULATION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Review of contemporary psychology research on emotion regulation, including conceptual foundations, neurobiological bases, individual differences, involvement in psychopathology, and links to translational research approaches relevant to health psychology. Graduate/Undergraduate Equivalency: PSYC 552. Mutually Exclusive: Credit cannot be earned for PSYC 452 and PSYC 552.

PSYC 455 - ADVANCED SEMINAR IN CLINICAL PSYCHOLOGY
Short Title: ADV SEM IN CLINICAL PSYCHOLOGY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 332
Description: Topics will vary. Repeatable for credit with Permission of Department.

PSYC 461 - REASONING, DECISION MAKING, PROBLEM SOLVING
Short Title: DECISION MAKING/PROB SOLVING
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 203 and (PSYC 339 or STAT 280 or STAT 300 or STAT 305 or STAT 310)
Description: Study of the higher mental processes. Includes problem solving, judgment, decision making, and reasoning. Graduate/Undergraduate Equivalency: PSYC 527. Mutually Exclusive: Credit cannot be earned for PSYC 461 and PSYC 360/PSYC 527.

PSYC 462 - NON-TRADITIONAL INTERFACES
Short Title: NON-TRADITIONAL INTERFACES
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced coverage of human computer interfaces that are not necessarily graphical in nature. The course covers haptic, gesture, locomotion, auditory, voice olfactory, taste interfaces. Impoverished GUIs (small screen) are investigated, as are interactive voice response systems and complex interfaces that are multi-model. Graduate/Undergraduate Equivalency: PSYC 662. Recommended Prerequisite(s): PSYC 370. Mutually Exclusive: Credit cannot be earned for PSYC 462 and PSYC 662.

PSYC 463 - MEDICAL HUMAN FACTORS
Short Title: MEDICAL HUMAN FACTORS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced coverage of the human factors that are specific to medical systems. Topics include medical decision making and diagnosis errors, surgical human factors, medical robots, surgical simulators, and general medical equipment design. Macro-ergonomics of hospital systems, electronic medical records and computerized physician order entry systems are also covered. Graduate/Undergraduate Equivalency: PSYC 663. Recommended Prerequisite(s): PSYC 370. Mutually Exclusive: Credit cannot be earned for PSYC 463 and PSYC 663.

PSYC 464 - USABILITY ASSESSMENT
Short Title: USABILITY ASSESSMENT
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course covers all of the aspects of specifying, planning, executing, and reporting usability assessments on products, services and systems. Formative and summative assessments are covered, as are "discount" usability methods. This course is project based, with students performing usability assessments as part of an engineering team that is developing products for deployment. Graduate/Undergraduate Equivalency: PSYC 664. Recommended Prerequisite(s): PSYC 370. Mutually Exclusive: Credit cannot be earned for PSYC 464 and PSYC 664.
PSYC 465 - Olfactory Perception

Short Title: Olfactory Perception
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major minor or concentration in "Cognitive Science" or Psychology. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101
Description: Overview of theories and research related to olfaction. Special topics include olfactory memory, the effect of emotion and cognition on olfaction, olfaction as a channel of communication, sensory integration, and ERP and fMRI studies on olfaction and its relationship with other sensory systems. Graduate/Undergraduate Equivalency: PSYC 565. Mutually Exclusive: Credit cannot be earned for PSYC 465 and PSYC 565.

PSYC 470 - Engineering Psychology

Short Title: Engineering Psychology
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 370
Description: This is an advanced human factors course aimed at students who have taken a basic course in human factors or human-computer interaction and are looking for greater depth. Graduate/Undergraduate Equivalency: PSYC 540. Mutually Exclusive: Credit cannot be earned for PSYC 470 and PSYC 540.

PSYC 475 - Stereotyping and Prejudice

Short Title: Stereotyping and Prejudice
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 202
Description: Consideration of modern research on stereotypes of, prejudice against, and discrimination toward racial, gender, and stigmatized groups. Recommended Prerequisite(s): PSYC 203 and 340.

PSYC 480 - Advanced Topics

Short Title: Advanced Topics
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 101 and (PSYC 202 may be taken concurrently) or PSYC 203
Description: Topics will vary. Please see individual instructor for prerequisite requirements. Repeatable for different topics. Repeatable for Credit.

PSYC 485 - Undergraduate Supervised Research

Short Title: UG Supervised Research
Department: Psychology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment is limited to students with a major in Cognitive Sciences or Psychology. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Supervised empirical research. Research paper required. Sponsorship by faculty member required. Instructor Permission Required. Recommended Prerequisite(s): PSYC 339, PSYC 340. Repeatable for Credit.

PSYC 488 - Supervised Reading

Short Title: Supervised Reading
Department: Psychology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to students with a major in Cognitive Sciences or Psychology. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Supervised reading of books and empirical papers on a topic of mutual interest to students and faculty. Term paper required. Sponsorship by faculty member required. Instructor Permission Required. Recommended Prerequisite(s): PSYC 339 and PSYC 340. Repeatable for Credit.

PSYC 495 - Summer Internship

Short Title: Summer Internship
Department: Psychology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Psychology. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Provides enrollment for various department summer internships. Instructor Permission Required. Repeatable for Credit.

PSYC 499 - Honors Thesis

Short Title: Honors Thesis
Department: Psychology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to students with a major in Psychology. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): PSYC 339 and PSYC 340
Description: Sponsorship by faculty member required. Students must apply for the Honors Program. Instructor Permission Required. Repeatable for Credit.
PSYC 502 - ADVANCED PSYCHOLOGICAL STATISTICS I
Short Title: ADVANCED PSYC STATISTICS I
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to inferential statistics, with emphasis on analysis of variance. Students who do not meet registration requirements as Graduate and Psychology Majors must receive instructor permission to register. Cross-list: STAT 509.

PSYC 503 - ADVANCED PSYCHOLOGICAL STATISTICS II
Short Title: ADVANCED PSYC STATISTICS II
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 502 or STAT 509
Description: A continuation of PSYC 502, focusing on multiple regression. Other multivariate techniques and distribution-free statistics are also covered. Cross-list: STAT 510.

PSYC 504 - COMPUTER APPLICATIONS IN PSYCHOLOGY
Short Title: COMPUTER APPLICATIONS IN PSYC
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The use of computers in psychological research and in usability engineering. The emphasis will be on dynamic HTML and JavaScript. Topics will include designing and running web-based psychology experiments and the use of web-based video. Graduate/Undergraduate Equivalency: PSYC 342. Mutually Exclusive: Credit cannot be earned for PSYC 504 and PSYC 342.

PSYC 507 - RESEARCH METHODS
Short Title: RESEARCH METHODS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate-level treatment of a wide range of laboratory and field research methodologies.

PSYC 511 - HISTORY AND SYSTEMS OF PSYCHOLOGY
Short Title: HISTORY & SYSTEMS OF PSYC
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of the evolution of psychological theory from the Greeks to the present. Includes development of scientific approaches to the study of human thought and behavior. Graduate/Undergraduate Equivalency: PSYC 411. Mutually Exclusive: Credit cannot be earned for PSYC 511 and PSYC 411.

PSYC 520 - FOUNDATIONS OF COGNITIVE PSYCHOLOGY
Short Title: FOUNDATIONS OF COGNITIVE PSYC
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to the basic topics in cognitive psychology, including perception, memory, psycholinguistics, concept formation, problem solving, and decision making.

PSYC 521 - PSYCHOLOGY OF PERCEPTION
Short Title: PERCEPTION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introductory survey of sensation and perception, both human and animal. Covers all sensory systems but focuses on vision and audition. Includes the philosophy of perception; measurement and methods; neuroanatomy of visual and auditory systems; computational models of vision, motion, depth, and color; illusions and perceptual organization; and perceptual development. Graduate/Undergraduate Equivalency: PSYC 351.

PSYC 522 - INFORMATION PROCESSING AND ATTENTION
Short Title: INFO PROCESSING & ATTENTION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An exploration of topics in attention, including information overload, selective attention, response conflict, and automatic/unconscious and controlled/conscious processes. The neural mechanisms underlying these processes will also be discussed.
PSYC 524 - MEMORY
Short Title: MEMORY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of issues and research in remembering and forgetting.

PSYC 525 - PSYCHOLINGUISTICS
Short Title: PSYCHOLINGUISTICS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the psychology of language. Includes the study of speech production, reading, syntax, meaning, bilingualism, language and thought, and language errors and disorders.

PSYC 527 - REASONING, DECISION MAKING, PROBLEM SOLVING
Short Title: DECISION MAKING/PROB SOLVING
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The study of higher mental processes. Includes problem solving, judgment, decision making, and reasoning. Graduate/Undergraduate Equivalency: PSYC 461. Mutually Exclusive: Credit cannot be earned for PSYC 527 and PSYC 461.

PSYC 529 - COGNITIVE RESEARCH SEMINAR
Short Title: COGNITIVE RESEARCH SEMINAR
Department: Psychology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A weekly student-staff seminar on current and recent research about mental phenomena. Repeatable for Credit.

PSYC 530 - FOUNDATIONS OF I/O PSYCHOLOGY
Short Title: FOUNDATIONS OF I/O PSYCHOLOGY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate-level introduction to the study of human behavior in the work setting. Instructor Permission Required. Mutually Exclusive: Credit cannot be earned for PSYC 530 and PSYC 431.

PSYC 531 - HF/HCI RESEARCH SEMINAR
Short Title: HF/HCI RESEARCH SEMINAR
Department: Psychology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A weekly student-staff seminar on various human factors and human-computer interaction topics. Repeatable for Credit.

PSYC 532 - HEALTH RESEARCH SEMINAR
Short Title: HEALTH RESEARCH SEMINAR
Department: Psychology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A weekly student-staff seminar on current and recent health and emotion-related research. Department Permission Required. Repeatable for Credit.

PSYC 533 - I/O PSYCHOLOGY RESEARCH SEMINAR
Short Title: I/O PSYCHOLOGY RESEARCH SEM
Department: Psychology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A weekly student-staff seminar on various industrial/organizational psychology topics. Repeatable for Credit.

PSYC 540 - FOUNDATIONS OF ENGINEERING PSYCHOLOGY
Short Title: ENGINEERING PSYCHOLOGY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is an advanced human factors course aimed at students who have taken a basic course in human factors or human-computer interaction and are looking for greater depth. Graduate/Undergraduate Equivalency: PSYC 470. Mutually Exclusive: Credit cannot be earned for PSYC 540 and PSYC 470.
PSYC 541 - HUMAN-COMPUTER INTERACTION
Short Title: HUMAN-COMPUTER INTERACTION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the design and evaluation of interactive computing systems for human use and the major phenomena surrounding them. Graduate/Undergraduate Equivalency: PSYC 441. Mutually Exclusive: Credit cannot be earned for PSYC 541 and PSYC 441.

PSYC 543 - COMPUTATIONAL MODELING OF COGNITIVE PROCESSES
Short Title: COMP MODELING OF COG PROCESSES
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A survey of computational approaches to modeling cognitive processes. The emphasis will be on recent production system models, but other approaches will also be covered. The course will involve evaluation of existing models and hands-on experience in modeling. Graduate/Undergraduate Equivalency: PSYC 430. Mutually Exclusive: Credit cannot be earned for PSYC 543 and PSYC 430.

PSYC 546 - PSYCHONEUROIMMUNOLOGY
Short Title: PSYCHONEUROIMMUNOLOGY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate

PSYC 547 - ADVANCED HEALTH PSYCHOLOGY AND BEHAVIORAL MEDICINE
Short Title: ADV HEALTH PSYC & BEHAVIOR MED
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate

PSYC 550 - FOUNDATIONS OF SOCIAL PSYCHOLOGY
Short Title: FOUNDATIONS OF SOCIAL PSYC
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of theories of social psychology with an emphasis on current empirical research. Instructor Permission Required.

PSYC 551 - GROUP DYNAMICS
Short Title: GROUP DYNAMICS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate

PSYC 552 - EMOTION REGULATION
Short Title: EMOTION REGULATION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of contemporary psychology research on emotion regulation, including conceptual foundations, neurobiological bases, individual differences, involvement in psychopathology, and links to translational research approaches relevant to health psychology. Graduate/Undergraduate Equivalency: PSYC 452. Mutually Exclusive: Credit cannot be earned for PSYC 552 and PSYC 452.

PSYC 556 - PSYCHOLOGY PRESENTATIONS
Short Title: PSYCHOLOGY PRESENTATIONS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Practicum on oral psychology presentation.

PSYC 561 - TEACHING IN PSYCHOLOGY
Short Title: TEACHING IN PSYCHOLOGY
Department: Psychology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Assistance in the teaching of undergraduate and occasionally graduate courses in psychology. Repeatable for Credit.
PSYC 563 - COGNITIVE PSYCHOLOGY INTERNSHIP
Short Title: COGNITIVE PSYC INTERNSHIP
Department: Psychology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 1-9
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised internship in cognitive psychology. Instructor Permission Required. Repeatable for Credit.

PSYC 564 - COGNITIVE NEUROSCIENCE LAB
Short Title: COGNITIVE NEUROSCIENCE LAB
Department: Psychology
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The objective is to equip the students of PSYC/NEUR 362 with the tools on how to apply cognitive neuroscience techniques to health or clinical topics and to investigate sensorimotor and cognitive measures in a human model. Instructor Permission Required. Cross-list: NEUR 564. Graduate/Undergraduate Equivalency: PSYC 364. Mutually Exclusive: Credit cannot be earned for PSYC 564 and PSYC 364.

PSYC 565 - HUMAN OLFACTION
Short Title: HUMAN OLFACITION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of theories and research related to olfaction. Special topics include olfactory memory, the effect of emotion and cognition on olfaction, olfaction as a channel of communication, sensory integration, and ERP and fMRI studies on olfaction and its relationship with other sensory systems. Graduate/Undergraduate Equivalency: PSYC 465. Mutually Exclusive: Credit cannot be earned for PSYC 565 and PSYC 465.

PSYC 571 - FIRST-YEAR PROJECT
Short Title: FIRST-YEAR PROJECT
Department: Psychology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Individual research project undertaken in the first year of the graduate program. Repeatable for Credit.

PSYC 572 - SECOND-YEAR PROJECT
Short Title: SECOND-YEAR PROJECT
Department: Psychology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Individual research project undertaken during the second year of the graduate program. Repeatable for Credit.

PSYC 573 - NON-THESIS GRADUATE RESEARCH
Short Title: NON-THESIS GRADUATE RESEARCH
Department: Psychology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-6
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Individual research not for first- or second-year project or thesis. Repeatable for Credit.

PSYC 574 - INTRODUCTION TO COGNITIVE NEUROSCIENCE
Short Title: INTRO COGNITIVE NEUROSCIENCE
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introductory graduate-level overview of cognitive neuroscience. The course will cover basics in history, neuroanatomy, methods of cognitive neuroscience, sensation and perception, control of action, learning and memory, emotion, language, attention, drugs and cognition, impulsivity, cognitive control, social cognition, and neurobiology of disease. This course is usually taught at the Texas Medical Center. Instructor Permission Required. Cross-list: NEUR 508.

PSYC 575 - ADVANCED COGNITIVE NEUROSCIENCE: ATTENTION AND PERCEPTION
Short Title: ATTENTION AND PERCEPTION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of neuropsychological and cognitive neuroscience approaches to higher mental functions including sensation and perception, attention, motor control, and neuropsychology. Other topics include basic neuroanatomy, experimental and clinical investigative methods, and the historical and philosophical context of contemporary neuroscience. Instructor Permission Required. Cross-list: NEUR 501.
Course URL: www.ruf.rice.edu/~neurosci
PSYC 576 - ADVANCED COGNITIVE NEUROSCIENCE: HIGHER MENTAL FUNCTIONS
Short Title: HIGHER MENTAL FUNCTIONS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of neuropsychological and neuroimaging approaches to higher mental functions, including language, memory, executive functions, reasoning, and numerical processing. Instructor Permission Required. Cross-list: NEUR 502.
Course URL: www.ruf.rice.edu/~neurosci

PSYC 577 - INTRODUCTION TO FUNCTIONAL NEUROANATOMY
Short Title: FUNCTIONAL NEUROANATOMY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 2-3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Anatomy and function of components of the nervous system with an emphasis on the central nervous system. Usually taught at the Texas Medical Center. Instructor Permission Required.

PSYC 578 - COGNITIVE NEUROPSYCHOLOGY: THEORIES AND METHODS
Short Title: COGNEURO: THEORIES AND METHODS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores different approaches in the field of Cognitive Neuropsychology. Topics include single-case studies, case series, voxel-lesion symptom mapping and computational neuropsychology. We will discuss how to do research with each of these techniques, how to draw inferences from neuropsychological data and critiques of the methodology.

PSYC 580 - DEVELOPMENTAL COGNITIVE NEUROSCIENCE
Short Title: DEVELOPMENTAL COG NEUROSCIENCE
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar focusing on the neural/biological bases of both normal and abnormal human development through a survey of recent research in developmental cognitive neuroscience. Topics include perceptual, motive, cognitive, and language development as well as experimental research methods for studying the developing brain.

PSYC 581 - VISION SCIENCE
Short Title: VISION SCIENCE
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced graduate seminar in the psychology of vision, covering the neural, psychophysical, and phenomenological approaches to visual perception.

PSYC 582 - EARLY SENSORY, PERCEPTUAL AND ATTENTIONAL DEVELOPMENT
Short Title: EARLY SENSORY PERCEPTION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a survey course for graduate students interested in the development of sensory systems, perception, and attention. There will be original empirical and theoretical readings from the literature on the development of these functions primarily during infancy. Neurobiological underpinnings for these functions will be debated and discussed.

PSYC 583 - THEORY, CONTENT, AND EXECUTION IN COGNITIVE NEUROSCIENCE
Short Title: COGNEURO THEORY/CONTENT/EXECUT
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The particular combination of issues in cognitive neuroscience in any one course will vary depending on the background and needs of the students registered for that course and the nature of the important articles in journals covering these areas. Instructor Permission Required. Repeatable for Credit.

PSYC 584 - FUNDAMENTAL NEUROSCIENCE SYSTEMS
Short Title: NEUROSYSTEMS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will provide a broad overview of the brain's neural systems that subserve perception, learning, and behavior. This course will be highly integrative with thematic content including functional organization of the nervous system, neural encoding and decoding, sensory systems, motor systems, and high-level concept processing. Graduate/Undergraduate Equivalency: PSYC 380. Mutually Exclusive: Credit cannot be earned for PSYC 584 and PSYC 380.
PSYC 585 - FUNCTIONAL MAGNETIC RESONANCE IMAGING LABORATORY
Short Title: IMRI LABORATORY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Laboratory course that provides comprehensive introduction to the practical aspects of planning conducting and analyzing Blood Oxygen Dependent Functional Magnetic Resonance Imaging (BOLD fMRI) data. BOLD fMRI is a methodology that allows non-invasive measurements of the neural processing underlying human perception/cognition. Course taught at Baylor College of Medicine for Advanced fMRI.

PSYC 586 - SOCIAL AND AFFECTIVE NEUROSCIENCE
Short Title: SOCIAL AND AFFECTIVE NEURO
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of the field of social and affective neuroscience, including conceptual foundations and methodology. Review and discussion of contemporary research on the neurobiological supporting social cognition and emotion in both healthy and affectively-disordered populations.

PSYC 590 - ADVANCED TOPICS IN NEUROSCIENCE
Short Title: ADVANCED TOPICS - NEUROSCIENCE
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics will vary. Repeatable for Credit.

PSYC 601 - MULTIVARIATE STATISTICS
Short Title: MULTIVARIATE STATISTICS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics will vary. Repeatable for Credit.

PSYC 602 - PSYCHOMETRICS
Short Title: PSYCHOMETRICS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Test theory, including reliability, validity, item response theory, and generalizability theory. In addition, the course offers hands-on experience with analysis software and discussion of practical issues such as test bias, item writing, and scale construction.

PSYC 609 - METHODS IN HUMAN-COMPUTER INTERACTION
Short Title: METHODS HUMAN-COMP INTERACTION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to methods for developing and testing user interfaces to computer systems. The focus is on web-based applications. Graduate/Undergraduate Equivalency: PSYC 409. Mutually Exclusive: Credit cannot be earned for PSYC 609 and PSYC 409.

PSYC 620 - ADVANCED TOPICS IN COGNITIVE PSYCHOLOGY
Short Title: ADV TOPICS - COGNITIVE PSYC
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics will vary. Repeatable for Credit.

PSYC 621 - TOPICS IN MEMORY
Short Title: TOPICS IN MEMORY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics will vary. Repeatable for Credit.

PSYC 622 - TOPICS IN PSYCHOLINGUISTICS
Short Title: TOPICS IN PSYCHOLINGUISTICS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to Graduate level students.
Course Level: Graduate
Description: In-depth, consideration of specialized topics in the psychology of language. Topics vary from year to year. Repeatable for Credit.
PSYC 624 - SOCIAL/ORGANIZATIONAL PSYCHOLOGY RESEARCH SEMINAR
Short Title: SOCIAL/ORG PSYC RESEARCH SEM
Department: Psychology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Weekly seminar to discuss recent research in social/organizational psychology. Instructor Permission Required. Repeatable for Credit.

PSYC 625 - COGNITIVE NEUROSCIENCE RESEARCH SEMINAR
Short Title: COGNEURO RESEARCH SEMINAR
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Weekly seminar to discuss recent research in cognitive neuroscience. Instructor Permission Required. Repeatable for Credit.

PSYC 626 - HUMAN FACTORS/HUMAN-COMPUTER INTERACTION RESEARCH SEMINAR
Short Title: HF/HCI RESEARCH SEMINAR
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Weekly seminar to discuss recent research in human factors/human-computer interaction. Instructor Permission Required. Repeatable for Credit.

PSYC 627 - INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY RESEARCH SEMINAR
Short Title: I/O PSYC RESEARCH SEMINAR
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Weekly seminar to discuss recent research in industrial/organizational psychology. Instructor Permission Required. Repeatable for Credit.

PSYC 628 - MEMORY RESEARCH SEMINAR
Short Title: MEMORY RESEARCH SEMINAR
Department: Psychology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Weekly seminar to discuss recent research in human memory. Repeatable for Credit.

PSYC 629 - PSYCHOLINGUISTICS RESEARCH SEMINAR
Short Title: PSYCHOLINGUISTICS SEMINAR
Department: Psychology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Weekly seminar to discuss recent research in psycholinguistics. Repeatable for Credit.

PSYC 630 - ADVANCED TOPICS IN I/O
Short Title: ADVANCED TOPICS IN I/O
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 530
Description: Topics will vary. Repeatable for different topics. Repeatable for Credit.

PSYC 631 - FOUNDATIONS OF INDIVIDUAL DIFFERENCES
Short Title: INDIVIDUAL DIFFERENCES
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Applied psychologists attempt to build theoretical and empirical models that effectively explain how variation in individual differences (e.g., cognitive ability, personality, motivation, interests) relates to variation in practically relevant outcomes (e.g., training effectiveness, job performance, response to clinical treatment). This course covers major theoretical and methodological approaches to this end.
PSYC 632 - LEADERSHIP
Short Title: LEADERSHIP
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate.
Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examination of the major psychological approaches to the study of leadership. Emphasis is on theory and practice in formal organizations.

PSYC 634 - PERSONNEL PSYCHOLOGY
Short Title: PERSONNEL PSYCHOLOGY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate.
Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 530
Description: Examination of the theory, research, and applications in personnel selection, including job analysis, job performance, evaluation of performance, validation of selection methods, and training.

PSYC 635 - MULTILEVEL MODELING IN PSYCHOLOGICAL RESEARCH
Short Title: MULTILEVEL MODELING
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate.
Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Psychological data often have a nested structure (e.g., students within classrooms, time points within individuals). Multilevel modeling of such data yields results that are more appropriate and interpretable than traditional statistical methods. Students will gain both practical and conceptional knowledge of this popular methodology.

PSYC 636 - ORGANIZATIONAL PSYCHOLOGY
Short Title: ORGANIZATIONAL PSYCHOLOGY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate.
Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 530
Description: Contemporary theory and research in organizational psychology, including topics such as motivation, leadership, job satisfaction, occupational stress, social cognition in work organizations, and group processes. Graduate/Undergraduate Equivalency: PSYC 436. Mutually Exclusive: Credit cannot be earned for PSYC 636 and PSYC 436.

PSYC 637 - META-ANALYSIS IN PSYCHOLOGICAL RESEARCH
Short Title: META-ANALYSIS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate.
Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Meta-analysis is a popular tool for statistically aggregating effects across related psychological studies. Course topics traverse a wide range of issues, including developing and using a coding sheet, fixed-vs. random-effects models, analysis moderator effects, correcting for statistical artifacts, dealing with dependent outcomes and outliers, and detecting publication bias.

PSYC 638 - STRUCTURAL EQUATION MODELING
Short Title: STRUCTURAL EQUATION MODELING
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate.
Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Structural equation modeling attempts to provide improved estimates of construct-level relationships. It also allows for complex hypothesis testing (e.g., mediation between groups, longitudinal) to find an appropriate balance between model parsimony and model fit. This course introduces students to basic concepts and applications of this popular research method.

PSYC 639 - INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY INTERNSHIP
Short Title: I/O PSYCHOLOGY INTERNSHIP
Department: Psychology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hours: 1-9
Restrictions: Enrollment limited to students with a class of Graduate.
Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised internship in organizational and/or personnel psychology. Instructor Permission Required. Repeatable for Credit.

PSYC 640 - TOPICS IN HUMAN-COMPUTER INTERACTION
Short Title: TOPICS IN HCI
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate.
Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics will vary. Repeatable for Credit.
PSYC 641 - SPECIAL TOPICS IN HUMAN-COMPUTER INTERACTION
Short Title: SPECIAL TOPICS IN HCI
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-6
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics will vary. Repeatable for Credit.

PSYC 649 - HUMAN FACTORS/HUMAN-COMPUTER INTERACTION INTERNSHIP
Short Title: HF/HCI PSYC INTERNSHIP
Department: Psychology
Grade Mode: Satisfactory/ Unsatisfactory
Course Type: Internship/ Practicum
Credit Hours: 1-9
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised internship in engineering psychology. Instructor Permission Required. Repeatable for Credit.

PSYC 651 - TOPICS IN SOCIAL PSYCHOLOGY
Short Title: TOPICS IN SOCIAL PSYCHOLOGY
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics will vary. Repeatable for Credit.

PSYC 660 - PROFESSIONAL ISSUES
Short Title: PROFESSIONAL ISSUES
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Discussion of selected topics on professional matters. Includes grant writing, licensing, and ethics in psychology.

PSYC 662 - NON-TRADITIONAL INTERFACES
Short Title: NON-TRADITIONAL INTERFACES
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced coverage of human computer interfaces that are not necessarily graphical in nature. The course covers haptic, gesture, locomotion, auditory, voice olfactory, taste interfaces. Impoverished GUIs (small screen) are investigated, as are interactive voice response systems and complex interfaces that are multi-model. Graduate/Undergraduate Equivalency: PSYC 462. Recommended Prerequisite(s): PSYC 370. Mutually Exclusive: Credit cannot be earned for PSYC 662 and PSYC 462.

PSYC 663 - MEDICAL HUMAN FACTORS
Short Title: MEDICAL HUMAN FACTORS
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced coverage of the human factors that are specific to medical systems. Topics include medical decision making and diagnosis errors, surgical human factors, medical robots, surgical simulators, and general medical equipment design. Macro-ergonomics of hospital systems, electronic medical records and computerized physician order entry systems are also covered. Graduate/Undergraduate Equivalency: PSYC 463. Recommended Prerequisite(s): PSYC 370. Mutually Exclusive: Credit cannot be earned for PSYC 663 and PSYC 463.

PSYC 664 - USABILITY ASSESSMENT
Short Title: USABILITY ASSESSMENT
Department: Psychology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers all of the aspects of specifying, planning, executing, and reporting usability assessments on products, services and systems. Formative and summative assessments are covered, as are "discount" usability methods. This course is project based, with students performing usability assessments as part of an engineering team that is developing products for deployment. Graduate/Undergraduate Equivalency: PSYC 464. Recommended Prerequisite(s): PSYC 370. Mutually Exclusive: Credit cannot be earned for PSYC 664 and PSYC 464.

PSYC 665 - SEMINAR IN GENES AND COGNITION
Short Title: SEMINAR IN GENES AND COGNITION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will consist of reading and discussing papers on molecular genetic studies of various cognitive functions broadly construed. This will include studies of genes and attention, genes and working memory, and genes and executive function. Will also include readings on genes and disordered cognition (e.g., ADHD, Alzheimer’s).
PSYC 671 - METHODS IN COGNITIVE NEUROSCIENCE
Short Title: METHODS COGNITIVE NEUROSCIENCE
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Explores issues in functional neuroimaging and provides hands-on experience with experimental design, data acquisition, and analysis. Examines hemodynamic (PET, FMRI), electrophysiologic (EEG, MEG), and other (e.g. neural stimulation, event-related optical) methods of measuring functional activation in the human brain related to cognitive operations. This course is usually offered at the University of Texas Medical School.

PSYC 681 - PERCEPTUAL ORGANIZATION
Short Title: PERCEPTUAL ORGANIZATION
Department: Psychology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 581
Description: Advanced graduate course. Perceptual organization, primarily in human vision but in other senses too. We examine theoretical issues underlying perceptual organization; principal phenomena; methods used to reveal perception of structure; neural basis of perception organization; theories of perceptual organization; and remaining problems in the field.

PSYC 700 - THESIS RESEARCH
Short Title: THESIS RESEARCH
Department: Psychology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research for the master’s thesis. Repeatable for Credit.

PSYC 800 - DISSERTATION RESEARCH
Short Title: DISSERTATION RESEARCH
Department: Psychology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Research for the doctoral dissertation. Repeatable for Credit.

Religion (RELI)

RELI 100 - ROMANCING RELIGION: NARRATIVES OF THE SACRED
Short Title: ROMANCING RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines links between religious experience and romance narrative taking the grail as a focal point. We start with grail legends in the middle ages, explore historical associations of the grail with medieval Christianity, and end with quest narratives and grail motifs in modern occultism, fiction and film. This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 100, MDEM 100.

RELI 101 - INTRODUCTION TO THE STUDY OF RELIGION
Short Title: INTRO TO THE STUDY OF RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Comparative and interdisciplinary analysis of key elements (including scripture, religious experience, ideas of the divine, religious art and practices) of two Western and two non-Western religions, of the scholarly study of religion, and of the role of religion in the contemporary world.

RELI 102 - BUDDHISM MEDITATION, ART AND US
Short Title: BUDDHISM MEDITATION, ART & US
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: How do you learn about another tradition? Its texts, practices, or art? Its conversations with the modern West? We will focus on all these as we enter ancient Buddhist worlds of India and Tibet, by reading ancient texts and modern treatments, including films and scientific inquiry. This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 102.
RELI 104 - INTRODUCTION TO JEWISH MYSTICISM  
Short Title: INTRO TO JEWISH MYSTICISM  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Surveys the historical development and central themes of Jewish mysticism. From the bible to ancient mysticism to medieval Kabbalah to modern expressions, we will critically reflect the ideas such as divine presence in the world, the cultivation of insight and magical powers, contemplative and restorative practices, and charismatic authority. Cross-list: MDEM 103.

RELI 105 - INTRODUCTION TO MEDIEVAL CHRISTIAN THOUGHT  
Short Title: MEDIEVAL CHRISTIAN THOUGHT  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Survey of major medieval Christian thinkers. Primary focus on high and late middle ages (12th-15th century), with some attention to spiritual and apocalyptic writings and dissenting thought in this period. Cross-list: MDEM 105.

RELI 108 - INTRODUCTION TO JUDAISM  
Short Title: INTRODUCTION TO JUDAISM  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Survey of post-biblical Judaism as reflected in the literature of the classical rabbinic tradition, mysticism, medieval biblical commentary, legal codes and philosophy, and modern movements such as Hasidism, denominational Judaism, Zionism, and feminist Judaism. Jewish material culture such as synagogue architecture, illuminated manuscripts and ritual artifacts will be included. Students will not receive credit for both RELI 108 and RELI 209. Mutually Exclusive: Credit cannot be earned for RELI 108 and RELI 209.

RELI 109 - RELIGION AND LAW  
Short Title: RELIGION AND LAW  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Law and religion: origins, differentiation, relation to legitimacy and stability of basic institutions. Law school, professional life, quest for a fitting career in the search for meaning and authentic selfhood. Required: willingness to share the personal roots of your interest in law and your take on the Big Picture.

RELI 111 - INTRODUCTION TO AFRICAN RELIGIONS  
Short Title: INTRO AFRICAN RELIGIONS  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Surveys the historical development and central themes of African religions. Topics include community, cosmology, ritual, ethical values, magic, witchcraft, spirit possession, contribution to nationalism, social change, religion and art, and transplantation of African Religions in the Americas.

RELI 112 - COMPARING CHRISTIANITIES  
Short Title: COMPARING CHRISTIANITIES  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course maps the pluralistic nature of early Christianity from its grassroots beginnings in a commune in Jerusalem to Rome and the conversion of Emperor Constantine. Different Christian movements include the Apostolic Christians, Ebionites, Marcionites, Thomasians, Montanists, Monarchians, Modalists, Arians, and a variety of Gnostic Christians will be studied comparatively as well as historically.

RELI 113 - INTRODUCTION TO CHRISTIANITY IN AFRICA  
Short Title: INTRO TO CHRISTIANITY AFRICA  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course examines the historical development of Christianity in Africa. Christians will be studied comparatively as well as historically.

RELI 116 - MYSTICISM THROUGHOUT THE AGES  
Short Title: MYSTICISM THROUGHOUT THE AGES  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course examines the historical development of mysticism in Western thought, placing the Christian experiential traditions in comparison with Jewish developments. Through mystical texts, we will explore key concepts, such as visions of God and spiritual journeys, as developed during late antiquity, the middle-ages, and into the early modern period. Cross-list: MDEM 116.
REL 118 - RELIGION, MORALITY, AND THE LAW
Short Title: RELIGION, MORALITY, & LAW
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: We know that religion, morality, and the law are connected to one another, but how? Do they depend upon, reinforce, or ultimately undermine one another? To improve our answers to these questions, we will investigate philosophical, theological, and social-scientific accounts of these categories and their relationships.

REL 122 - THE BIBLE AND ITS INTERPRETERS
Short Title: THE BIBLE AND ITS INTERPRETERS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level

REL 124 - RELIGION AND THE ART OF HAPPINESS
Short Title: RELIGION & ART OF HAPPINESS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Students at Rice University consistently self-report as "happiest" by rankings like the Princeton Review. Course analyzes what we mean when we talk about "happiness" in the study of religion, assessing the role of community, habits, meaning, and positive thinking in religious and psychological texts, as well as lived experience.

REL 125 - INTRODUCTION TO BIBLICAL HEBREW I
Short Title: INTRO TO BIBLICAL HEBREW I
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to Biblical Hebrew with emphasis on grammar and vocabulary. Cross-list: HEBR 125. Graduate/Undergraduate Equivalency: RELI 507. Mutually Exclusive: Credit cannot be earned for RELI 125 and RELI 507.

REL 126 - INTRODUCTION TO BIBLICAL HEBREW II
Short Title: INTRO TO BIBLICAL HEBREW II
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Continuation of RELI 125. We will finish the grammar in the second half of this semester and then read selections from the Hebrew Bible. Cross-list: HEBR 126. Graduate/Undergraduate Equivalency: RELI 511. Mutually Exclusive: Credit cannot be earned for RELI 126 and RELI 511.

REL 127 - INTERMEDIATE BIBLICAL HEBREW III
Short Title: INTERM BIBLICAL HEBREW III
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): RELI 125 and RELI 126
Description: Readings in the Hebrew Bible as well as in some unvocalized texts from the Dead Sea Scrolls. Review of grammar and vocabulary. Instructor Permission Required. Graduate/Undergraduate Equivalency: RELI 512. Mutually Exclusive: Credit cannot be earned for RELI 127 and RELI 512.

REL 128 - INTERMEDIATE BIBLICAL HEBREW IV
Short Title: INTERM BIBLICAL HEBREW IV
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): RELI 125 and RELI 126
Description: Continuation of RELI 127 (RELI 127 is not a prerequisite). Cross-list: HEBR 128. Graduate/Undergraduate Equivalency: RELI 516. Mutually Exclusive: Credit cannot be earned for RELI 128 and RELI 516.

REL 157 - RELIGION AND HIP HOP CULTURE IN AMERICA
Short Title: RELIGION AND HIP HOP
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Hip Hop culture has changed how life is discussed and conducted. However, one of the under-explored dimensions of Hip Hop culture involves its religious sensibilities. Using lectures, discussions, films, and video presentations, this course explores Hip Hop culture's religious dimensions through its musical language-rap music. Mutually Exclusive: Credit cannot be earned for RELI 157 and RELI 311.
RELI 158 - LIBERATION THEOLOGIES
Short Title: LIBERATION THEOLOGIES
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course seeks to acquaint students with examples of liberation theology, as they relate to the following issues: racism, sexism, classism, and environmental destruction. Attention is given to the context, construction, form, and aims of Latin American liberation theology, Black theology, Feminist theology, and Theology in the Intersections. Graduate/Undergraduate Equivalency: RELI 548. Mutually Exclusive: Credit cannot be earned for RELI 158 and RELI 548.

RELI 171 - THE BODY AND THE COSMOS IN THE MIDDLE AGES
Short Title: BODY & COSMOS IN MIDDLE AGES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: What shaped medieval Christian notions of the body? How did common experiences of pain, sexuality, childbirth, and death refract the grasp of larger concepts - God, time, and the cosmos? This seminar will explore the issues connecting body to cosmos through close reading of medieval literary, mystical, and autobiographical texts. This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 171, MDEM 171. Mutually Exclusive: Credit cannot be earned for RELI 171 and FWIS 150.

RELI 203 - JUDAISM OF JESUS AND HILLEL
Short Title: JUDAISM OF JESUS AND HILLEL
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines the history and culture of Judaism during the Second Temple period, which produced such great religious leaders as Jesus and Hillel. Topics include: canonization, colonization, diaspora, economic and political instability, eschatology, Hellenization, imperialism, messianism, Pharisees, priesthood, Sadducees, Scribes, scriptures, sectarianism, synagogue and temple worship. Cross-list: HIST 201.

RELI 213 - THE PROPHET JEREMIAH: THE BIBLICAL BOOK AND ITS RECEPTION IN JUDAISM AND CHRISTIANITY
Short Title: THE PROPHET JEREMIAH
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A seminar on the book of Jeremiah and its reception. Topics to be explored: ancient Near Eastern prophecy and Israel's cultures of revelation; the composition, production, and transmission of a biblical book; the life of the prophet; the transformation of Jeremiah's message in later, post-biblical texts attributed to him.

RELI 215 - MYSTIC CINEMA: KABBALAH IN FILM
Short Title: MYSTIC CINEMA
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course explores uses by the film industry of ideas drawn from Jewish mysticism. We will examine themes such as monsters, spirits, numerology and the paranormal, as portrayed in classic film and through to contemporary Hollywood. Emphasis will be placed on the medieval textual and folkloric traditions behind such portrayals. Cross-list: FILM 215. Mutually Exclusive: Credit cannot be earned for RELI 215 and FILM 114/FSEM 141/RELI 114.

RELI 217 - SHI'ISM: ASSASSINS AND AYATULLAH
Short Title: SHI'ISM: ASSASSINS & AYATULLAH
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will examine the life of the Prophet Muhammad, focusing on its significance for Muslims and for non-Muslims. Readings in The Qur'an, Ibn Hisham, and Haykal. Cross-list: ASIA 221.

RELI 221 - THE LIFE OF THE PROPHET MUHAMMAD
Short Title: LIFE OF PROPHET MUHAMMAD
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will examine the life of the Prophet Muhammad, focusing on its significance for Muslims and for non-Muslims. Readings in The Qur'an, Ibn Hisham, and Haykal. Cross-list: ASIA 221.
REL 223 - QU'RAN AND COMMENTARY
Short Title: QU'RAN AND COMMENTARY
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of the major themes of the Qu'an and selected types of commentary on it from the early Islamic period until the present day.

REL 230 - ASIAN RELIGIONS IN AMERICA
Short Title: ASIAN RELIGIONS IN AMERICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A survey course on Hinduism, Buddhism, Taoism, and Jainism in America, from the colonial period to the present, with a special focus on American metaphysical religion, the counterculture, the New Age, and the history of Western colonialism, transnational encounter, translation and immigration. Cross-list: ASIA 230.

REL 231 - AMERICAN METAPHYSICAL RELIGION
Short Title: AMERICAN METAPHYSICAL RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Beginning with a historical survey of the American metaphysical tradition, this course turns to a close study of the Esalen Institute in Big Sur, California, as a unique window into some of the different ways the tradition has appropriated Asian religions, psychological models of the unconscious, and contemporary scientific paradigms. Cross-list: ASIA 231. Graduate/Undergraduate Equivalency: RELI 505. Mutually Exclusive: Credit cannot be earned for RELI 231 and RELI 505.

REL 232 - RELIGIONS FROM INDIA
Short Title: RELIGIONS FROM INDIA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will survey the religions of India, namely Hinduism, Buddhism, Jainism, Christianity, Islam, and Sikhism. Emphasis will be placed on the study of scriptures of these traditions and their continuing global relevance, particularly in American history and culture. Cross-list: ASIA 232. Graduate/Undergraduate Equivalency: RELI 500. Mutually Exclusive: Credit cannot be earned for RELI 232 and RELI 500.

REL 233 - TIBETAN LANGUAGE, LITERATURE AND CULTURE I
Short Title: TIBETAN LANG LIT & CULTURE I
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introducing the Tibetan alphabet and basics of grammar through reading section of a classic Tibetan text. In addition, readings in English in Indian and Tibetan Buddhist materials, also on the art, history, geography and/or modern era in those areas. Final includes a paper drawn from readings and class discussion. Cross-list: TIBT 233. Graduate/Undergraduate Equivalency: RELI 502. Mutually Exclusive: Credit cannot be earned for RELI 233 and RELI 502.

REL 234 - TIBETAN LANGUAGE, LITERATURE AND CULTURE II
Short Title: TIBETAN LANG LIT & CULTURE II
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Continued training in Tibetan language-extending vocabulary and facility with grammar. Final includes a paper drawn from readings and class discussion. Cross-list: TIBT 234. Graduate/Undergraduate Equivalency: RELI 564. Mutually Exclusive: Credit cannot be earned for RELI 234 and RELI 564. Repeatable for Credit.

REL 243 - THE BOOK OF GENESIS
Short Title: THE BOOK OF GENESIS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: A critical reading in English of the Book of Genesis with close attention to the narrative artistry and theological dimensions of the text. Compares pre-modern modes of interpretation and modern historical criticism.

REL 270 - INTRODUCTION TO THE BLACK CHURCH IN THE UNITED STATES
Short Title: INTRO BLACK CHURCH IN THE US
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Much of what has historically taken place within Black communities has been shaped by Black Christian churches. These churches are resources for those interested in understanding religious expression and activism within the Black community. This course provides an introduction into the history, thought, and worship of the major Black denominations.
RELI 271 - MEDIEVAL POPULAR CHRISTIANITY
Short Title: MEDIEVAL POPULAR CHRISTIANITY
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: For much of the Middle Ages, literacy was a luxury that ordinary people could not afford. How could peasants participate in Christian traditions? Course surveys devotional practices engaged by the laity, including penance, pilgrimage, plays, charms and spells, as well as traditions of lay interaction with dead saints and ghosts. Cross-list: MDEM 271.

RELI 282 - INTRODUCTION TO CHRISTIANITY
Short Title: INTRO TO CHRISTIANITY
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Multidisciplinary exploration of Christian religious experience, belief, and social reality with examples from Africa, the Americas, Asia, and Europe during the last two thousand years. Themes include search for lasting marks of identity amid change and diversity as well as the issue of Christianity's relation to processes of modernization and secularization. No prior background in religious studies required.

RELI 285 - GENDER AND POLITICIZED RELIGION
Short Title: GENDER & POLITICIZED RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines the emergence of religion-based politics in various Asian countries - particularly Hindu and Muslim-focusing on the women participants in these movements as well as the movements’ concerns with gender roles in society. We will investigate, for instance, the extent to which women participants have been willing or able to reshape the central ideas of such movements. Cross-list: ASIA 240, SWGS 240. Mutually Exclusive: Credit cannot be earned for RELI 285 and RELI 341.

RELI 294 - RELIGION IN FICTION AND FILM
Short Title: RELIGION IN FICTION AND FILM
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The sacred in interreligious, international, and interdisciplinary encounter, approached via social sciences, theology, theories of literature and mythology. Authors and directors can include Waugh, Mishima, Mann, Proust, Hesse, Percy, Gardner, Updike, Gibson, Sterling, Coupland, Ray, Resnais, Fellini, Bergman, Anderson, Bunnel, and Nutley. Graduate/Undergraduate Equivalency: RELI 514. Mutually Exclusive: Credit cannot be earned for RELI 294 and RELI 514.

RELI 300 - RELIGIONS IN AMERICA
Short Title: RELIGIONS IN AMERICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examines the religions and religious practices of America from colonial encounter with native peoples to the contemporary period with a special focus on the morphing natures and historical complexities of American Christianities, religious pluralism and secularism. Graduate/Undergraduate Equivalency: RELI 504. Mutually Exclusive: Credit cannot be earned for RELI 300 and RELI 504.

RELI 301 - NIETZSCHE AND RELIGIOUS THOUGHT
Short Title: NIETZSCHE & RELIGIOUS THOUGHT
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Nietzsche's thought and background: his impact on religious thinkers and cultural critics; his influence on understanding of God, faith, values, society; his connection with Schopenhauer, Wagner, Tillich, Mann, Barth, Buber, Freud, Jung, D.H. Lawrence, Heidegger, antibourgeois cultural criticism, environmentalism, feminism, and postmodernism. Graduate/Undergraduate Equivalency: RELI 515. Mutually Exclusive: Credit cannot be earned for RELI 301 and RELI 515.
RELI 302 - PEOPLE OF THE BOOK: JUDAISM AND SCRIPTURE
Short Title: PEOPLE OF THE BOOK
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examines Judaism as a “People of the Book,” recognizing Judaism's dominant religious preoccupation for millennia to be the reading, study and performance of Jewish scripture, particularly the Torah or the first 5 books of the Hebrew Bible. Topics: book culture, act of reading, canonization, revelation, and rabbinic, philosophical, mystical interpretations. All readings are in English. Graduate/Undergraduate Equivalency: RELI 526. Mutually Exclusive: Credit cannot be earned for RELI 302 and RELI 526.

RELI 304 - JESUS AND THE GOSPELS
Short Title: JESUS AND THE GOSPELS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explores the various portraits of Jesus in the New Testament and extra-canonical gospels (including the gospels of Thomas, Philip, Mary, and Judas) in order to reconstruct each gospel's Christological interpretation of Jesus as well as the "historical" Jesus himself.

RELI 305 - PAIN, ECSTASY AND EMBODIMENT IN RELIGIOUS EXPERIENCE
Short Title: PAIN, ECSTASY AND EMBODIMENT
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: From exorcism to other worldly visions, we experience religion as embodied human beings. This course explores embodied religion by focusing on connections between pain and transcendence, looking at medieval Christianity as well as contemporary and cross-cultural examples. Cross-list: MDEM 305. Graduate/Undergraduate Equivalency: RELI 566. Mutually Exclusive: Credit cannot be earned for RELI 305 and RELI 566.

RELI 307 - BASIC COPTIC 1
Short Title: BASIC COPTIC 1
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A first semester introduction to Coptic grammar and vocabulary. Graduate/Undergraduate Equivalency: RELI 591. Mutually Exclusive: Credit cannot be earned for RELI 307 and RELI 591. Repeatable for Credit.

RELI 308 - BASIC COPTIC 2
Short Title: BASIC COPTIC 2
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): RELI 307
Description: Second semester introduction to Coptic grammar and vocabulary, with selected readings from the Coptic New Testament, Nag Hammadi, and monastic literature. Prerequisite: Introduction to Coptic Language I. Graduate/Undergraduate Equivalency: RELI 592. Mutually Exclusive: Credit cannot be earned for RELI 308 and RELI 592.

RELI 309 - BASIC COPTIC 3
Short Title: BASIC COPTIC 3
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Varied readings in original language to include the New Testament, Nag Hammadi, and monastic literature. Prerequisite: Coptic 1 and 2. Graduate/Undergraduate Equivalency: RELI 593. Mutually Exclusive: Credit cannot be earned for RELI 309 and RELI 593. Repeatable for Credit.

RELI 311 - RELIGION AND HIP HOP CULTURE IN AMERICA
Short Title: RELIGION AND HIP HOP
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Hip Hop culture has changed how life is discussed and conducted. However, one of the under-explored dimensions of Hip Hop culture involves its religious sensibilities. Using lectures, discussions, films, and video presentations, this course explores Hip Hop culture's religious dimensions through its musical language-rap music. RELI 311 requires additional work above the RELI 157 counterpart, including a term paper, etc. Mutually Exclusive: Credit cannot be earned for RELI 311 and RELI 157.
RELI 312 - THE RELIGIOUS THOUGHT OF MARTIN L. KING, JR. AND MALCOLM X
Short Title: MLK AND MALCOLM X
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Although many figures played a prominent role during the Civil Rights Movement, Martin L. King, Jr. and Malcolm X made unique contributions. Their work sparked important conversation concerning the methods, goals, and consequences of struggle toward liberation. This course examines their religiosity, theological sensibilities, and the major themes which surface in their writings and public work. Graduate/Undergraduate Equivalency: RELI 546. Mutually Exclusive: Credit cannot be earned for RELI 312 and RELI 546.

RELI 313 - INTRODUCTION TO SYRIAC
Short Title: INTRODUCTION TO SYRIAC
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to Syriac grammar and vocabulary. Graduate students are expected to write an exegetical paper on a Syriac text of their choice. Graduate/Undergraduate Equivalency: RELI 513. Mutually Exclusive: Credit cannot be earned for RELI 313 and RELI 513.

RELI 314 - DIVINE SEX: GENDER AND DIVINITY IN THE MIDDLE AGES
Short Title: DIVINE SEX
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine key medieval works, with special attention to women's writing, focusing on gender construction in mysticism and theology. Primary readings will include works by Hildegard of Bingen, Birgitta of Sweden, Margery Kempe, and others. Cross-list: MDEM 314, SWGS 314. Graduate/Undergraduate Equivalency: RELI 551. Mutually Exclusive: Credit cannot be earned for RELI 314 and RELI 551.

RELI 315 - GENDER AND ISLAM
Short Title: GENDER AND ISLAM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explores the lives of Muslim women in Asia, the Middle East, Europe, and North America; analyze constructions of gender in the Islamic world over time, the challenges faced from such diverse quarters as colonial administrators, Western feminists, and states, as well as movements and individuals within the Muslim world. Cross-list: ASIA 315, SWGS 315.

RELI 317 - CREATING MAGIC: KEY WRITINGS ON MAGIC AND RELIGION
Short Title: CREATING MAGIC
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Focusing on social theories of magic from Durkheim to Tambiah, this course will also investigate how the idea of magic is already embedded against religion in theological writings. Graduate work includes extra reading, additional seminars, and a more extended final project. Graduate/Undergraduate Equivalency: RELI 541. Mutually Exclusive: Credit cannot be earned for RELI 317 and RELI 541.

RELI 320 - THE LEGAL FRAMEWORK OF RELIGIOUS TOLERANCE
Short Title: LEGAL FRMWK RELI TOLERANCE
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The American Constitution embodies a complex experiment in religious tolerance, including the promise of "free exercise of religion" and the prohibition of laws "respecting an establishment of religion". In this class we will primarily seek a critical understanding of our tolerance-rich legal invocations of religious freedom and address fundamental issues such as how can we distinguish "religious" actions and commitments from other morally important beliefs and activities. Cross-list: POLI 320. Graduate/Undergraduate Equivalency: RELI 596. Mutually Exclusive: Credit cannot be earned for RELI 320 and RELI 596.

RELI 322 - INTRODUCTION TO BUDDHISM
Short Title: INTRODUCTION TO BUDDHISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Buddhist ideas, art, and meditation. Exploration of the Buddhism in India, China, and Japan and their impact in the USA today. Readings include Buddhists classics and contemporary responses from mediators and scientists. Cross-list: ASIA 322. Graduate/Undergraduate Equivalency: RELI 572. Mutually Exclusive: Credit cannot be earned for RELI 322 and RELI 572.
RELI 326 - ANGELS, POWERS, AND MONSTERS  
**Short Title:** ANGELS, POWERS, & MONSTERS  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** "Every time a bell rings an angel gets its wings." Course examines the natures, roles, physical appearances, and functions ascribed to the intermediate beings (angels, powers, and monsters) in western thought from the Ancient Near East to the modern Period, in both academic and popular opinion. Graduate/Undergraduate Equivalency: RELI 508. Mutually Exclusive: Credit cannot be earned for RELI 326 and RELI 508.

RELI 328 - RELIGION AND GLOBAL POVERTY  
**Short Title:** RELIGION & GLOBAL POVERTY  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Advanced study of religion and poverty in global context. Course materials will address religious, ethical anthropological theories of development, analyze specific themes economic and social development, examine the role of Faith Based Organizations and do specific case studies. Students will be graded on short reflections papers and a final term paper. Graduate/Undergraduate Equivalency: RELI 528. Mutually Exclusive: Credit cannot be earned for RELI 328 and RELI 528.

RELI 332 - ADVANCED TIBETAN LANGUAGE & CULTURE  
**Short Title:** ADV TIBETAN LANGUAGE & CULTURE  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** RELI 132 or TIBT 132  
**Description:** This class builds on RELI 232 and 234, now including more challenging material in Tibetan, and continuing the trajectory of gaining familiarity with Buddhist philosophical systems as these touch on epistemology, ontology, and contemplative practice. Cross-list: TIBT 332. Graduate/Undergraduate Equivalency: RELI 532. Mutually Exclusive: Credit cannot be earned for RELI 332 and RELI 532. Repeatable for Credit.

RELI 333 - KNOWING BODY/GLOWING MIND: BUDDHIST ARTS OF CONTEMPLATION AND ANALYSIS  
**Short Title:** KNOWING BODY/GLOWING MIND  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Buddhism is a performing art engaging both mind and body. Our course investigates Buddhist and other literature, epistemology and rituals with an eye to how they speak to contemplative practice. Contemplative practice itself, in class and out, supplements our exploration of the interplay between traditional Asian and contemporary Western perspectives. Graduate/Undergraduate Equivalency: RELI 573. Recommended prerequisite(s): One course in Buddhism. Mutually Exclusive: Credit cannot be earned for RELI 333 and RELI 573. Repeatable for Credit.

RELI 334 - PSYCHOLOGY OF RELIGION  
**Short Title:** PSYCHOLOGY OF RELIGION  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** An overview of the basic approaches in the psychological understanding of religious belief and practice. Topics to be addressed in religious systems East and West include: sex, religious experience, ritual, myth, saintliness, guilt, God and meditation.

RELI 335 - MEDICINE AND THE MUSEUM: CLINICAL AESTHETICS AND THE MUSEUM OF FINE ARTS, HOUSTON  
**Short Title:** MEDICINE AND THE MUSEUM  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Through weekly visits to the Museum of Fine Arts, Houston, this class develops key skills and engages relevant themes relating to medicine and caregiving, including observation and description, embodiment and motion, eros and suffering, vulnerable populations, grief and loss, human mortality and spiritual transcendence.
RELI 336 - RELIGION & THE SOCIAL SCIENCES

Short Title: RELIGION & THE SOCIAL SCIENCES
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Designed to introduce the student to classic and contemporary texts in the social scientific study of religion. Topics include: mysticism, the social construction of gender, the guru-disciple relationship, secularization, healing traditions East and West, cross-cultural debates. Mutually Exclusive: Credit cannot be earned for RELI 336 and RELI 260/RELI 609.

RELI 337 - SHAMANS, SAINTS, & SAGES

Short Title: SHAMANS, SAINTS, & SAGES
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Familiarize the student with diverse texts (secular and religious, East and West) found in mystical literature. Emphasis will be placed on psychological and comparative methods. Mutually Exclusive: Credit cannot be earned for RELI 337 and RELI 262.

RELI 338 - THE CHURCH OF AFRICA

Short Title: THE CHURCH OF AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A reading course designed to examine Christianity in Africa. Course materials and readings will address the development of the church from the Patristic era to the present, paying attention to theological developments, missionization, colonialism, nationalism, prophetic movements, race relations, the role of women, and social issues. Graduate/Undergraduate Equivalency: RELI 540. Mutually Exclusive: Credit cannot be earned for RELI 338 and RELI 540.

RELI 339 - APOCALYPSE THEN AND NOW

Short Title: APOCALYPSE THEN AND NOW
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A close reading of some early Jewish apocalypses and a discussion of the apocalyptic worldview. Texts include the Book of Daniel, 1 Enoch, the Dead Sea Scrolls, and the Book of Revelation. Graduate/Undergraduate Equivalency: RELI 510. Mutually Exclusive: Credit cannot be earned for RELI 339 and RELI 510.

RELI 340 - THEOLOGY IN AFRICA

Short Title: THEOLOGY IN AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introductory readings on theological thinking in Africa. Course will address methodological issues as well as constructive theological work on enculturation, social and economic justice, gender, health, and liberation. Read 5 major texts, write a major review, lead class discussions, discuss texts used, and write 20 page research paper. Graduate/Undergraduate Equivalency: RELI 539. Mutually Exclusive: Credit cannot be earned for RELI 340 and RELI 539.

RELI 342 - NEW RELIGIOUS MOVEMENTS IN AFRICA

Short Title: NEW RELIG MOVEMENTS IN AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Discusses new religious movements and the religious, sociological, and political factors leading to their rise, also missionary and colonial reactions to them. Examines their relationship to indigenous religions, political praxis, and their focus on this-worldly salvation in the wake of political and economic marginality. Cross-list: ANTH 343.

RELI 343 - SEMINAR ON LOVE

Short Title: SEMINAR ON LOVE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the themes of love, sex, and spirit from the classical era through the postmodern age. We will examine literary, philosophical, and artistic expressions in painting, sculpture, cinema, novels, poetry, psychoanalysis, religion, and culture. Cross-list: HART 347.

RELI 344 - SEMINAR ON THE END OF LIFE

Short Title: END OF LIFE SEMINAR
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines themes associated with death and dying from the historical through the contemporary periods. The class will adopt highly multidisciplinary approach that combines the critical perspectives of biomedicine, religious studies, art history, philosophy, anthropology, bioethics, and cultural studies as we consider life at the end of life.
REL 348 - CHRISTIANITY AND ISLAM IN AFRICA  
Short Title: CHRISTIANITY & ISLAM IN AFRICA  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course will focus upon the history and conflict of Christianity and Islam in Africa, with emphasis placed upon indigenous African developments, cultural and artistic themes, and conversion narratives as well as exploring the co-existence and conflict of the two major faiths of the continent. Graduate/Undergraduate Equivalency: RELI 536. Mutually Exclusive: Credit cannot be earned for RELI 348 and RELI 536.

REL 350 - DEMONS, MENTAL ILLNESS AND MEDICINE  
Short Title: DEMONS/MENTAL ILLNESS/MEDICINE  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Treats complex connections between religious beliefs/practices and formulation of human psychology in western tradition, through a historical reckoning with demonology. Consider the way demons are represented -- from semi-corporeal beings to marks of mental illness -- by looking at texts from the ancient world to modern psychiatry. Cross-list: MDEM 350. Mutually Exclusive: Credit cannot be earned for RELI 350 and RELI 605.

REL 356 - MAJOR ISSUES IN CONTEMPORARY ISLAM  
Short Title: MAJ ISSUES CONTEMPORARY ISLAM  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course will focus on the major issues confronting contemporary Islam including Islamic unity, the place of the Qur'an and traditions, human rights, Islamic feminism, da'wa, education, science and Islam, globalization and medical ethics.

REL 357 - WHAT'S RELIGIOUS ABOUT BLACK RELIGION?  
Short Title: IS BLACK RELIGION RELIGIOUS?  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course examines two questions: How is religion defined within the study of lack religion? What constitutes the nature and meaning of blackness within black religion? These questions provide opportunity to explore how scholars explain what it has meant to be black and religious within the United States. Graduate/Undergraduate Equivalency. RELI 547. Mutually Exclusive: Credit cannot be earned for RELI 357 and RELI 547.

REL 359 - RELIGIOUS TOLERANCE IN THE CRUCIBLE OF GLOBALIZATION  
Short Title: RELIGIOUS TOLERANCE  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Explores context and consequences of the concept of religious tolerance in the crucible of globalization politics. Background in settlement of Reformation-era religious wars; American attitudes; impetus for tolerance policies and their implementation, 1945 to present (including governmentality and surveillance); results for historically Christian populations, esp. in US and Europe. Graduate/Undergraduate Equivalency: RELI 580. Mutually Exclusive: Credit cannot be earned for RELI 359 and RELI 580.

REL 361 - THE HUMANITIES OF CARE & END OF LIFE  
Short Title: THE HUMANITIES OF CARE  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Pairing the perspectives of medicine, bioethics, and the medical humanities with thematic case studies in art, literature, cinema, and visual culture, the class examines the humanities of care and the end of life. Cross-list: HURC 361.

REL 363 - JEWISH PHILOSOPHY: GREAT THINKERS AND THEMES IN JEWISH THOUGHT  
Short Title: JEWISH PHILOSOPHY  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: An introduction to the main figures and themes in Jewish philosophy. Topics to be discussed include reason vs faith and prophetic revelation; Israel's chosenness vs human universalism; creation vs eternity; divine providence and necessity vs free will; evil, justice, and divine omnipotence; prayer, contemplation, and divine and human perfection.

REL 365 - PAUL AND THE NEW TESTAMENT  
Short Title: PAUL & THE NEW TESTAMENT  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Examines the growth of Christianity from its origins as a Jewish group to a religion in the mid-second century that distinguished itself from Judaism. Includes discussion of Acts, Paul's letters, Johannine corpus, Gospel of Thomas, Pastoral letters, Hebrews, and Revelation.
RELI 368 - RISE OF THE NONES: HUMANISMS AND HUMANITIES
Short Title: RISE OF THE NONES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will look at the rise of the "nones," that is, individuals who affiliate with no religious tradition, through both a history of secular thought in the West and a close reading of key texts and figures. Atheism, humanism, secularism and the "spiritual but not religious" will all be treated as key categories. Graduate/Undergraduate Equivalency: RELI 568. Mutually Exclusive: Credit cannot be earned for RELI 368 and RELI 568. Repeatable for Credit.

RELI 369 - READING WRIGHT: THEISM AND ATHEISM IN THE WRITINGS OF RICHARD WRIGHT
Short Title: READING RICHARD WRIGHT
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Richard Wright's fiction and nonfiction are important resources for understanding the nature of radicalized life in the United States. This course explores his writings for what they tell us about the role of religion in the development of identity and life meaning, and we will juxtapose the role of religion with Wright's commentary on the nature and significance of atheism for countering injustice. Graduate/Undergraduate Equivalency: RELI 606. Mutually Exclusive: Credit cannot be earned for RELI 369 and RELI 606.

RELI 371 - CHRISTIANITY IN THE GLOBAL SOUTH
Short Title: CHRISTIANITY IN GLOBAL SOUTH
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Readings on Christianity in the Global South analyzing historical developments, mission and colonial encounters, growth and expansion; diversity of expression, the development of local initiated Churches, Pentecostalism, and public role of the Church. Graduate/Undergraduate Equivalency: RELI 561. Mutually Exclusive: Credit cannot be earned for RELI 371 and RELI 561.

RELI 375 - EPIPHANIES: SEEING IN A NEW LIGHT AND RECOGNIZING THE RADIANCE
Short Title: EPIPHANIES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Epiphanies are events or objects that can note a striking appearance or manifestation, just as an epiphanic experience contains a significant moment of revelation. This course examines expressions of epiphanies in modernist art, literature, film, sacred experience, and in the mundane details of life itself. Cross-list: HART 328.

RELI 378 - MIND AND ART, FILM AND LITERATURE IN BUDDHISM
Short Title: BUDDHIST ART AND LITERATURE
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: What is mind? What is self? What can a human being become? Drawing on a wealth of Buddhist-related art, film, and literature, this course introduces you to Tibetan and other Buddhist approaches to these crucial questions. Graduate/Undergraduate Equivalency: RELI 578. Mutually Exclusive: Credit cannot be earned for RELI 378 and RELI 578.

RELI 381 - THE MESSIAH
Short Title: THE MESSIAH
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examines the historical origins of Messianism. The Hebrew Bible, the Dead Sea Scrolls, and other ancient texts reflect a surprising diversity of Messianic expectations in early Judaism. These form the background of early Christian depictions of Jesus of Nazareth.

RELI 382 - LOST JUDAISMS: THE APOCRYPHAL WRITINGS
Short Title: LOST JUDAISMS
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: After the Hebrew Bible/Old Testament canon was closed, Jews and Christians continued to compose texts and attributed them to the biblical figures of the past. Seminar offers a close reading of some of these apocryphal/pseudepigraphic little known texts. Graduate/Undergraduate Equivalency: RELI 509. Mutually Exclusive: Credit cannot be earned for RELI 382 and RELI 509.
RELI 383 - THE DEAD SEA SCROLLS
Short Title: THE DEAD SEA SCROLLS
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A survey of the Dead Sea Scrolls as a window into the Second Temple period. A close reading of the scrolls will lead to a discussion of the theological and historical issues of the time, a period pivotal for the formation of Rabbinic Judaism and Early Christianity. Graduate/Undergraduate Equivalency: RELI 553. Mutually Exclusive: Credit cannot be earned for RELI 383 and RELI 553.

RELI 384 - PILGRIMAGE AND CRUSADE
Short Title: PILGRIMAGE AND CRUSADE
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Focus on the pilgrimage to Jerusalem and Mecca by Jews, Christians, and Muslims within the context of the crusade period. Also covers the historical religious events of the crusades (approximately 1000-1300) from both a Muslim and a Christian perspective. Graduate/Undergraduate Equivalency: RELI 608. Mutually Exclusive: Credit cannot be earned for RELI 384 and RELI 608.

RELI 385 - GOD, TIME AND HISTORY
Short Title: GOD, TIME AND HISTORY
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How is the passage of time given meaning, and what role--if any--is assigned to divinity in shaping the direction of events? Course explores various forms of recording and interpreting events, drawing from ancient Mesopotamia, Israel, and the Greco-Roman world--the cultures in which modern ideas of history began. Cross-list: HIST 381. Graduate/Undergraduate Equivalency: RELI 585. Mutually Exclusive: Credit cannot be earned for RELI 385 and RELI 585.

RELI 387 - WESTERN ESOTERICISM: METHOD AND THEORY
Short Title: WESTERN ESOTERICISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores the relation between esoteric texts and the idea of "Western Esotericism." We will look at primary writings from Agrippa to Madame Blavatsky and consider the historical and methodological approaches emerging as Esotericism is constructed as an academic area. Graduate/Undergraduate Equivalency: RELI 587. Mutually Exclusive: Credit cannot be earned for RELI 387 and RELI 587.

RELI 388 - THE PSALMS AND THEIR POETIC AFTERLIFE
Short Title: PSALMS AND POETRY
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A seminar on the biblical Psalms. This course will situate the Psalms in their ancient Near Eastern context, explore their original liturgical function in ancient Israel, and trace their afterlife in postbiblical poetry. All texts will be studied in translation. Counts for the Minor in Jewish Studies. RELI 612: Additional readings and longer paper. Graduate/Undergraduate Equivalency: RELI 612. Mutually Exclusive: Credit cannot be earned for RELI 388 and RELI 612.

RELI 390 - SEARCH FOR GOD IN THE POSTMODERN WORLD
Short Title: SEARCH FOR GOD
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explore forms of theistic religious experience, concentrating on the Western Christian tradition; past and present cultural and philosophical challenges to traditional religious belief; the possibility of Christian faith and the struggle for justice and meaning. Mutually Exclusive: Credit cannot be earned for RELI 390 and RELI 280.

RELI 391 - THE REFORMATION & ITS RESULTS
Short Title: THE REFORMATION & ITS RESULTS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Theology and church-state issues from 16th-century Reformation to 17th-century; medieval background; Luther and Calvin, the Catholic Reformation; religious wars; Protestant orthodoxy; Pietist spirituality, Puritanism, and calls for toleration. Cross-list: MDEM 391. Mutually Exclusive: Credit cannot be earned for RELI 391 and RELI 286.

RELI 392 - JERUSALEM: HOLY CITY IN TIME AND IMAGINATION
Short Title: JERUSALEM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3,4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course on Jerusalem's past and present, its religious meanings in Judaism, Christianity, and Islam, and its role in the modern conflict in the Middle East. Instructor Permission Required.
RELI 393 - MUTANTS AND MYSTICS: THE PARANORMAL AND POPULAR CULTURE
Short Title: MUTANTS AND MYSTICS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Traces the "paranormal" from its elite origins around Cambridge and Harvard to its later pop-cultural expressions in pulp and science fiction, superhero comics, and film. Particular attention will be given to the role that the anomalous experiences of authors, artists, and scientists have played in this still emerging Super Story. Graduate/Undergraduate Equivalency: RELI 589. Mutually Exclusive: Credit cannot be earned for RELI 393 and RELI 589.

RELI 395 - LOSING YOUR RELIGION IN FILM & FICTION & MUSIC
Short Title: LOSING YOUR RELIGION IN FILM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Doubt, sex, despair, obsession, ecstasy in directors, writers, musicians wanting spiritual reboot, 1890-2015: such as Allen Ginsberg, Oscar Wilde, D.H. Lawrence, T.S. Eliot, H.P. Lovecraft, John Updike, and Ingmar Bergman. Graduate/Undergraduate Equivalency: RELI 503. Mutually Exclusive: Credit cannot be earned for RELI 395 and RELI 503.

RELI 396 - PENTECOSTALISM
Short Title: PENTECOSTALISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to Pentecostalism in a global context focusing historical developments, expansion in Europe, North America, Africa, Latin America and Asia. Graduate/Undergraduate Equivalency: RELI 595. Mutually Exclusive: Credit cannot be earned for RELI 396 and RELI 595.

RELI 399 - CONTEMPLATIVE PRACTICUM
Short Title: CONTEMPLATIVE PRACTICUM
Department: Religion
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Literary and artistic creativity, religious experience, and textual interpretation often draw on focused states of consciousness made possible by contemplative practices. The practicum will provide historical information about such practices and offer opportunities to participate in techniques ranging from meditation and observing breath to freeform writing and T’ai Chi. Graduate/Undergraduate Equivalency: RELI 597. Mutually Exclusive: Credit cannot be earned for RELI 399 and RELI 597. Repeatable for Credit.

RELI 400 - SENIOR THESIS
Short Title: SENIOR THESIS
Department: Religion
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Consisting of the writing of a thesis of considerable length, depth, and research, this course will function as the capstone course on writing in the discipline. Required of all majors.

RELI 401 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Religion
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Multiple sections of this course are offered. Repeatable for Credit.

RELI 402 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Religion
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Multiple sections of this course are offered. Repeatable for Credit.

RELI 405 - RELIGION AND THE NATURAL SCIENCES
Short Title: RELIGION & NATURAL SCIENCES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This advanced seminar analyzes interdisciplinary efforts by scholars of religion to engage scientific research. We assess the possibilities for collaboration, as well as conflict, between humanistic and scientific disciplines, asking how the tools of interpretation and empiricism might enrich our understanding of religious phenomena. Graduate/Undergraduate Equivalency: RELI 610. Mutually Exclusive: Credit cannot be earned for RELI 405 and RELI 610.
RELI 406 - CHRISTIANITY AND LATE ANTIQUITY
Short Title: CHRISTIANITY & LATE ANTIQUITY
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This advanced seminar treats the formation of Christianity as an institutional power in relation to the Roman Empire. Starting with the Edict of Milan in 313 CE, which put an end to persecution of Christians, and closing with the Council of Chalcedon in 451 CE, which established normative Christian doctrine, we will move through this development in seven roughly chronological units. Graduate/Undergraduate Equivalency: RELI 506. Mutually Exclusive: Credit cannot be earned for RELI 406 and RELI 506.

RELI 415 - SECRET RELIGION
Short Title: SECRET RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examines religious currents that operate in the margins of traditional religion: the gnostic, esoteric and mystical. Covers how these categories were theorized. Explores how they continue to identify contemporary religious currents that are considered transgressive and are rejected by conventional religious authorities. Class is grounded in antiquity and historical method. Graduate/Undergraduate Equivalency: RELI 615. Mutually Exclusive: Credit cannot be earned for RELI 415 and RELI 615.

RELI 416 - BEGINNINGS OF CHRISTIANITY
Short Title: BEGINNINGS OF CHRISTIANITY
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How did Christianity emerge as a new religious movement in the Roman Empire? Covers the history and literature of the first five generations of Christians (10 BCE - 190 CE), focusing on Post-Temple developments, issues of authority and leadership, rise of regional forms of Christianity, and formation of distinct Christian identities. Graduate/Undergraduate Equivalency: RELI 616. Mutually Exclusive: Credit cannot be earned for RELI 416 and RELI 616.

RELI 421 - FOUCAULT & THE HERMENEUTICS OF SELF
Short Title: FOUCAULT & THE SELF
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Best known for analyzing domination and power, Michel Foucault shifts his attention to ethics and “technologies of the self” in 1976. In this advanced seminar, we study and critique Foucault’s turn to western antiquity through his lectures and volumes of foregrounding resistance to power through religion, politics and ethics. Graduate/Undergraduate Equivalency: RELI 569. Mutually Exclusive: Credit cannot be earned for RELI 421 and RELI 569.

RELI 423 - AFRICAN MYTHS AND RITUALS
Short Title: AFRICAN MYTHS AND RITUALS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explore and analyze specific myths and rituals which provide legitimation for community ceremonies and that serve as a basis for the negotiation of power and ideology for members within that community. Readings from classic theorists: Durkheim, Levi-Strauss, Edmond Leach, Gennap and Turner, and contemporary theorists: Werbner, Heusch, Comaroff, and Ray. Cross-list: ANTH 423. Graduate/Undergraduate Equivalency: RELI 537. Mutually Exclusive: Credit cannot be earned for RELI 423 and RELI 537.

RELI 424 - RELIGION AND POLITICS IN AFRICA
Short Title: RELIGION & POLITICS IN AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course explores interdisciplinary perspectives on religion and politics in Africa focusing on indigenous religious, Christianity, and Islam. Readings will reflect theoretical perspectives, historical developments, regional angels, and contemporary issues such as sharia, gender, and reconciliation as political options. Graduate/Undergraduate Equivalency: RELI 534. Mutually Exclusive: Credit cannot be earned for RELI 424 and RELI 534. Repeatable for Credit.
RELI 426 - RELIGION AND LITERATURE IN AFRICA
Short Title: RELI AND LITERATURE IN AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Analysis of the religious imagination and gender issues in postcolonial literature in Africa focusing on Islam, Christianity, indigenous religions and African Initiated Churches. Religious and gender issues addressed include identity crises, power, class of cultures, modernity, cosmology, community, and socio-religious conflicts in a postcolonial world. Mutually Exclusive: Credit cannot be earned for RELI 426 and RELI 538.

RELI 427 - HISTORY AND METHODS: NINETEENTH CENTURY
Short Title: HISTORY AND METHODS: 19TH CENT
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Focused discussion of the history and methods of the study of religion via close readings of classical texts and narratives of the field from 1800-1900. Graduate/Undergraduate Equivalency: RELI 527. Mutually Exclusive: Credit cannot be earned for RELI 427 and RELI 527.

RELI 428 - HISTORY AND METHODS: TWENTIETH CENTURY
Short Title: HISTORY AND METHODS: 20TH CENT
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Focused discussion of the history and methods of the study of religion via close readings of classical texts and narratives of the field from 1900-present. Graduate/Undergraduate Equivalency: RELI 559. Mutually Exclusive: Credit cannot be earned for RELI 428 and RELI 559.

RELI 430 - RELIGION, PSYCHOLOGY & CULTURE
Short Title: RELIGION, PSYCHOLOGY & CULTURE
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A survey of the historical development of the psychology of religion and its conversation with theology, comparative studies, gender studies, sociology, and anthropology. Topics include: mysticism, esotericism, conversion, feminism, psychobiography. Examples drawn from a variety of religious traditions. Readings include: Freud, Jung, Tillich, Erikson, Kristeva, Kakar. Graduate/Undergraduate Equivalency: RELI 584. Mutually Exclusive: Credit cannot be earned for RELI 430 and RELI 584.

RELI 431 - RELIGION AND COGNITIVE SCIENCE
Short Title: RELIGION AND COGNITIVE SCIENCE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Interdisciplinary approach founded on biological, cross-cultural, evolutionary, neurological and cognitive studies of religion. Explores extreme religious experiences, ritualized behaviors, shamanism and religious therapy, religious community, universality of religion, and transmission of religious ideas and practices. 5000 word research paper. Graduate/Undergraduate Equivalency: RELI 531. Mutually Exclusive: Credit cannot be earned for RELI 431 and RELI 531.

RELI 433 - TIBETAN LANGUAGE AND CULTURE
Short Title: TIBETAN LANGUAGE & CULTURE
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explores the ascetic and Sufi aspects of Islam from the East from Late Antiquity until the 19th century, focusing on healing practices, astrology, protection, amulets, seasoned/life-cycle rituals, and other popular beliefs common to Islam, Judaism and Christianity. Cross-list: ASIA 441. Graduate/Undergraduate Equivalency: RELI 522. Mutually Exclusive: Credit cannot be earned for RELI 440 and RELI 522.

RELI 440 - ISLAM'S MYSTICAL AND ESOTERIC TRADITION
Short Title: ISLAM'S MYSTICAL TRADITION
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explodes the ascetic and Sufi aspects of Islam from the middle Islamic period until the present day. Readings from al-Ghazali, Ibn al-Arabi, Sa’di, Hafiz and Rumi. Graduate/Undergraduate Equivalency: RELI 522. Mutually Exclusive: Credit cannot be earned for RELI 440 and RELI 522.

RELI 441 - MAGIC AND POPULAR RELIGION
Short Title: MAGIC & POPULAR RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine the popular religion in the Middle East from Late Antiquity until the 19th century, focusing on healing practices, astrology, protection, amulets, seasoned/life-cycle rituals, and other popular beliefs common to Islam, Judaism and Christianity. Cross-list: ASIA 441. Graduate/Undergraduate Equivalency: RELI 525. Mutually Exclusive: Credit cannot be earned for RELI 441 and RELI 525.
**RELI 442 - CLASSICAL AND CONTEMPORARY ARABIC TEXTS**

**Short Title:** ARABIC TEXTS  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Study and read classical Arabic texts with the goal of learning the material as well as the syntax and grammar of Arabic. Repeatable for Credit.

**RELI 443 - MAIMONIDES "GUIDE FOR THE PERPLEXED"**

**Short Title:** MAIMONIDES GUIDE PERPLEXED  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course will closely read the classic text of Judeo-Muslim thought, Maimonides Guide for the Perplexed, in its historical philosophical and literary context. It will draw upon additional Jewish and Muslim sources as well. Graduate/Undergraduate Equivalency: RELI 565. Mutually Exclusive: Credit cannot be earned for RELI 443 and RELI 565.

**RELI 444 - VISIONS AND VISIONARY PRACTICES: MEDIEVAL TO MODERN**

**Short Title:** VISIONS & VISIONARY PRACTICES  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course examines accounts of visions, comparing medieval and modern visionary techniques and processes and relating visionary writings to cultural and personal contexts. Includes some Christian theology along with other theoretical frameworks, but emphasis on praxis. Cross-list: MDEM 462. Graduate/Undergraduate Equivalency: RELI 543. Mutually Exclusive: Credit cannot be earned for RELI 444 and RELI 543.

**RELI 449 - EARLY CHRISTIAN CONTROVERSIES**

**Short Title:** EARLY CHRISTIAN CONTROVERSIES  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Seminar examines controversies and debates among the early Christians as catholic Christianity emerged from a diversity of Christian movements. Literature reviewed will vary. Students will select to focus on one controversy and write a research paper (undergraduates, 5000 words; graduate students, 7500 words). Oral discussion and presentations will be required. Graduate/Undergraduate Equivalency: RELI 549. Mutually Exclusive: Credit cannot be earned for RELI 449 and RELI 549. Repeatable for Credit.

**RELI 456 - HISTORY OF WESTERN CHRISTIANITY: REFORMATION TO THE PRESENT**

**Short Title:** REFORMATION TO THE PRESENT  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A history of the development of the modern category of "mysticism" from the seventeenth century to today, with side studies of cognate terms like "spirituality," "metaphysical religion," and the "paranormal," as these forms of extreme religious experience are by social-scientific and humanistic methods. RELI 558: Additional readings and writing. Graduate/Undergraduate Equivalency: RELI 558. Mutually Exclusive: Credit cannot be earned for RELI 456 and RELI 558.

**RELI 458 - MYSTICISM: THEORIES AND METHODS**

**Short Title:** MYSTICISM  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A history of the development of the modern category of "mysticism" from the seventeenth century to today, with side studies of cognate terms like "spirituality," "metaphysical religion," and the "paranormal," as these forms of extreme religious experience are by social-scientific and humanistic methods. RELI 558: Additional readings and writing. Graduate/Undergraduate Equivalency: RELI 558. Mutually Exclusive: Credit cannot be earned for RELI 456 and RELI 558.

**RELI 462 - ENGLISH SPIRITUALITY AFTER HENRY VIII: PROTESTANT, CATHOLIC, OR ANGLICAN?**

**Short Title:** ENGLISH SPIRITUALITY  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Reformations aftermath explored through key topics, texts in spiritual practice, e.g.: ecclesiastical discipline; secularization; stylized and free-form intersections of English time with Christian eternity; King James Bible; Book of Common Prayer; "saintly revolution;" Thomas Cranmer; William Laud; William Shakespeare; Lancelot Andrews; John Donne; J.H. Newman; hymnody; C.S. Lewis; T.S. Eliot. Cross-list: MDEM 462. Graduate/Undergraduate Equivalency: RELI 543. Mutually Exclusive: Credit cannot be earned for RELI 462 and RELI 543.

**RELI 470 - BUDDHIST WISDOM TEXTS**

**Short Title:** BUDDHIST WISDOM TEXTS  
**Department:** Religion  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Indo-Tibetan analyses of the mind and its functions, especially differing views on the role of reasoning and the nature of the "ultimate" in major philosophical schools of Tibet and India. Graduate/Undergraduate Equivalency: RELI 570. Mutually Exclusive: Credit cannot be earned for RELI 470 and RELI 570. Repeatable for Credit.
RELI 472 - KABBALAH SEMINAR
Short Title: KABBALAH SEMINAR
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar will delve into literature known as "kabbalah." through close readings of first-hand accounts of thinkers and mystics known as "kabbalists," will explore themes like secrecy and mystery, the nature of the divine, and religious ecstasy. Graduate/Undergraduate Equivalency: RELI 582. Mutually Exclusive: Credit cannot be earned for RELI 472 and RELI 582.

RELI 476 - FROM DECOLONIZATION TO GLOBALIZATION
Short Title: FROM DECOLONI TO GLOBALIZATION
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An historical survey of the History of Religions School that has emerged in the 1960s and 70s at the University of Chicago and came to play such an important role in the comparative study of religion. Graduate/Undergraduate Equivalency: RELI 582. Mutually Exclusive: Credit cannot be earned for RELI 472 and RELI 582.

RELI 481 - GNOSTICISM SEMINAR
Short Title: GNOSTICISM SEMINAR
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In depth examination of one (or more) Gnostic texts within its literary, social, historical, and religious landscapes. Graduate/Undergraduate Equivalency: RELI 581. Mutually Exclusive: Credit cannot be earned for RELI 481 and RELI 581.

RELI 488 - THE HISTORY OF RELIGIONS SCHOOLS
Short Title: HISTORY OF RELIGIONS
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An historical survey of the History of Religions School that emerged in the 1960s and 70s at the University of Chicago and came to play such an important role in the comparative study of religion. Graduate/Undergraduate Equivalency: RELI 588. Mutually Exclusive: Credit cannot be earned for RELI 481 and RELI 581.

RELI 490 - AFRICAN AMERICAN LITERATURE AND RELIGION
Short Title: AF/AM LITERATURE & RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Taught in English. Novels, and films, from North and West Africa, and the immigrant population in France, from 1960 to 2010. Emphasis on the tensions between narratives of political emancipation, modernity, secularism, and religious fundamentalism and mysticism. Extra reading for graduate students in theories of colonialism, postcolonialism, globalization. Cross-list: FREN 324, POLI 324. Graduate/Undergraduate Equivalency: RELI 604. Recommended Prerequisite(s): Any 200 level course or above in English or French, or HUMA 101 or HUMA 102, or a FWIS course. Mutually Exclusive: Credit cannot be earned for RELI 476 and RELI 604.

RELI 497 - SENIOR FORUM
Short Title: SENIOR FORUM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Forum for seniors to consult, draft, and critique senior papers and projects. Senior should register each semester in their senior year. Repeatable for Credit.

RELI 499 - INTERNSHIP IN RELIGION
Short Title: INTERNSHIP IN RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Student collaborates with a faculty member in the department and a pre-approved local institution, completing original research to be presented in a public setting at the end of the internship and/or working on an outreach initiative. Projects must focus on applying the study of religion to areas of public life and interest. Department Permission Required. Repeatable for Credit.

RELI 500 - RELIGIONS FROM INDIA
Short Title: RELIGIONS FROM INDIA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate/Undergraduate Equivalency: RELI 232. Mutually Exclusive: Credit cannot be earned for RELI 500 and RELI 232.
RELI 502 - TIBETAN LANGUAGE, LITERATURE AND CULTURE I  
Short Title: TIBETAN LANG LIT & CULTURE I  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Introducing the Tibetan alphabet and basics of grammar and Tibetan literary genres. Topics vary; Buddhist literature and art, personal narrative, core cultural characteristics. Readings in English and Tibetan. RELI 531: write a paper approximately one-third longer than the undergraduate equivalent (RELI 233) and complete a more substantial presentation. Graduate/Undergraduate Equivalency: RELI 233. Mutually Exclusive: Credit cannot be earned for RELI 502 and RELI 233.  

RELI 503 - LOSING YOUR RELIGION IN FILM & FICTION & MUSIC  
Short Title: LOSING YOUR RELIGION IN FILM  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Doubt, sex, despair, obsession, ecstasy in directors, writers, musicians wanting spiritual reboot, 1890-2015: such as Allen Ginsberg, Oscar Wilde, D.H. Lawrence, T.S. Eliot, H.P. Lovecraft, John Updike, and Ingmar Bergman. Graduate/Undergraduate Equivalency. RELI 395. Mutually Exclusive: Credit cannot be earned for RELI 503 and RELI 395.  

RELI 504 - RELIGIONS IN AMERICA  
Short Title: RELIGIONS IN AMERICA  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Examines the religions and religious practices of America from colonial encounter with native peoples to the contemporary period with a special focus on the morphing natures and historical complexities of American Christianities, religious pluralism and secularism. Graduate students will be required to read a standard and well-known two-volume, 1,200-page collection of primary historical sources. They will also write a research paper (25-30 pages) that is approximately twice as long as the undergraduate paper. Graduate/Undergraduate Equivalency. RELI 300. Mutually Exclusive: Credit cannot be earned for RELI 504 and RELI 300.  

RELI 505 - AMERICAN METAPHYSICAL RELIGION  
Short Title: AMERICAN METAPHYSICAL RELIGION  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Beginning with a historical survey of the American metaphysical tradition, this course turns to a close study of the Esalen Institute in Big Sur, CA, as a unique window to some of the different ways tradition has appropriated Asian religions, psychological models of the unconscious, and contemporary scientific paradigms. Graduate/Undergraduate Equivalency. RELI 231. Mutually Exclusive: Credit cannot be earned for RELI 505 and RELI 231.  

RELI 506 - CHRISTIANITY AND LATE ANTIQUITY  
Short Title: CHRISTIANITY & LATE ANTIQUITY  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This advanced seminar treats the formation of Christianity as an institutional power in relation to the Roman Empire. Starting with the Edict of Milan in 313 CE, which put an end to persecution of Christians, and closing with the Council of Chalcedon in 451 CE, which established normative Christian doctrine, we will move through this development in seven roughly chronological units. Graduate/Undergraduate Equivalency. RELI 406. Mutually Exclusive: Credit cannot be earned for RELI 506 and RELI 406.  

RELI 507 - INTRODUCTION TO BIBLICAL HEBREW I  
Short Title: INTRO TO BIBLICAL HEBREW I  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: An introduction to Biblical Hebrew with emphasis on grammar and vocabulary. Write an exegetical paper on a Hebrew text of your choice. Instructor Permission Required. Graduate/Undergraduate Equivalency. RELI 125. Mutually Exclusive: Credit cannot be earned for RELI 507 and RELI 125.  

RELI 508 - ANGELS, POWERS, AND MONSTERS  
Short Title: ANGELS, POWERS, & MONSTERS  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: "Every time a bell rings an angel gets its wings." Course examines the natures, roles, physical appearances, and functions ascribed to the intermediate beings (angels, powers, and monsters) in western thought from the Ancient Near East to the modern Period, in both academic and popular opinion. Additional readings, research, and additional paper required in RELI 508. Graduate/Undergraduate Equivalency. RELI 326. Mutually Exclusive: Credit cannot be earned for RELI 508 and RELI 326.  

RELI 509 - LOST JUDAISMS: THE APOCRYPHAL WRITINGS  
Short Title: LOST JUDAISMS  
Department: Religion  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: After the Hebrew Bible/Old Testament canon was closed, Jews and Christians continued to compose texts and attributed them to biblical figures of the past. Seminar offers a close reading of some of these apocryphal/pseudepigraphic little known texts. Students in RELI 509 will additionally conduct a research project. Graduate/Undergraduate Equivalency. RELI 382. Mutually Exclusive: Credit cannot be earned for RELI 509 and RELI 382.
RELI 510 - APOCALYPSE THEN AND NOW
Short Title: APOCALYPSE THEN AND NOW
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A close reading of some early Jewish apocalypses and a discussion of the apocalyptic worldview. Texts include the Book of Daniel, 1 Enoch, the Dead Sea Scrolls, and the Book of Revelation. Graduate/Undergraduate Equivalency: RELI 339. Mutually Exclusive: Credit cannot be earned for RELI 510 and RELI 339.

RELI 511 - INTRODUCTION TO BIBLICAL HEBREW II
Short Title: INTRO TO BIBLICAL HEBREW II
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of RELI 507. We will finish the grammar in the second half of this semester and then read selections from the Hebrew bible. Write an exegetical paper on a Hebrew text of your choice. Graduate/Undergraduate Equivalency: RELI 126. Mutually Exclusive: Credit cannot be earned for RELI 511 and RELI 126.

RELI 512 - INTERMEDIATE BIBLICAL HEBREW III
Short Title: INTERM BIBLICAL HEBREW III
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): RELI 125 and RELI 126
Description: Readings in the Hebrew Bible as well as some unvocalized texts from the Dead Sea Scrolls. Review of grammar and vocabulary. Write an exegetical paper on a Hebrew text. UG/GR Equivalent: RELI 127. Instructor Permission Required. Graduate/Undergraduate Equivalency: RELI 127. Mutually Exclusive: Credit cannot be earned for RELI 512 and RELI 127.

RELI 513 - INTRODUCTION TO SYRIAC
Short Title: INTRODUCTION TO SYRIAC
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to Syriac Grammar and vocabulary. Graduate students are expected to write an exegetical paper on a Syriac text of their choice. Graduate/Undergraduate Equivalency: RELI 313. Mutually Exclusive: Credit cannot be earned for RELI 513 and RELI 313.

RELI 514 - RELIGION IN FICTION AND FILM
Short Title: RELIGION IN FICTION AND FILM
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The sacred in interreligious, international, and interdisciplinary encounter, approached via social sciences, theology, theories of literature and mythology. Authors and directors can include Waugh, Mishima, Mann, Proust, Hesse, Percy, Gardner, Updike, Gibson, Sterling, Coupland, Ray, Resnais, Fellini, Bergman, Anderson, Bunnel, and Nutley. Term paper twice as long as undergraduate requirement. Graduate/Undergraduate Equivalency: RELI 294. Mutually Exclusive: Credit cannot be earned for RELI 514 and RELI 294.

RELI 515 - NIETZSCHE AND RELIGIOUS THOUGHT
Short Title: NIETZSCHE & RELIGIOUS THOUGHT
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of RELI 515 and RELI 128.
Course Level: Graduate
Prerequisite(s): RELI 128. Mutually Exclusive: Credit cannot be earned for RELI 515 and RELI 301.

RELI 516 - INTERMEDIATE BIBLICAL HEBREW IV
Short Title: INTERM BIBLICAL HEBREW IV
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of RELI 512 (RELI 512 is not a prerequisite). Write an exegetical paper on a Hebrew text. Graduate/Undergraduate Equivalency: RELI 128. Mutually Exclusive: Credit cannot be earned for RELI 516 and RELI 128.

RELI 520 - HISTORY OF WESTERN CHRISTIANITY: REFORMATION TO THE PRESENT
Short Title: REFORMATION TO THE PRESENT
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of RELI 520 (RELI 520 is not a prerequisite).

RELI 521 - ADVANCED STUDY OF ISLAM
Short Title: ADVANCED STUDY OF ISLAM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The purpose of this course will be to give graduate students a working knowledge of Islam historically and religiously.
RELI 522 - ISLAM’S MYSTICAL AND ESOTERIC TRADITION
Short Title: ISLAM’S MYSTICAL TRADITION
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Description: Graduate/Undergraduate Equivalency: RELI 440. Mutually Exclusive: Credit cannot be earned for RELI 522 and RELI 440.

RELI 523 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Religion
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Multiple sections of this course are offered. Repeatable for Credit.

RELI 524 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Religion
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-9
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Multiple sections of this course are offered. Repeatable for Credit.

RELI 525 - MAGIC AND POPULAR RELIGION
Short Title: MAGIC & POPULAR RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will examine the popular religion in the Middle East from Late Antiquity until the 19th century, focusing on healing practices, astrology, protection, amulets, seasoned/life-cycle rituals, and other popular beliefs common to Islam, Judaism and Christianity. Graduate/Undergraduate Equivalency: RELI 441. Mutually Exclusive: Credit cannot be earned for RELI 525 and RELI 441.

RELI 526 - PEOPLE OF THE BOOK: JUDAISM AND SCRIPTURE
Short Title: PEOPLE OF THE BOOK
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examines Judaism as a "People of the Book," recognizing Judaism’s dominant religious preoccupation for millennia to be the reading, study and performance of Jewish scripture, particularly the Torah or the first 5 books of the Hebrew Bible Topics: book culture, act of reading, canonization, revelation, and rabbinic, philosophical, mystical interpretations. All readings are in English. Graduate/Undergraduate Equivalency: RELI 302. Mutually Exclusive: Credit cannot be earned for RELI 526 and RELI 302.

RELI 527 - HISTORY AND METHODS: 19TH CENTURY
Short Title: HISTORY AND METHODS: 19TH CENT
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focused discussion of the history and methods of the study of religion via close readings of classical texts and narratives of the field from 1800-1900. Graduate course will require reading of more books and a longer paper to write. Graduate/Undergraduate Equivalency: RELI 427. Mutually Exclusive: Credit cannot be earned for RELI 527 and RELI 427.

RELI 528 - RELIGION AND GLOBAL POVERTY
Short Title: RELIGION & GLOBAL POVERTY
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Advanced study of religion and poverty in global context. Course materials will address religious, ethical anthropological theories of development, analyze specific themes economic and social development, examine the role of Faith Based Organizations and do specific case studies. Students will be graded on short reflections papers and a final term paper. Graduate students taking the course will be assigned 4 additional texts, do a major review of one of the texts, and do two class presentations on one of the texts. Graduate/Undergraduate Equivalency: RELI 328. Mutually Exclusive: Credit cannot be earned for RELI 528 and RELI 328.

RELI 530 - PEDAGOGY PRACTICUM
Short Title: PEDAGOGY PRACTICUM
Department: Religion
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: As an integral part of the department's apprenticeship program, this is a semester-long practicum through which a graduate student apprentices with a faculty member teaching an undergraduate course in order to be trained in all aspects of course design, lecturing, advising, and grading. Required of all graduate students. Repeatable for Credit.
RELI 531 - RELIGION AND COGNITIVE SCIENCE
Short Title: RELIGION AND COGNITIVE SCIENCE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Interdisciplinary approach founded on biological, cross-cultural, evolutionary, neurological and cognitive studies of religion. Explores extreme religious experiences, ritualized behaviors, shamanism and religious therapy, religious community, universality of religion, and transmission of religious ideas and practices. GR: seminar leadership, 7500 word research paper. Graduate/Undergraduate Equivalency: RELI 431. Mutually Exclusive: Credit cannot be earned for RELI 531 and RELI 431.

RELI 532 - ADVANCED TIBETAN LANGUAGE AND CULTURE
Short Title: ADV TIBETAN LANGUAGE & CULTURE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): RELI 131
Description: This class builds on RELI 500 and 564, now including more challenging material in Tibetan, and continuing the trajectory of gaining familiarity with Buddhist philosophical systems as these touch on epistemology, ontology, and contemplative practice. Graduate/Undergraduate Equivalency: RELI 332. Recommended Prerequisite(s): Basic reading ability in Tibetan. Mutually Exclusive: Credit cannot be earned for RELI 532 and RELI 132/RELI 332. Repeatable for Credit.

RELI 534 - RELIGION AND POLITICS IN AFRICA
Short Title: RELIGION & POLITICS IN AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course explores interdisciplinary perspectives on religion and politics in Africa focusing on indigenous religious, Christianity, and Islam. Readings will reflect theoretical perspectives, historical developments, regional angels, and contemporary issues such as sharia, gender, and reconciliation as political options. RELI 534 requires additional reading, review a book on the subject, and write a 25 page research paper. Graduate/Undergraduate Equivalency: RELI 424. Mutually Exclusive: Credit cannot be earned for RELI 534 and RELI 424.

RELI 536 - CHRISTIANITY AND ISLAM IN AFRICA
Short Title: CHRISTIANITY & ISLAM IN AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will focus upon the history and conflict of Christianity and Islam in Africa, with emphasis placed upon indigenous African developments, cultural and artistic themes, and conversion narratives as well as exploring the co-existence and conflict of the two major faiths of the continent. RELI 536: Write longer (20-25 page) paper, teach/lead class discussions and read additional literature. Graduate/Undergraduate Equivalency: RELI 348. Mutually Exclusive: Credit cannot be earned for RELI 536 and RELI 348.

RELI 537 - AFRICAN MYTHS AND RITUALS
Short Title: AFRICAN MYTHS AND RITUALS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: . Graduate/Undergraduate Equivalency: RELI 423. Mutually Exclusive: Credit cannot be earned for RELI 537 and RELI 423.

RELI 539 - THEOLOGY IN AFRICA
Short Title: THEOLOGY IN AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introductory readings on theological thinking in Africa. Course will address methodological issues as well as constructive theological work on enculturation, social and economic justice, gender, health, and liberation. RELI 539: read 5 major texts, write a major review, lead class discussions, discuss texts used. and write 20 page research paper. Graduate/Undergraduate Equivalency: RELI 340. Mutually Exclusive: Credit cannot be earned for RELI 539 and RELI 340.

RELI 540 - THE CHURCH OF AFRICA
Short Title: THE CHURCH OF AFRICA
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: . Graduate/Undergraduate Equivalency: RELI 338. Mutually Exclusive: Credit cannot be earned for RELI 540 and RELI 338.
REL 541 - CREATING MAGIC: KEY WRITINGS ON MAGIC AND RELIGION
Short Title: CREATING MAGIC
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focusing on social theories of magic from Durkheim to Tambiah, this course will also investigate how the idea of magic is already embedded against religion in theological writings. Graduate work includes extra reading, additional seminars, and a more extended final project. Graduate/Undergraduate Equivalency: RELI 541 and RELI 317. Mutually Exclusive: Credit cannot be earned for RELI 541 and RELI 317.

REL 543 - ENGLISH SPIRITUALITY AFTER HENRY VIII: PROTESTANT, CATHOLIC, OR ANGLICAN?
Short Title: ENGLISH SPIRITUALITY
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Reformation's aftermath explored through key topics, texts in spiritual practice, e.g.: ecclesiastical discipline; secularization; stylized and free-form intersections of English time with Christian eternity; King James Bible; Book of Common Prayer; "sainthood revolution;" Thomas Cranmer; William Laud; William Shakespeare; Lancelot Andrewes; John Donne; J.H. Newman; hymnody; C.S. Lewis; T.S. Eliot. RELI 543: additional presentations required. Graduate/Undergraduate Equivalency: RELI 462. Mutually Exclusive: Credit cannot be earned for RELI 543 and RELI 462.

REL 547 - WHAT'S RELIGIOUS ABOUT BLACK RELIGION?
Short Title: IS BLACK RELIGION RELIGIOUS?
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines two questions: How is religion defined within the study of lack religion? What constitutes the nature and meaning of blackness within black religion? These questions provide opportunity to explore how scholars explain what it has meant to be black and religious within the United States. Additional requirements for RELI 547: Write 5 reflection papers; lead at least two class discussions; complete a 30-page research paper; and complete additional readings. Graduate/Undergraduate Equivalency: RELI 357. Mutually Exclusive: Credit cannot be earned for RELI 547 and RELI 357.
RELI 555 - HISTORICAL ANTHROPOLOGIES OF RELIGION
Short Title: HISTORICAL ANTHROPOLOGIES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will address the study of the religious past through conjunctions of anthropology and history. Readings will include books and selections by Max Weber, Marshall Sahlins, Victor Turner, Jacques Le Goff, Aron Gurevich, and others. Cross-list: ANTH 550.

RELI 558 - MYSTICISM: THEORIES AND METHODS
Short Title: MYSTICISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A history of the development of the modern category of "mysticism" from the seventeenth century to today, with side studies of cognate terms like "spirituality," "metaphysical religion," and the "paranormal," as these forms of extreme religious experience are by social-scientific and humanistic methods. RELI 558: Additional readings and writing. Graduate/Undergraduate Equivalency: RELI 458. Mutually Exclusive: Credit cannot be earned for RELI 558 and RELI 458.

RELI 559 - HISTORY AND METHODS: TWENTIETH CENTURY
Short Title: HISTORY AND METHODS: 20TH CENT
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focused discussion of the history and methods of the study of religion via close readings of classical texts and narratives of the field from 1900-present. Graduate course will require reading of more books and a longer paper to write. Graduate/Undergraduate Equivalency: RELI 428. Mutually Exclusive: Credit cannot be earned for RELI 559 and RELI 428.

RELI 560 - ADVANCED READINGS IN TIBETAN TEXTS
Short Title: READING TIBETAN TEXTS
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is to accommodate Grad students' requests to read more widely in Tibetan texts and genres. Our focus is reading and disciplined discussion of the texts. Repeatable for Credit.

RELI 561 - CHRISTIANITY IN THE GLOBAL SOUTH
Short Title: CHRISTIANITY IN GLOBAL SOUTH
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Readings on Christianity in the Global South analyzing historical developments, mission and colonial encounters, growth and expansion; diversity of expression, the development of local initiated Churches, Pentecostalism, and public role of the Church. Graduate students will lead class on a church in a country of their choice. Each graduate student will prepare and lead a seminar on one aspect of the region or country. Each graduate student will also present in class an in-depth study of a selected theme. Graduate students will read additional books selected from a list of texts discussed with instructor. They will also write a 25 page research paper on any topic in Global Christianity. Graduate/Undergraduate Equivalency: RELI 371. Mutually Exclusive: Credit cannot be earned for RELI 561 and RELI 371.

RELI 564 - TIBETAN LANGUAGE, LITERATURE AND CULTURE II
Short Title: TIBETAN LANG LIT & CULTURE II
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continued training in Tibetan language-extending vocabulary and facility with grammar. Final includes a paper drawn from readings and class discussion. RELI 564: Write a paper approximately one-third longer and complete a more substantial oral presentation. Graduate/Undergraduate Equivalency: RELI 234. Mutually Exclusive: Credit cannot be earned for RELI 564 and RELI 234. Repeatable for Credit.

RELI 565 - MAIMONIDES "GUIDE FOR THE PERPLEXED"
Short Title: MAIMONIDES GUIDE PERPLEXED
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will closely read the classic text of Judeo-Muslim thought, Maimonides Guide for the Perplexed, in its historical philosophical and literary context. It will draw upon additional Jewish and Muslim sources as well. Graduate/Undergraduate Equivalency: RELI 443. Mutually Exclusive: Credit cannot be earned for RELI 565 and RELI 443.
RELI 566 - PAIN, ECSTASY AND EMBODIMENT IN RELIGIOUS EXPERIENCE
Short Title: PAIN, ECSTASY AND EMBODIMENT
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: From exorcism to other worldly visions, we experience religion as embodied human beings. This course explores embodied religion by focusing on connections between pain and transcendence, looking at medieval Christianity as well as contemporary and cross-cultural examples. Graduate students will do additional presentation, extra reading, and longer final essay. Graduate/Undergraduate Equivalency: RELI 305. Mutually Exclusive: Credit cannot be earned for RELI 566 and RELI 305.

RELI 568 - RISE OF THE NONES: HUMANISMS AND HUMANITIES
Short Title: RISE OF THE NONES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will look at the rise of the “nones,” that is, individuals who affiliate with no religious tradition, through both a history of secular thought in the West and a close reading of key texts and figures. Atheism, humanism, secularism and the “spiritual but not religious” will all be treated as key categories. RELI 568 will require additional readings, 3 additional papers plus a longer research paper, leading discussions and teaching. Graduate/Undergraduate Equivalency: RELI 368. Mutually Exclusive: Credit cannot be earned for RELI 568 and RELI 368. Repeatable for Credit.

RELI 569 - FOUCAULT & THE HERMENEUTICS OF SELF
Short Title: FOUCAULT & THE SELF
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Best known for analyzing domination and power, Michel Foucault shifts his attention to ethics and “technologies of the self” in 1976. In this advanced seminar, we study and critique Foucault’s turn to western antiquity through his lectures and volumes of foregrounding resistance to power through religion, politics and ethics. Graduate/Undergraduate Equivalency: RELI 421. Mutually Exclusive: Credit cannot be earned for RELI 569 and RELI 421.

RELI 570 - BUDDHIST WISDOM TEXTS
Short Title: BUDDHIST WISDOM TEXTS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Indo-Tibetan analyses of the mind and its functions, especially differing views on the role of reasoning and the nature of the “ultimate” in major philosophical schools of Tibet and India. RELI 570: More difficult readings and two longer papers required. Graduate/Undergraduate Equivalency: RELI 470. Mutually Exclusive: Credit cannot be earned for RELI 570 and RELI 470. Repeatable for Credit.

RELI 572 - INTRODUCTION TO BUDDHISM: ARTS FOR LIFE
Short Title: INTRODUCTION TO BUDDHISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Buddhist ideas, art, and meditation. Exploration of the Buddhism in India, China, and Japan and their impact in the USA today. Readings include Buddhists classics and contemporary responses from mediators and scientists. Additional readings, more writing. Graduate/Undergraduate Equivalency: RELI 322. Mutually Exclusive: Credit cannot be earned for RELI 572 and RELI 322.

RELI 573 - KNOWING BODY/GLOWING MIND: BUDDHIST ARTS OF CONTEMPLATION AND ANALYSIS
Short Title: KNOWING BODY/GLOWING MIND
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Buddhism is a performing art engaging both mind and body. Our course investigates Buddhist and other literature, epistemology and rituals with an eye to how they speak to contemplative practice. Contemplative practice itself, in class and out, supplements our exploration of the interplay between traditional Asian and contemporary Western perspectives. Graduate/Undergraduate Equivalency: RELI 333. Recommended prerequisite(s): One course in Buddhism. Mutually Exclusive: Credit cannot be earned for RELI 573 and RELI 333. Repeatable for Credit.

RELI 577 - THE KNOWING BODY: BUDDHISM, GENDER, AND THE SOCIAL WORLD
Short Title: BUDDHISM, GENDER, & SOCIETY
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mutually Exclusive: Credit cannot be earned for RELI 577 and RELI 332.
RELI 578 - MIND AND ART, FILM AND LITERATURE IN BUDDHISM
Short Title: BUDDHIST ART AND LITERATURE
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: What is mind? What is self? What can a human being become? Drawing on a wealth of Buddhist-related art, film, and literature, this course introduces you to Tibetan and other Buddhist approaches to these crucial questions. RELI 578 requires additional readings and research papers. Graduate/Undergraduate Equivalency: RELI 378. Mutually Exclusive: Credit cannot be earned for RELI 578 and RELI 378.

RELI 580 - RELIGIOUS TOLERANCE IN THE CRUCIBLE OF GLOBALIZATION
Short Title: RELIGIOUS TOLERANCE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Explores context and consequences of the concept of religious tolerance in the crucible of globalization politics. Background in settlement of Reformation-era religious wars; American attitudes; impetus for tolerance policies and their implementation, 1945 to present (including governmentality and surveillance); results for historically Christian populations, esp. in US and Europe. Graduate/Undergraduate Equivalency: RELI 359. Mutually Exclusive: Credit cannot be earned for RELI 580 and RELI 359.

RELI 581 - GNOSTICISM SEMINAR
Short Title: GNOSTICISM SEMINAR
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In depth examination of one (or more) Gnostic texts within its literary, social, historical, and religious landscapes. RELI 581 requires preparation and delivery of public presentations. Graduate/Undergraduate Equivalency: RELI 481. Mutually Exclusive: Credit cannot be earned for RELI 581 and RELI 481.

RELI 582 - KABBALAH SEMINAR
Short Title: KABBALAH SEMINAR
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This seminar will delve into literature known as “kabbalah,” through close readings of first-hand accounts of thinkers and mystics known as “kabbalists,” will explore themes like secrecy and mystery, the nature of the divine, and religious ecstasy. RELI 562 requirements: Additionally write a lengthy research paper and lead a session. Graduate/Undergraduate Equivalency: RELI 472. Mutually Exclusive: Credit cannot be earned for RELI 582 and RELI 472.

RELI 584 - RELIGION, PSYCHOLOGY, AND CULTURE
Short Title: RELIGION, PSYCHOLOGY & CULTURE
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: . Graduate/Undergraduate Equivalency: RELI 430. Mutually Exclusive: Credit cannot be earned for RELI 584 and RELI 430.

RELI 585 - GOD, TIME AND HISTORY
Short Title: GOD, TIME AND HISTORY
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: . Graduate/Undergraduate Equivalency: RELI 385. Mutually Exclusive: Credit cannot be earned for RELI 585 and RELI 385.

RELI 587 - WESTERN ESOTERICISM: METHOD AND THEORY
Short Title: WESTERN ESOTERICISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores the relation between esoteric texts and the idea of "Western Esotericism." We will look at primary writings from Agrippa to Madame Blavatsky and consider the historical and methodological approaches emerging as Esotericism is constructed as an academic area. Extra readings and writing a longer essay is required in RELI 587. Graduate/Undergraduate Equivalency: RELI 387. Mutually Exclusive: Credit cannot be earned for RELI 587 and RELI 387.

RELI 588 - THE HISTORY OF RELIGIONS SCHOOL
Short Title: HISTORY OF RELIGIONS
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An historical survey of the History of Religions School that emerged in the 1960s and 70s at the University of Chicago and came to play such an important role in the comparative study of religion. Graduate Students will have twice the reading and will require a longer paper. Graduate/Undergraduate Equivalency: RELI 488. Mutually Exclusive: Credit cannot be earned for RELI 588 and RELI 488.
RELI 589 - MUTANTS AND MYSTICS: THE PARANORMAL AND POPULAR CULTURE
Short Title: MUTANTS AND MYSTICS
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Traces the "paranormal" from its elite origins around Cambridge and Harvard to its later pop-cultural expressions in pulp and science fiction, superhero comics, and film. Particular attention will be given to the role that the anomalous experiences of authors, artists, and scientists have played in this still emerging Super Story. RELI 589 requires: Double the reading and a 30-page paper. Graduate/Undergraduate Equivalency: RELI 393. Mutually Exclusive: Credit cannot be earned for RELI 589 and RELI 393.

RELI 590 - AFRICAN AMERICAN LITERATURE AND RELIGION
Short Title: AF/AM LITERATURE & RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this seminar students will read and analyze African American literature in order to explore the various ways in which African Americans have understood and articulated the nature and meaning of African American religious experience and practice. Graduate/Undergraduate Equivalency: RELI 490. Mutually Exclusive: Credit cannot be earned for RELI 590 and RELI 490.

RELI 591 - BASIC COPTIC 1
Short Title: BASIC COPTIC 1
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A first semester introduction to Coptic grammar and vocabulary. Select a Coptic text, read in its original language, and prepare a commentary or an exegesis on that text (5,000 words). Graduate/Undergraduate Equivalency: RELI 307. Mutually Exclusive: Credit cannot be earned for RELI 591 and RELI 307.

RELI 592 - BASIC COPTIC 2
Short Title: BASIC COPTIC 2
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): RELI 307
Description: Second semester introduction to Coptic grammar and vocabulary, with selected readings from the Coptic New Testament, nag Hammadi, and monastic literature. Pre-requisite: Introduction to Coptic Language I RELI 592: Select a Coptic text, read in its original language, and prepare a commentary or an exegesis on that text (5,000 words). Graduate/Undergraduate Equivalency: RELI 308. Mutually Exclusive: Credit cannot be earned for RELI 592 and RELI 308.

RELI 593 - BASIC COPTIC 3
Short Title: BASIC COPTIC 3
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Varied readings in original language to include the New Testament, Nag Hammadi, and monastic literature. Pre-requisite: Coptic 1 and 2. RELI 593: Students will select a Coptic text, and in addition to reading it in its original language, prepare a commentary or an exegesis on that text (5,000 words). Graduate/Undergraduate Equivalency: RELI 393. Mutually Exclusive: Credit cannot be earned for RELI 593 and RELI 393. Repeatable for Credit.

RELI 595 - PENTECOSTALISM
Short Title: PENTECOSTALISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate study and analysis of introduction to Pentecostalism in a global context focusing historical developments, expansion in Europe, North America, Africa, Latin America and Asia. Graduate students will read 4 additional texts one from East, Central, West, and Southern Africa. Graduate students will write weekly reflections on the reading to the braded satisfactory or unsatisfactory. They will do two presentations during the semester. Each student will write a research paper that will be at least 25 double spaced pages. Graduate/Undergraduate Equivalency: RELI 396. Mutually Exclusive: Credit cannot be earned for RELI 595 and RELI 396.

RELI 596 - THE LEGAL FRAMEWORK OF RELIGIOUS TOLERANCE
Short Title: LEGAL FRMWK RELI TOLERANCE
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The American Constitution embodies a complex experiment in religious tolerance, including the promise of "free exercise of religion" and the prohibition of laws "respecting an establishment of religion". In this class we will primarily seek a critical understanding of our tolerance-rich legal invocations of religious freedom and address fundamental issues such as how can we distinguish "religious" actions and commitments from other morally important beliefs and activities. RELI 596: Write additional paper and more readings. Graduate/Undergraduate Equivalency: RELI 320. Mutually Exclusive: Credit cannot be earned for RELI 596 and RELI 320.
RELI 597 - CONTEMPLATIVE PRACTICUM
Short Title: CONTEMPLATIVE PRACTICUM
Department: Religion
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Literary and artistic creativity, religious experience, and textual interpretation often draw on focused states of consciousness made possible by contemplative practices. The practicum will provide historical information about such practices and offer opportunities to participate in techniques ranging from meditation and observing breath to freeform writing and T'ai Chi. Graduate students would be expected to write a longer paper and/or to include a segment on contemplative practice in connection with whatever course they are taking. In either case this will involve readings and issues beyond what the undergraduates are responsible for, and which will be developed with each graduate student on an individual basis. Graduate/Undergraduate Equivalency: RELI 399. Mutually Exclusive: Credit cannot be earned for RELI 597 and RELI 399. Repeatable for Credit.

RELI 600 - GEM RESEARCH FORUM
Short Title: GEM RESEARCH FORUM
Department: Religion
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The GEM Research Forum meets regularly throughout the academic year to share and engage the ongoing research of the GEM faculty and students. The annual capstone experience of the Forum features an invited speaker. Evaluation is based on student participation, research and presentations.

RELI 602 - THE SACRED ARTS OF SECULAR MODERNISM
Short Title: SACRED ARTS SECULAR MODERNISM
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines various representations of spirituality and the sacred in modernist and post modernist aesthetics, and their corresponding expressions in historical and contemporary museum practices. Special emphasis will be placed on the outstanding collections of the adjacent museum district, the Menil Collection, and the Museum of Fine Arts, Houston. RELI 602 will be expected to complete a larger-scale final project in consultation with the instructor. The final project will engage a broadened scope of critical methodologies which, in turn, reflect the ways in which both texts and artworks serve as primary objects of study. Graduate/Undergraduate Equivalency: RELI 394. Mutually Exclusive: Credit cannot be earned for RELI 602 and RELI 394.

RELI 606 - READING WRIGHT: THEISM AND ATHEISM IN THE WRITINGS OF RICHARD WRIGHT
Short Title: READING RICHARD WRIGHT
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Richard Wright’s fiction and nonfiction are important resources for understanding the nature of radicalized life in the United States. This course explores his writings for what they tell us about the role of religion in the development of identity and life meaning, and we will juxtapose the role of religion with Wright’s commentary on the nature and significance of atheism for countering injustice. RELI 606 requires additional reflection papers, longer research paper and class presentations. Graduate/Undergraduate Equivalency: RELI 369. Mutually Exclusive: Credit cannot be earned for RELI 606 and RELI 369.

RELI 608 - PILGRIMAGE AND CRUSADE
Short Title: PILGRIMAGE AND CRUSADE
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Focus on the pilgrimage to Jerusalem and Mecca by Jews, Christians, and Muslims within the context of the crusade period. Also covers the historical religious events of the crusades (approximately 1000-1300) from both a Muslim and a Christian perspective. RELI 608 requires additional readings, lengthy paper, and oral presentations. Graduate/Undergraduate Equivalency: RELI 384. Mutually Exclusive: Credit cannot be earned for RELI 608 and RELI 384.

RELI 610 - RELIGION AND THE NATURAL SCIENCES
Short Title: RELIGION & NATURAL SCIENCES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This advanced seminar analyzes interdisciplinary efforts by scholars of religion to engage scientific research. We assess the possibilities for collaboration, as well as conflict, between humanistic and scientific disciplines, asking how the tools of interpretation and empiricism might enrich our understanding of religious phenomena. RELI 610 requires additional reading and longer research paper. Graduate/Undergraduate Equivalency: RELI 405. Mutually Exclusive: Credit cannot be earned for RELI 610 and RELI 405.

RELI 611 - READINGS IN MEDIEVAL LATIN
Short Title: READINGS IN MEDIEVAL LATIN
Department: Religion
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Guided readings in Latin from a range of medieval genres, including medicine, theology, visionary literature. Repeatable for Credit.
RELI 612 - THE PSALMS AND THEIR POETIC AFTERLIFE
Short Title: PSALMS AND POETRY
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A seminar on the biblical Psalms. This course will situate the Psalms in their ancient Near Eastern context, explore their original liturgical function in ancient Israel, and trace their afterlife in postbiblical poetry. All texts will be studied in translation. Counts for the Minor in Jewish Studies. RELI 612: Additional readings and longer paper. Graduate/Undergraduate Equivalency: RELI 388. Mutually Exclusive: Credit cannot be earned for RELI 612 and RELI 388.

RELI 614 - THE RICE/LEIPZIG SEMINAR ON EARLY JUDAISM AND CHRISTIAN ORIGINS
Short Title: THE RICE/LEIPZIG SEMINAR
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar on Early Judaism and Christian Origins taught jointly by Dr. Matthias Henze (Rice) and Dr. Jens Herzer (University of Leipzig, Germany). Participation is by invitation only. Instructor Permission Required.

RELI 615 - SECRET RELIGION
Short Title: SECRET RELIGION
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examines religious currents that operate in the margins of traditional religion: the gnostic, esoteric and mystical. Covers how these categories were theorized. Explores how they continue to identify contemporary religious currents that are considered transgressive and are rejected by conventional religious authorities. Class is grounded in antiquity and historical method. RELI 615: Write 7,500-10,000 word research paper. Graduate/Undergraduate Equivalency: RELI 415. Mutually Exclusive: Credit cannot be earned for RELI 615 and RELI 415.

RELI 616 - BEGINNINGS OF CHRISTIANITY
Short Title: BEGINNINGS OF CHRISTIANITY
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How did Christianity emerge as a new religious movement in the Roman Empire? Covers the history and literature of the first five generations of Christians (10 BCE - 190 CE), focusing on Post-Temple developments, issues of authority and leadership, rise of regional forms of Christianity, and formation of distinct Christian identities. Graduate requirements: additional writings and presentations. Graduate/Undergraduate Equivalency: RELI 416. Mutually Exclusive: Credit cannot be earned for RELI 616 and RELI 416.

RELI 644 - VISIONS AND VISIONARY PRACTICES: MEDIEVAL TO MODERN
Short Title: VISIONS & VISIONARY PRACTICES
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines accounts of visions, comparing medieval and modern visionary techniques and processes and relating visionary writings to cultural and personal contexts. Includes some Christian theology along with other theoretical frameworks, but emphasis on praxis. Graduate work includes 10 additional readings (~200 pp), double the pages to be written, 30 more minutes presentation time. Graduate/Undergraduate Equivalency: RELI 444. Mutually Exclusive: Credit cannot be earned for RELI 644 and RELI 444.

RUSS 141 - FIRST YEAR RUSSIAN I
Short Title: FIRST YEAR RUSSIAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Development of interactive competence in Russian (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Russian. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required.
Course URL: clicrussian.blogs.rice.edu
RUSS 142 - FIRST YEAR RUSSIAN II
Short Title: FIRST YEAR RUSSIAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): RUSS 141
Description: Continuation of RUSS 141. Development of interactional competence in Russian (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Russian. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for RUSS 142 and RUSS 262.
Course URL: clicrussian.blogs.rice.edu

RUSS 263 - SECOND YEAR RUSSIAN I
Short Title: SECOND YEAR RUSSIAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): RUSS 142
Description: Continuation of RUSS 142. Development of interactional competence in Russian (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Russian. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for RUSS 263 and RUSS 201.
Course URL: clicrussian.blogs.rice.edu

RUSS 264 - SECOND YEAR RUSSIAN II
Short Title: SECOND YEAR RUSSIAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): RUSS 263
Description: Continuation of RUSS 263. Development of interactional competence in Russian (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Russian. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for RUSS 264 and RUSS 202.
Course URL: clicrussian.blogs.rice.edu

RUSS 301 - THIRD YEAR RUSSIAN I
Short Title: THIRD YEAR RUSSIAN I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): RUSS 264
Description: Continuation of RUSS 264. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.
Course URL: clicrussian.blogs.rice.edu

RUSS 302 - THIRD YEAR RUSSIAN II
Short Title: THIRD YEAR RUSSIAN II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): RUSS 301
Description: Continuation of RUSS 301. Emphasis on developing reading and writing ability as more authentic materials and socio-cultural topics are introduced.
Course URL: clicrussian.blogs.rice.edu

Social Sciences (SOSC)

SOSC 221 - PROFESSIONAL EXCELLENCE FOR SOCIAL SCIENCES MAJORS
Short Title: PROF EXCELLENCE FOR SS MAJORS
Department: Social Sciences Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Guided professional internship course for social sciences majors. Instructor Permission Required.

SOSC 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.
SOSC 250 - THINKING DIFFERENTLY: NEW APPROACHES TO IDEAS, PEOPLE, SOLUTIONS AND PROBLEMS
Short Title: THINKING DIFFERENTLY
Department: Social Sciences Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class meets select Wednesdays from 4-5 PM followed by small group discussion. The class explores changes in the economy and information technology that give rise to questions about the future of ideas, work and careers, identity and relationships, and solutions and problems. Repeatable for Credit.
Course URL: freestylerice.org (http://freestylerice.org)

SOSC 300 - BAKER INSTITUTE INTRODUCTION TO PUBLIC POLICY
Short Title: INTRODUCTION TO PUBLIC POLICY
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Taught by Baker Institute Fellow, this course is designed to introduce students to the field of public policy as well as to important policy issues. Topic areas include the Middle East, China, Mexico, energy security, environmental challenges, globalization, health policy, tax policy, and Texas and Houston politics.

SOSC 301 - POLICY ANALYSIS
Short Title: POLICY ANALYSIS
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Familiarizes students with the analytical tools necessary for evaluating and analyzing public policies. Cross-list: POLI 338. Mutually Exclusive: Credit cannot be earned for SOSC 301 and POST 338.

SOSC 322 - GATEWAY STUDY OF LEADERSHIP I
Short Title: GATEWAY STUDY OF LEADERSHIP I
Department: Social Sciences Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The Gateway Study of Leadership is a student-led research cohort based in the School of Social Sciences that focuses on leadership and power dynamics within academia as well as common themes in the professional development of faculty members. Students enrolled in the program will perform qualitative research through conducting and transcribing interviews with faculty members. Students will also develop their own leadership skills by attending breakfasts and lunches with prominent leaders in the Rice community and participating in retreats and workshops. Instructor Permission Required. Repeatable for Credit.

SOSC 323 - GATEWAY STUDY OF LEADERSHIP II
Short Title: GATEWAY OF LEADERSHIP II
Department: Social Sciences Division
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Continuation of the Gateway of Leadership from the fall semester. Students will continue to develop their own leadership skills by attending breakfasts and lunches with prominent leaders in the Rice community. After having conducted and transcribed interviews in the fall, students will code these interviews for common themes. Compiled research will be published as the "Turning Points" booklet series by the School of Social Sciences. Students will further produce a research paper and a poster to be presented the Rice Undergraduate Research Symposium. Instructor Permission Required. Repeatable for Credit.

SOSC 330 - HEALTH CARE REFORM IN THE 50 STATES
Short Title: HEALTH CARE REFORM IN U.S.
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examination of those states that have undertaken comprehensive health system reform, have carried out more limited revisions, or have failed to even begin the process, assessing successes and failures. Includes general theories of state-federal relationships and the role of the federal government in state health reform.

SOSC 405 - LAW PRACTICUM
Short Title: LAW PRACTICUM
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students will participate in a semester-long "practicum" with a sitting judge (federal, or Texas appellate) in Houston. This program is designed to give select Rice undergraduates a broad and practical introduction to what lawyers do in court and how judges and the law clerks who work with them think about the questions they are asked to resolve. Instructor Permission Required. Repeatable for Credit.

SOSC 406 - JUDICIAL PRACTICUM
Short Title: JUDICIAL PRACTICUM
Department: Social Sciences Division
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students will participate in a semester-long "practicum" with a sitting judge (federal, or Texas appellate) in Houston. This program is designed to give select Rice undergraduates a broad and practical introduction to what lawyers do in course and how judges and the law clerks who work with them think about the questions they are asked to resolve. Instructor Permission Required.
SOSC 423 - FALL MEDICAL RESEARCH INTERNSHIP
Short Title: FALL MEDICAL RESEARCH INTERN  
Department: Social Sciences Division  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 1-3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Internship with a faculty member at Baylor College of Medicine (BCM) centering on a medical research topic involving the Social Sciences. Student-interns will spend up to 10 hours/week at BCM and will be required to submit a written report, evaluations and an example of research products (research posters, abstracts, paper drafts, manuscripts, etc.) both to their supervisor and the Office of the Dean of Social Sciences. Enrollment is limited to Rice undergraduate students who have declared a major within the School of Social Sciences and have been approved for participation in the internship partnership between Rice and BCM. Written approval of the research supervisor and the Dean of Undergraduates must be received by the Office of the Dean of Social Sciences at least 2 weeks prior to the start of classes. Instructor Permission Required.

SOSC 424 - SPRING MEDICAL RESEARCH INTERNSHIP
Short Title: SPRING MEDICAL RESEARCH INTERN  
Department: Social Sciences Division  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 1-3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Internship with a faculty member at Baylor College of Medicine (BCM) centering on a medical research topic involving the Social Sciences. Student-interns will spend up to 10 hours/week at BCM and will be required to submit a written report, evaluations and an example of research products (research posters, abstracts, paper drafts, manuscripts, etc.) both to their supervisor and the Office of the Dean of Social Sciences. Enrollment is limited to Rice undergraduate students who have declared a major within the School of Social Sciences and have been approved for participation in the internship partnership between Rice and BCM. Written approval of the research supervisor and the Dean of Undergraduates must be received by the Office of the Dean of Social Sciences at least 2 weeks prior to the start of classes. Instructor Permission Required.

SOSC 444 - CONSULTING PRACTICUM
Short Title: CONSULTING PRACTICUM  
Department: Social Sciences Division  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Students in the Applied Innovation Lab learn the elements of problem solving in the business environment. Project teams interact with businesses or non-profit organizations seeking creative solutions to challenges they face. The course offers experiential learning on all project phases from investigation and analysis through presentation of recommendations designed to meet real-world needs. Department Permission Required. Repeatable for Credit.

SOSC 464 - SOCIAL ENTREPRENEURSHIP
Short Title: SOCIAL ENTREPRENEURSHIP  
Department: Social Sciences Division  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course introduces students to contemporary concepts, debates, and contexts necessary for analyzing and engaging in the sphere of social entrepreneurship. The course has five distinct parts: 1. social entrepreneurship overview; 2. social context and stakeholders; 3. private sector roles and motivations; 4. organizational forms and collaborations; and 5. measurement and impacts (private and public). Students will be exposed to various forms of social entrepreneurship, such as base of the pyramid/microenterprises, private-public partnerships, private-governmental partnerships, voluntary social codes, corporate social responsibility, and ethical consumerism. From this introductory foundation, students will undertake a social entrepreneurship project about a contemporary social problem in Houston: the urban food desert (https://apps.ams.usda.gov/fooddeserts/fooodeserts.aspx). Students will learn a range of research methods (e.g. quantitative data analysis, ethnography, focus groups). With these research tools and building from perspectives offered by earlier by readings, guest speakers, and field visits, students will problematize, propose, develop, and present competing solutions to the social problem during the final course meetings. Cross-list: BUSI 464, GLHT 464.

SOSC 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS  
Department: Social Sciences Division  
Grade Mode: Standard Letter  
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar  
Credit Hours: 1-4  
Course Level: Undergraduate Upper-Level  
Description: Topics and credit hours may vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

Sociology (SOCI)

SOCI 101 - INTRODUCTION TO SOCIOLOGY
Short Title: INTRODUCTION TO SOCIOLOGY  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Introduction to the principal concepts, theories and methods of sociology. Required (normally) for sociology majors and minors. Enrollment in section 003 of this course is reserved for new matriculants only.
SOCI 231 - SOCIAL PROBLEMS
Short Title: SOCIAL PROBLEMS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course will confront "social problems" in everyday life by focusing on contemporary issues, situations, behaviors, and ideas in national and international contexts. The course will focus primarily on case studies in contemporary issues including racism, religion, politics, classism, sexism, and heterosexism. Mutually Exclusive: Credit cannot be earned for SOCI 231 and SOCI 338.

SOCI 299 - EXPERIENTIAL EDUCATION IN SOCIOLOGY
Short Title: EXPERIENTIAL EDUCATION IN SOCIO
Department: Sociology
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Sociology. Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course provides one hour of university credit for faculty-directed and approved internship. Students must obtain approval from a member of the department's undergraduate committee and must submit a letter from the internship provider indicating completion and satisfactory performance. Department Permission Required. Repeatable for Credit.

SOCI 301 - SOCIAL INEQUALITY
Short Title: SOCIAL INEQUALITY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course investigates the causes and consequences of social inequality in the U.S., focusing on inequality by class, race, and gender. We will discuss different measures of inequality, the extent of inequality, as well as classical and modern theories for why it has been increasing since the 1970s. In addition, we will discuss how much inequality is justifiable and which redistributive programs work.

SOCI 304 - ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE
Short Title: ENVIRON ISSUES: RICE IN FUTURE
Department: Sociology
Grade Mode: Standard Letter
Course Type: Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students use the campus as a laboratory for learning about sustainability through group projects to reduce Rice's environmental impact or resolve environmental issues. Cross-list: ENST 302.

SOCI 306 - SOCIOLOGY OF GENDER
Short Title: SOCIOLOGY OF GENDER
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Relationship between gender and social role. Development of the contemporary sexual division of labor and process of socialization with reference to family, education, media, and occupations. Cross-list: SWGS 324.

SOCI 308 - HOUSTON: THE SOCIOLOGY OF A CITY
Short Title: HOUSTON: SOCIOLOGY OF A CITY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Houston as an exemplar of contemporary urban change. The "golden buckle of the sunbelt"; recovery from the oil boom collapse of the 1980s into a restructuring economy and demographic revolution; the changing politics of education, quality-of-life issues, and interethnic relations, as they interact to shape the urban future. Guest lectures, field trips.

SOCI 309 - RACE AND ETHNIC RELATIONS
Short Title: RACE & ETHNIC RELATIONS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Historical and contemporary issues and theories of race and ethnic relations in the United States. The key groups covered will be European Americans, African Americans, Native Americans, Asian Americans, and Mexican Americans. Group patterns of assimilation and conflict inform a basic tenet that race and ethnicity are organizing features of society.

SOCI 310 - URBAN SOCIOLOGY
Short Title: URBAN SOCIOLOGY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of urban development, form, and heterogeneity; and the conditions of life associated with living in cities. Examines the rise of cities, their growth and purposes in the U.S. and internationally. Examines behavioral adaptations required by city life, and considers urban subcultures.
SOCI 313 - DEMOGRAPHY
Short Title: DEMOGRAPHY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to the study of the dynamics of population change. Includes demographic data sources, components of population change, mortality patterns, family planning, the measurement of migration flows, and population-economic models. Graduate/Undergraduate Equivalency: SOCI 513. Mutually Exclusive: Credit cannot be earned for SOCI 313 and SOCI 513.

SOCI 314 - SCIENCE AT RISK? OUT OF THE LAB AND INTO PUBLIC SPHERE
Short Title: SCIENCE AT RISK
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: What happens when science enters the public sphere and when the public sphere enters science? Through the lens of sociology we will examine some of the most controversial issues facing science, including biotechnology, science and religion, US knowledge of science, increasing diversity of the science workforce and corporate funding.

SOCI 316 - ENVIRONMENTAL FILM
Short Title: ENVIRONMENTAL FILM
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explores the ways film represents the environment and environmental issues (food, water, energy, waste, environmental justice, sustainability), and both expresses and shapes environmental values. We will view and analyze a variety of genres, as well as reading supplementary material. Cross-list: ENST 316.

SOCI 319 - SOCIOLOGY OF WORK AND OCCUPATIONS
Short Title: WORK AND OCCUPATIONS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Work is a central part of our lives. We will examine how work is structured in occupations and industries and how it changes over time. We will focus on understanding the lives of workers: work and inequalities between men and women, racial/ethnic inequalities, and relations between work and family.

SOCI 321 - CRIMINOLOGY
Short Title: CRIMINOLOGY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of criminal behavior. Includes social construction of crime, elementary forms of crime, empirical patterns of crime, and theories of crime. Field work required.

SOCI 325 - SOCIOLOGY OF LAW
Short Title: SOCIOLOGY OF LAW
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will explore law and legality utilizing a sociological perspective. We place law within its social and political context, and examine how law influences everyday life. We explore sociological theories of law, empirical studies of law, legal institutions, and how social characteristics influence legal outcomes. Fieldwork required.

SOCI 327 - SUPERVISED RESEARCH I
Short Title: SUPERVISED RESEARCH I
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course offers the opportunity to work with a faculty member on that faculty member's existing research project. The course involves intensive pedagogy and mentoring including a pedagogical plan developed in conjunction with the sponsoring faculty member. Instructor Permission Required.

SOCI 328 - SUPERVISED RESEARCH II
Short Title: SUPERVISED RESEARCH II
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course offers the opportunity to work with a faculty member on that faculty member's existing research project. The course involves intensive pedagogy and mentoring including a pedagogical plan developed in conjunction with the sponsoring faculty member. Please contact the Department for a description of the section you are registering for. Instructor Permission Required.
SOCI 329 - MULTIRACIAL AMERICA
Short Title: MULTIRACIAL AMERICA
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Multiracial America examines the phenomenon of race mixing (e.g. interracial interaction, multiracial identity) from a sociological perspective. The course covers the legal, political, and cultural contexts of interracial interaction and how these impact current understanding of what it means to be "mixed race." Recommended Prerequisite(s): SOCI 101

SOCI 333 - SOCIOLOGY OF RELIGION
Short Title: SOCIOLOGY OF RELIGION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of religious beliefs, symbols, actions, organizations, roles, and various interrelationships between religion and society. Includes new religious movements, secularization, and fundamentalism. Field work required.

SOCI 334 - SOCIOLOGY OF THE FAMILY
Short Title: SOCIOLOGY OF THE FAMILY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will teach students the important influences and consequences of American family life. We will consider issues such as sex and sexualities, marriage and cohabitation, divorce, family structure, same-sex marriage, domestic violence, and household labor. We will also examine the role of social institutions and social inequality in shaping family norms and constraints on family behaviors. Cross-list: SWGS 325.

SOCI 340 - SOCIOLOGY OF IMMIGRATION
Short Title: SOCIOLOGY OF IMMIGRATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Sociology of Immigration traces the migration process from initiation through its long-term consequences using theories of initiation (e.g. economic and sociological models) and adaptation (e.g. segmented assimilation, new assimilation theory). It also explores the effects of immigration policies.

SOCI 341 - QUALITATIVE RESEARCH METHODS
Short Title: QUALITATIVE RESEARCH METHODS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines qualitative methodological approaches for conducting social science research. Particularly, students will examine how qualitative methods allow social scientists to analyze the symbolic, religious, gendered, socio-economic, policies and historical forces and contexts that underlie and motivate beliefs, ideologies, practices and social change. Graduate/Undergraduate Equivalency: SOCI 541. Mutually Exclusive: Credit cannot be earned for SOCI 341 and SOCI 541.

SOCI 342 - SOCIOLOGY OF GLOBALIZATION
Short Title: SOCIOLOGY OF GLOBALIZATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores how the process of global integration transforms human life with specific emphasis on: the global economy and economic development; transnational political organizations; culture and an identity; the effect of globalization on social stratification, including gender/race/ethnic inequalities; transnational migration; environmental change; and transnational social movements.

SOCI 343 - RACE, SOCIETY AND POPULATION CHANGE
Short Title: RACE, SOCIETY & POPULATION CHG
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course investigates the meaning and significance of the U.S. population is more diverse than ever before - how did that happen? This course looks at how race and ethnicity patterns demographic processes. This course explores demographic techniques and collection of racial data. Topics include: Roots of racial diversity, collecting racial data, immigration and population growth, and population polices. Graduate/Undergraduate Equivalency: SOCI 543. Mutually Exclusive: Credit cannot be earned for SOCI 343 and SOCI 543.

SOCI 344 - SOCIOLOGY OF MENTAL HEALTH
Short Title: SOCIOLOGY OF MENTAL HEALTH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course investigates the meaning and significance of mental health, with heavy emphasis on the social construction of mental illness; positive psychology and psychological well-being; psychiatric epidemiology; stigma and labeling; and culture and social control. Social determinants of mental health are also discussed.
SOCI 345 - MEDICAL SOCIOLOGY
Short Title: MEDICAL SOCIOLOGY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will explore the relationship between social factors and health, illness, and mortality, with a heavy emphasis on experiences of illness, the doctor-patient relationship, and the socialization of medical students and new doctors. Social determinants of health, cultural determinants of health, and the ethics surrounding conception, birth, and death will also be discussed.

SOCI 348 - ORGANIZATIONAL SOCIOLOGY
Short Title: ORGANIZATIONAL SOCIOLOGY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: From congregations to corporations to colleges, organizations surround us. While the prominence of organizations in our daily lives is an indicator of their success, we know that organizations can be impersonal, unresponsive and even corrupt. This course will visit social scientists' best attempts to figure out what makes organizations tick.

SOCI 349 - DEVIANCE JUSTICE AND POPULAR CULTURE
Short Title: DEVIANCE & POPULAR CULTURE
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class will critically explore cultural imaginaries of deviance, crime, law and justice. How are these portrayed (historically and contemporarily) in popular culture, including television, film, social media outlets, newspapers and magazines, novels, and ‘art.’ Well also interrogate has these images and portrayals interact with perceptions, personhood (identity), and policy.

SOCI 350 - URBAN TRANSPORTATION
Short Title: URBAN TRANSPORTATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Moving people and goods within cities is the stuff of legendary challenge and the life blood of urban areas. In this course we study the transportation systems used in European and US cities, examine advantages and disadvantages of different systems, and consider whether major transformations in urban transportation are on the horizon.

SOCI 358 - CRIME, PUNISHMENT AND SOCIETY
Short Title: CRIME, PUNISHMENT AND SOCIETY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A multi-faceted exploration of crime. We explore how crime is socially defined, perceived and portrayed. Next we analyze empirical patterns and theories of crime. Lastly, we examine societal responses, focusing on policing and punishment. Material will encompass both classical/foundational and contemporary scholarship, and a mix of empirical and theoretical work.

SOCI 363 - AFRICAN AMERICAN-JEWISH RELATIONS: RACE, RELIGION, POLITICS, AND POPULAR CULTURE
Short Title: AFRICAN AMER-JEWISH RELATIONS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines African American-Jewish relations in the United States from colonial times to the present day. Through readings, music, images, and films, we will explore constructions of racial identity, arenas of religious and cultural interaction, and the politics and policies that have shaped African American-Jewish relations in urban neighborhoods.

SOCI 364 - MUSLIMS IN AMERICAN SOCIETY
Short Title: MUSLIMS IN AMERICAN SOCIETY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course unearths the history of Muslims in America from the 15th century to present-day. Students will have the opportunity to explore the experiences of African, Middle Eastern, European, South Asian, Hispanic, and black/white Muslims. In studying these communities, students will question what it means to be Muslim in America.

SOCI 365 - POLITICS OF REPRESENTATION: HOW WE UNDERSTAND "WAR" AND "THE RACIAL OTHER"
Short Title: POLITICS OF REPRESENTATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Does media show how things really are? This class explores the politics of representation, particularly in times of social mayhem, revolution, and war. Although we will focus primarily on cultural and political representations of the Israeli-Palestinian conflict, this class will also put this dispute in comparison with other global events. Cross-list: ANTH 365.
SOCI 367 - ENVIRONMENTAL SOCIOLOGY
Short Title: ENVIRONMENTAL SOCIOLOGY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course focuses on the foundations of environmental sociology and takes a social and historical approach to examine how humans affect the environment and the environment affects humans. Topics include: agricultural sustainability, resource extraction and climate changes; environmental racism/sexism; globalization and development; population, and consumption, and environmental movements. Cross-list: ENST 367.

SOCI 368 - SOCIOLOGY OF DISASTER
Short Title: SOCIOLOGY OF DISASTER
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will cover social dimensions of disasters stemming from natural and human hazards. Emphasis will focus on social, economic and political forces that put people unequally at risk as well as how vulnerable social groups experience and adjust to these risks and associated hazards.

SOCI 371 - POVERTY, JUSTICE, AND HUMAN CAPABILITIES
Short Title: POVERTY, JUSTICE, CAPABILITIES
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course provides an overview of the study of poverty, justice, and human capabilities. The course considers theory and economic policy oriented towards improving human well-being in the US, Asia, Africa, and other regions. Readings address not just material deprivations but also gender, racial and ethnic disparities, health status, education, human rights, and political freedoms. To be considered for the course, please complete the brief questionnaire at pjhc.rice.edu/enrollment-questionnaire. Preference is given to those that have declared the PJHC minor. Formerly HUMA/SOCI 280. Instructor Permission Required. Cross-list: HUMA 371. Mutually Exclusive: Credit cannot be earned for SOCI 371 and HUMA 280/SOCI 280.

SOCI 374 - SOCIAL PSYCHOLOGY OF PREJUDICE
Short Title: SOCIAL PSYCHOLOGY OF PREJUDICE
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course investigates the meaning, durability and significance of prejudice based upon social psychological literature addressing intergroup and interpersonal conflict and its resolution. Problems of relations between racial groups in contemporary society are also discussed.

SOCI 376 - ART AND ACTIVISM: CRITICAL STUDY OF HOPE IN TIMES OF CRISIS
Short Title: ART AND ACTIVISM
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores art and social change in times of mass displacement, racial oppression, and war. It surveys the efforts involved in achieving justice and the possible implications of remaining historically mute and hopeless. The class will host contemporary activists and artists concerned with radical visions of hope in Houston. Cross-list: ANTH 376.

SOCI 377 - HEALTH DISPARITIES IN THE UNITED STATES
Short Title: HEALTH DISPARITIES
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class will explore patterns and explanations surrounding health disparities in the United States based on key status characteristics (socioeconomic status, race/ethnic identity, nativity, gender, and sexual orientation). We will draw on interdisciplinary scholarship covering diverse fields (e.g., medical sociology, social demography, public health, public policy) and methodologies.

SOCI 380 - SOCIAL THEORY
Short Title: SOCIAL THEORY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course engages and analyzes the foundational texts of social theory from its classical roots to its contemporary branches. Students will explore theoretical approaches that inform current sociological research and during the course will examine social phenomena of particular interest to them from the perspective of two major theorists.
SOCI 381 - RESEARCH METHODS
Short Title: RESEARCH METHODS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to the methods sociologists use to study human societies and their members. Hypothesis formulation and research design; qualitative studies through observation and interviews; historical and comparative approaches; sample surveys and the statistical analysis of quantitative data, political and ethical issues in social research.

SOCI 382 - SOCIAL STATISTICS
Short Title: SOCIAL STATISTICS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Emphasizes the practical uses of statistics to answer the types of questions sociologists ask. We learn sample description, sampling and probability, sampling theory, and how to make inferences from samples to populations. We study and apply common univariate, bivariate, and multivariate statistics. Because most statistical analysis is done with the aid of computers, we also learn how to use a common statistical package.

SOCI 394 - HUMAN DEVELOPMENT IN GLOBAL AND LOCAL COMMUNITIES
Short Title: HUMAN DEVELOPMENT
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): HUMA 371 or SOCI 371
Description: This course explores poverty and gender in local and global communities. Readings consider human deprivations and well-being in the context of social norms, gender relations, and governmental structures. Also examined are policies meant to improve human capabilities, including both the overall effects of such policies and their differential consequences for children, women and men. Cross-list: SWGS 394.

SOCI 396 - LAW AND RESISTANCE IN THE EVERYDAY
Short Title: LAW AND RESISTANCE
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will explore how people interact with the law in their everyday lives – in the U.S. and elsewhere. Examples will include how individuals experience and respond to policing, examining the effects of immigration and border security policies, and tracing how people and groups mobilize to challenges laws perceived as unjust.

SOCI 401 - RELIGION SEMINAR
Short Title: RELIGION SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course that explores the theories, tools, concepts, and major debates that are central to the sociology of religion. Specific attention is devoted to religious practices, communities, and identities as well as how the sociology of religion relates to other sub-fields within the broader discipline. Instructor Permission Required. Graduate/Undergraduate Equivalency: SOCI 501. Mutually Exclusive: Credit cannot be earned for SOCI 401 and SOCI 501.

SOCI 402 - RACE AND FAMILY SEMINAR
Short Title: RACE AND FAMILY SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: What features of family life are marked by race? This course examines the question and gauges whether differences are a matter of culture or do they reflect issues of structure (or access to opportunities) and what are the implications for race/ethnic inequality? Topics include racial socialization and ethnic identity. Instructor Permission Required. Graduate/Undergraduate Equivalency: SOCI 502. Mutually Exclusive: Credit cannot be earned for SOCI 402 and SOCI 502.

SOCI 403 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Directed reading and written papers on subjects not regularly offered; advanced study of subjects on which courses are offered. Instructor Permission Required. Repeatable for Credit.

SOCI 404 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Directed readings and essay writing on special subjects. Includes advanced study in subjects from other courses, if desired. Instructor Permission Required. Repeatable for Credit.
SOCI 405 - ETHNOGRAPHIC RESEARCH
Short Title: ETHNOGRAPHIC RESEARCH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Beginning with the theoretical frameworks for ethnographic and other qualitative research methods, the course will cover ethics, entry, observation, field notes, interviewing, data analysis, and writing reports. It will offer a hands-on approach combining lectures, research through lectures, readings, and fieldwork. Field projects can be conducted in group, classroom, campus, or community settings. Graduate/Undergraduate Equivalency: SOCI 505. Mutually Exclusive: Credit cannot be earned for SOCI 405 and SOCI 505.

SOCI 406 - BASIC DEMOGRAPHIC TECHNIQUES
Short Title: BASIC DEMOGRAPHIC TECHNIQUES
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course provides a survey of basic demographic methods for assessing population change, fertility, mortality, and (im)migration and characteristics such with age, gender, race/ethnicity, household/family composition, marital status, economic, employment, and educational. Emphasis placed on the use of the methods in a variety of demographic and other settings. Graduate/Undergraduate Equivalency: SOCI 506. Mutually Exclusive: Credit cannot be earned for SOCI 406 and SOCI 506.

SOCI 407 - GENDER SEMINAR
Short Title: GENDER SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An overview of the construction and reproduction of gender as a social category. Course will compare various conceptualizations of gender and discuss structural-, interactional-, and individual-level processes that reproduce gender inequality. Will also explore interactions of gender with other axes of social difference, such as sexuality, race/ethnicity and social class. Instructor Permission Required. Graduate/Undergraduate Equivalency: SOCI 507. Mutually Exclusive: Credit cannot be earned for SOCI 407 and SOCI 507.

SOCI 408 - ETHNOGRAPHIC RESEARCH II
Short Title: ETHNOGRAPHIC RESEARCH II
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SOCI 405
Description: Continuation of theoretical frameworks for ethnographic and other qualitative research methods including ethics, entry, observation, field notes, interviewing, data analysis and writing reports. Field projects can be conducted in group, classroom, campus or community settings. Instructor Permission Required.

SOCI 412 - PERSPECTIVES ON RELIGIOUS TOLERANCE IN AN INTOLERANT AGE
Short Title: UG SEMINAR RELIGIOUS TOLERANCE
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How do we understand religious pluralism in the midst of religious traditions that seem inherently at odds? Is religion more likely to bring peace or conflict? Through readings from the humanities and the social sciences and short lectures, this weekly undergraduate seminar will address these issues and more. Graduate/Undergraduate Equivalency: SOCI 512. Mutually Exclusive: Credit cannot be earned for SOCI 412 and SOCI 512.

SOCI 415 - THE ENVIRONMENTAL MOVEMENT
Short Title: THE ENVIRONMENTAL MOVEMENT
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Examines the environmental movement in the U.S. and globally. After a historical overview, we will use a social movement perspective to examine mobilization, organizations and tactics, ideologies and identities, as well as exploring aspects of contemporary environmentalism (e.g. green building and slows flood, wildlife management/biodiversity, sustainable development, environmental justice). Cross-list: ENST 415.

SOCI 422 - SOCIAL AUTOPSIES: HOW SOCIETY KILLS US
Short Title: SOCIAL AUTOPSIES
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course explores mortality, and how long we live, as a social process. Though we often reflect on the biological, physiological, and genetic conditions that play parts in the length of our lives, we will explore evidence suggesting that social conditions shape mortality prospects for all of us. Graduate/Undergraduate Equivalency: SOCI 522. Mutually Exclusive: Credit cannot be earned for SOCI 422 and SOCI 522.
SOCI 423 - SOCIOLOGY OF FOOD
Short Title: SOCIOLOGY OF FOOD
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the production, distribution, and consumption of food as a medium to understand the relations between large social processes and the practices of everyday life. Topics include: food policy; commodification of food; food security and hunger; food, health and the body; cultural food practices; and alternative food systems. Graduate/Undergraduate Equivalency: SOCI 523. Mutually Exclusive: Credit cannot be earned for SOCI 423 and SOCI 523.

SOCI 424 - RACE AND ETHNICITY SEMINAR
Short Title: RACE AND ETHNICITY SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Overview of the sociological study of race and ethnic relations; identifying the major contributions made to the sociological study of race and the ethnicity; and the major areas in need of new thinking and research. Focus on theoretical formulations, historical understandings, and causes and consequences of race and technical relations globally Graduate/Undergraduate Equivalency: SOCI 524. Mutually Exclusive: Credit cannot be earned for SOCI 424 and SOCI 524.

SOCI 425 - POPULATION HEALTH SEMINAR
Short Title: POPULATION HEALTH SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course is a graduate level overview of population health, including the social determinates of morbidity and mortality, fertility and birth outcomes, health disparities, and contextual determinants of health. Course will cover major theoretical perspectives in the field, including fundamental cause theory, life course theory, and theories of stress and resilience. Graduate/Undergraduate Equivalency: SOCI 525. Mutually Exclusive: Credit cannot be earned for SOCI 425 and SOCI 525.

SOCI 426 - CONTEMPORARY THEORY
Short Title: CONTEMPORARY THEORY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course builds foundational understanding of the diverse theoretical traditions of the last half-century that underlie much of the work currently being undertaken in sociology. Theories include: symbolic interactionism, critical theory, structuralism, power and social control, neo-institutionalism, feminist theory, and cultural theory. Evaluation based on papers, memos and seminar participation. Graduate/Undergraduate Equivalency: SOCI 526. Mutually Exclusive: Credit cannot be earned for SOCI 426 and SOCI 526.

SOCI 436 - RESEARCH SEMINAR: THE HOUSTON AREA SURVEY
Short Title: HOUSTON AREA SURVEY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Continuation of the series of annual surveys on how Houston residents are reacting to the ongoing economic and demographic changes. Includes sampling procedures, questionnaire construction, interviewing, data analysis, and the logic and skills of survey research. Culminates in a research report that develops empirical hypotheses and tests their validity with the survey findings. Graduate/Undergraduate Equivalency: SOCI 536. Recommended Prerequisite(s): SOCI 381 & SOCI 382. Mutually Exclusive: Credit cannot be earned for SOCI 436 and SOCI 536.

SOCI 437 - SOCIOLOGY OF EDUCATION
Short Title: SOCIOLOGY OF EDUCATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Analyzing educational inequality in the U.S. using concepts of educational equality and inequality and analysis of the factors that shape schooling outcomes. Addressing the role of students, families, neighborhoods, schools, school organizations and teachers. Special topics: education of immigrants, school segregation, accountability, higher education and the future of educational inequality. Graduate/Undergraduate Equivalency: SOCI 537. Mutually Exclusive: Credit cannot be earned for SOCI 437 and SOCI 337/SOCI 537.
SOCI 438 - FAMILY SEMINAR
Short Title: FAMILY SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will cover the history of the family and key theoretical and empirical debates about family formation, stability, and dissolution. Ultimately, we will seek to answer the question: is the American family in decline? Instructor Permission Required. Graduate/Undergraduate Equivalency: SOCI 538. Mutually Exclusive: Credit cannot be earned for SOCI 438 and SOCI 538.

SOCI 451 - IMMIGRATION IN A GLOBAL WORLD
Short Title: IMMIGRATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine the relationship between immigration to the US (and other countries) with more recent migratory flows. Topics will be related to the transnational identities of immigrants, ethnic discrimination, and the impact of immigrants on civic and religious institutions. A central part of the course is a semester-long research project. Graduate/Undergraduate Equivalency: SOCI 551. Mutually Exclusive: Credit cannot be earned for SOCI 451 and SOCI 551.

SOCI 453 - RACE, MIGRATION, AND HEALTH SEMINAR
Short Title: RACE, MIGRATION, AND HEALTH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this class we will examine the relationship between racial identity, nativity, and health status. Through readings and class discussion we will examine how racial identity and generational status shape health-related resources, stressors, behaviors, and supports. We will also consider how these factors relate to health care access and use. Graduate/Undergraduate Equivalency: SOCI 553. Mutually Exclusive: Credit cannot be earned for SOCI 453 and SOCI 553.

SOCI 459 - RELIGION AND PUBLIC LIFE
Short Title: RELIGION AND PUBLIC LIFE
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will use the tools of social science to understand how religion shows up in public life, both in the US and around the globe. Topics include: epistemology and methodology of public religion; how religion shapes views on politics, gender, families, science, race, immigration, education, the workplace; the challenges of religious diversity and crossing sociopolitical divides. Instructor Permission Required. Graduate/Undergraduate Equivalency: SOCI 559. Mutually Exclusive: Credit cannot be earned for SOCI 459 and SOCI 559.

SOCI 465 - GENDER AND HEALTH
Short Title: GENDER AND HEALTH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the relationship between gender and health (longevity, physical illness and functioning, mental health, and health behavior). Specific topics include masculinity, disease expression, medical research, health care use, stress and social relationships, and intersectionality (race/ethnicity and sexuality) as they relate shaping health outcomes among men and women. Instructor Permission Required. Cross-list: SWGS 465. Graduate/Undergraduate Equivalency: SOCI 665. Mutually Exclusive: Credit cannot be earned for SOCI 465 and SOCI 665.

SOCI 469 - COMMUNITY BRIDGES TRAINING
Short Title: COMMUNITY BRIDGES TRAINING
Department: Sociology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is the precursor for the spring course, SOCI 470, Inequality and Urban Life. Only students accepted into the Community Bridges Program may enroll in this course, where we do preparatory readings, trainings and workshops for the spring community internships. Instructor Permission Required.

SOCI 470 - INEQUALITY AND URBAN LIFE
Short Title: INEQUALITY AND URBAN LIFE
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course combines classroom study with seven hours of fieldwork per week, working on projects with a local organization. We study how urban areas generate wealth and poverty, the experience of inequality, and issues of community development. Enrollment is by permission only. Instructor Permission Required.

SOCI 483 - DATA ANALYSIS
Short Title: DATA ANALYSIS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This graduate course introduces students to multivariate regression methods. It assumes previous coursework in elementary statistics and the use of STATA. We will cover regression analysis for continuous dependent variables and move in to intermediate and some advance analysis for categorical dependent variables, commonly referred to as generalized linear models.
Rice University

SOCI 485 - IDENTITIES IN A DIVERSE WORLD
Short Title: RACIAL IDENTITIES
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: How have shifts in ethnic and race diversity affected the way we answer the question, "who am I?" "Identities in a Diverse World" is a seminar dedicated to answering this core question by exploring the new frontiers of understanding race and ethnicity. Topics include: Racial Passing, Transracial adoption, Whiteness, and Immigration. Graduate/Undergraduate Equivalency: SOCI 585. Mutually Exclusive: Credit cannot be earned for SOCI 485 and SOCI 585.

SOCI 492 - DIRECTED HONORS RESEARCH
Short Title: DIRECTED HONORS RESEARCH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Sociological research under faculty supervision. Includes first-semester review of relevant literature and the preparation of an outline for planned research, followed by second-semester research and the writing of an honors thesis. Open only to students in sociology honors program. Instructor Permission Required.

SOCI 493 - DIRECTED HONORS RESEARCH
Short Title: DIRECTED HONORS RESEARCH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Sociological research under faculty supervision. Includes first-semester review of relevant literature and preparation of outline for planned research, followed by second-semester research and the writing of an honors thesis. Open only to students in sociology honors program. Instructor Permission Required.

SOCI 500 - SUMMER RESEARCH
Short Title: SUMMER RESEARCH
Department: Sociology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment limited to students with a class of Graduate.
Course Level: Graduate
Description: Sociological research for graduate students in sociology. Repeatable for Credit.

SOCI 501 - GRADUATE RELIGION SEMINAR
Short Title: GRADUATE RELIGION SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Sociology.
Course Level: Graduate
Description: A graduate level course that explores the theories, tools, concepts, and major debates that are central to the sociology of religion. Specific attention is devoted to religions practices, communities, and identities as well as how the sociology of religion relates to other subfields with the broader discipline. Graduate/Undergraduate Equivalency: SOCI 401. Mutually Exclusive: Credit cannot be earned for SOCI 501 and SOCI 401.

SOCI 502 - RACE AND FAMILY SEMINAR
Short Title: RACE AND FAMILY SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Sociology.
Course Level: Graduate
Description: What features of family life are marked by race? This course examines the question and gauges whether differences are a matter of culture or do they reflect issues of structure (or access to opportunities) and what are the implications for race/ethnic inequality? Topics include racial socialization and ethnic identity. Graduate/Undergraduate Equivalency: SOCI 402. Mutually Exclusive: Credit cannot be earned for SOCI 502 and SOCI 402.

SOCI 503 - TEACHING SOCIOLOGY
Short Title: TEACHING SOCIOLOGY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Sociology.
Course Level: Graduate
Description: This course will examine different approaches to teaching sociology at the university level, including core curriculum, a syllabus, and different forms of presenting material and evaluating students at the undergraduate and graduate levels. Sociology department faculty will discuss their particular approaches to teaching sociology.

2017-2018 General Announcements
SOCI 505 - ETHNOGRAPHIC RESEARCH  
Short Title: ETHNOGRAPHIC RESEARCH  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Beginning with the theoretical frameworks for ethnographic and other qualitative research methods, the course will cover ethics, entry, observation, field notes, interviewing, data analysis, and writing reports. It will offer a hands-on approach combining lectures, research through lectures, readings, and fieldwork. Field projects can be conducted in group, classroom, campus, or community settings. Graduate/Undergraduate Equivalency: SOCI 405. Mutually Exclusive: Credit cannot be earned for SOCI 505 and SOCI 405.

SOCI 506 - BASIC DEMOGRAPHIC TECHNIQUES  
Short Title: BASIC DEMOGRAPHIC TECHNIQUES  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: The course provides a survey of basic demographic methods for assessing population change, fertility, mortality, and (im)migration and characteristics such with age, gender, race/ethnicity, household/family composition, marital status, economic, employment, and educational. Emphasis placed on the use of the methods in a variety of demographic and other settings. Graduate/Undergraduate Equivalency: SOCI 406. Mutually Exclusive: Credit cannot be earned for SOCI 506 and SOCI 406.

SOCI 510 - RELIGION AND SOCIETY  
Short Title: RELIGION AND SOCIETY  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This seminar focuses on the ways in which religion is impacted by society, how society is shaped by religion, and the functions, uses, and meanings of religion in the modern world. We rely on the sociological perspective for understanding religion. Field work required.

SOCI 511 - COMMUNITY AND URBAN SOCIOLOGY  
Short Title: COMMUNITY & URBAN SOCIOLOGY  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Study of urban development, form, and heterogeneity; and the conditions of life associated with living in cities, their growth and purposes globally and locally.

SOCI 512 - PERSPECTIVES ON RELIGIOUS TOLERANCE IN AN INTOLERANT AGE  
Short Title: GR SEMINAR RELIGIOUS TOLERANCE  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: How do we understand religious pluralism in the midst of religious traditions that seem inherently at odds? Is religion more likely to bring peace or conflict? Through readings form the humanities and the social sciences and short lectures, this weekly undergraduate seminar will address these issues and more. Graduate/Undergraduate Equivalency: SOCI 412. Mutually Exclusive: Credit cannot be earned for SOCI 512 and SOCI 412.

SOCI 513 - DEMOGRAPHY  
Short Title: DEMOGRAPHY  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Study of the dynamics of population change. Includes demographic data sources, components of population change, mortality patterns, family planning, the measurement of migration flows, and population-economic models. Graduate/Undergraduate Equivalency: SOCI 313. Mutually Exclusive: Credit cannot be earned for SOCI 513 and SOCI 313.

SOCI 522 - SOCIAL AUTOPSIES  
Short Title: SOCIAL AUTOPSIES  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course explores mortality, and how long we live, as a social process. Though we often reflect on the biological, physiological, and genetic conditions that play parts in the length of our lives, we will explore evidence suggesting that social conditions shape mortality prospects for all of us. Graduate/Undergraduate Equivalency: SOCI 422. Mutually Exclusive: Credit cannot be earned for SOCI 522 and SOCI 422.

SOCI 523 - SOCIOLOGY OF FOOD  
Short Title: SOCIOLOGY OF FOOD  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course examines the production, distribution, and consumption of food as a medium to understand the relations between large social processes and the practices of everyday life. Topics include: food policy; commodification of food; food security and hunger; food, health and the body; cultural food practices; and alternative food systems. Graduate/Undergraduate Equivalency: SOCI 423. Mutually Exclusive: Credit cannot be earned for SOCI 523 and SOCI 423.
SOCI 524 - RACE AND ETHNICITY SEMINAR
Short Title: RACE AND ETHNICITY SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Overview of the sociological study of race and ethnic relations; identifying the major contributions made to the sociological study of race and the ethnicity, and the major areas in need of new thinking and research. Focus on theoretical formulations, historical understandings, and causes and consequences of race and technical relations globally Graduate/Undergraduate Equivalency: SOCI 424. Mutually Exclusive: Credit cannot be earned for SOCI 524 and SOCI 424.

SOCI 525 - POPULATION HEALTH SEMINAR
Short Title: POPULATION HEALTH SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Course is a graduate level overview of population health, including the social determinates of morbidity and mortality, fertility and birth outcomes, health disparities, and contextual determinants of health. Course will cover major theoretical perspectives in the field, including fundamental cause theory, life course theory, and theories of stress and resilience. Graduate/Undergraduate Equivalency: SOCI 425. Mutually Exclusive: Credit cannot be earned for SOCI 525 and SOCI 425.

SOCI 526 - CONTEMPORARY THEORY
Short Title: CONTEMPORARY THEORY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course builds foundational understanding of the diverse theoretical traditions of the last half-century that underlie much of the work currently being undertaken in sociology. Theories include: symbolic interactionism, critical theory, structuralism, power and social control, neo-institutionalism, feminist theory, and cultural theory. Evaluation based on papers, memos and seminar participation. Graduate/Undergraduate Equivalency: SOCI 426. Mutually Exclusive: Credit cannot be earned for SOCI 526 and SOCI 426.

SOCI 528 - GIS FOR SOCIAL SCIENCE RESEARCH
Short Title: GIS FOR SOCIAL SCIENCE RES
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course builds foundational understanding of the diverse theoretical traditions of the last half-century that underlie much of the work currently being undertaken in sociology. Theories include: symbolic interactionism, critical theory, structuralism, power and social control, neo-institutionalism, feminist theory, and cultural theory. Evaluation based on papers, memos and seminar participation. Graduate/Undergraduate Equivalency: SOCI 426. Mutually Exclusive: Credit cannot be earned for SOCI 526 and SOCI 426.

SOCI 536 - RESEARCH SEMINAR: THE HOUSTON AREA SURVEY
Short Title: HOUSTON AREA SURVEY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Continuation of the series of annual surveys on how Houston residents are reacting to the ongoing economic and demographic changes. Includes sampling procedures, questionnaire construction, interviewing, data analysis, and the logic and skills of survey research. Culminates in a research report that develops empirical hypotheses and tests their validity with the survey findings. Graduate/Undergraduate Equivalency: SOCI 436. Mutually Exclusive: Credit cannot be earned for SOCI 536 and SOCI 436.

SOCI 537 - SOCIOLOGY OF EDUCATION
Short Title: SOCIOLOGY OF EDUCATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Sociology.
Course Level: Graduate
Description: Analyzing educational inequality in the U.S. using concepts of educational equality and inequality and analysis of the factors that shape schooling outcomes. Addressing the role of students, families, neighborhoods, schools, school organizations and teachers. Special topics: education of immigrants, school segregation, accountability, higher education and the future of educational inequality. Graduate/Undergraduate Equivalency: SOCI 437. Mutually Exclusive: Credit cannot be earned for SOCI 537 and SOCI 337/SOCI 437.

SOCI 538 - FAMILY SEMINAR
Short Title: FAMILY SEMINAR
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Sociology.
Course Level: Graduate
Description: This course will cover the history of the family and key theoretical and empirical debates about family formation, stability, and dissolution. Ultimately, we will seek to answer the question: is the American family in decline? Graduate/Undergraduate Equivalency: SOCI 438. Mutually Exclusive: Credit cannot be earned for SOCI 538 and SOCI 438.
SOCI 541 - QUALITATIVE RESEARCH METHODS
Short Title: QUALITATIVE RESEARCH METHODS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course examines qualitative methodological approaches for conducting social science research. Particularly, students will examine how qualitative methods allow social scientists to analyze the symbolic, religious, gendered, socio-economic, policies and historical forces and contexts that underlie and motivate beliefs, ideologies, practices and social change. Graduate/Undergraduate Equivalency: SOCI 341. Mutually Exclusive: Credit cannot be earned for SOCI 541 and SOCI 341.

SOCI 543 - RACE, SOCIETY AND POPULATION CHANGE
Short Title: RACE, SOCIETY & POPULATION CHG
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The U.S. population is more diverse than ever before - how did that happen? This course looks at how race and ethnicity patterns demographic processes. This course explores demographic techniques and collection of racial data. Topics include: Roots of racial diversity, collecting racial data, immigration and population growth, and population policies. Graduate/Undergraduate Equivalency: SOCI 343. Mutually Exclusive: Credit cannot be earned for SOCI 543 and SOCI 343.

SOCI 551 - IMMIGRATION IN A GLOBAL AGE
Short Title: IMMIGRATION
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course compare 20th century immigration to the US (and other countries) with more recent migratory flows. Topics will be related to the transnational identities of immigrants, ethnic discrimination, and the impact of immigrants on civic and religious institutions. A central part of the course is a semester-long research project. Graduate/Undergraduate Equivalency: SOCI 451. Mutually Exclusive: Credit cannot be earned for SOCI 551 and SOCI 451.

SOCI 553 - RACE, MIGRATION, AND HEALTH SEMINAR
Short Title: RACE, MIGRATION, AND HEALTH
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In this class we will examine the relationship between racial identity, nativity, and health status. Through readings and class discussion we will examine how racial identity and generational status shape health-related resources, stressors, behaviors, and supports. We will also consider how these factors relate to health care access and use. Graduate/Undergraduate Equivalency: SOCI 453. Mutually Exclusive: Credit cannot be earned for SOCI 553 and SOCI 453.

SOCI 559 - RELIGION AND PUBLIC LIFE
Short Title: RELIGION AND PUBLIC LIFE
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will use the tools of social science to understand how religion shows up in public life, both in the US and around the globe. Topics include: epistemology and methodology of public religion; how religion shapes views on politics, gender, families, science, race, immigration, education, the workplace; the challenges of religious diversity and crossing sociopolitical divides. Instructor Permission Required. Graduate/Undergraduate Equivalency: SOCI 459. Mutually Exclusive: Credit cannot be earned for SOCI 559 and SOCI 459.

SOCI 580 - CLASSICAL THEORY
Short Title: CLASSICAL THEORY
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course engages and analyzes the foundational texts of social theory from its classical roots to its contemporary branches. Students will explore theoretical approaches that inform current sociological research and during the course will examine social phenomena of particular interest to them from the perspective of two major theorists.
SOCI 581 - QUANTITATIVE RESEARCH METHODS
Short Title: QUANTITATIVE RESEARCH METHODS
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Designed as a graduate level overview of quantitative research methods, with a focus on survey construction and design. The class moves through the stops of the research design process, and discusses mixed-methods and meta-analysis research. Class also includes a strong focus on writing, critique, peer review, and the publishing process.

SOCI 582 - QUANTITATIVE DATA ANALYSIS I
Short Title: QUANTITATIVE DATA ANALYSIS I
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introduction to statistics and data analysis for graduate students in sociology. Topics include descriptive statistics, visual representation of data, univariate and bivariate tests, as well as an introduction to multiple regression. Techniques for visualizing data will be discussed throughout. Familiarity with the statistical package Stata is assumed.

SOCI 583 - QUANTITATIVE DATA ANALYSIS II
Short Title: QUANTITATIVE DATA ANALYSIS II
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces students to multiple regression methods - a set of models that relate an outcome (also referred to as response or dependent) variable to a set of explanatory or independent variables. Students should have a previous coursework on descriptive statistics, bivariate regression, as well as familiarity with Stata.

SOCI 584 - QUANTITATIVE ANALYSIS III
Short Title: QUANTITATIVE ANALYSIS III
Department: Sociology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture/Laboratory
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): SOCI 582 and SOCI 583
Description: The course will give an overview of several advanced statistical techniques commonly used in Sociology.

SOCI 585 - IDENTITIES IN A DIVERSE WORLD
Short Title: RACIAL IDENTITIES
Department: Sociology
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: How have shifts in ethnic and race diversity affected the way we answer the question, "who am I?" "Identities in a Diverse World" is a seminar dedicated to answering this core question by exploring the new frontiers of understanding race and ethnicity. Topics include: Racial Passing, Transracial adoption, Whiteness, and Immigration. Graduate/Undergraduate Equivalency: SOCI 485. Mutually Exclusive: Credit cannot be earned for SOCI 585 and SOCI 485.

SOCI 586 - MULTILEVEL MODELING
Short Title: MULTILEVEL MODELING
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): SOCI 582 and SOCI 583
Description: This course is an introduction to multilevel modeling methods for data with complex clustering. The major topics include two-level models for continuous, categorical, and count outcomes, three-level models, multilevel models of change and models for imperfectly nested data. Instructor Permission Required.

SOCI 596 - STATISTICAL PROGRAMMING
Short Title: STATISTICAL PROGRAMMING
Department: Sociology
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will provide a thorough introduction to the statistical software package Stata. The emphasis will be on important skills for quantitative research that are not typically covered in statistics classes. Topics will include: data management, creating graphs, presentation of results, workflow, and documenting one's work.
SOCI 600 - GRADUATE INDEPENDENT STUDY  
**Short Title:** GRADUATE INDEPENDENT STUDY  
**Department:** Sociology  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a major in Sociology. Enrollment is limited to Graduate level students.

**Course Level:** Graduate  
**Description:** The student will go beyond the basic graduate level theory course, doing advanced readings in theories, related to a substantive area in which the student concentrates.

SOCI 602 - QUANTITATIVE METHODS  
**Short Title:** QUANTITATIVE METHODS  
**Department:** Sociology  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a major in Sociology. Enrollment is limited to Graduate level students.

**Course Level:** Graduate  
**Description:** The student will do advanced work in an area of statistical interest with a faculty member who specializes in the techniques.

SOCI 603 - DIRECTED READING IN URBAN SOCIOLOGY  
**Short Title:** URBAN SOCIOLOGY  
**Department:** Sociology  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.

**Course Level:** Graduate  
**Description:** The student will do advanced readings in an area of statistical interest with a faculty member who specializes in the techniques.

SOCI 604 - MAXIMUM LIKELIHOOD ESTIMATION FOR GENERALIZED LINEAR MODELS  
**Short Title:** GENERALIZED LINEAR MODELS  
**Department:** Sociology  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a major in Sociology. Enrollment is limited to Graduate level students.

**Course Level:** Graduate  
**Description:** The student will do advanced readings in an area of statistical interest with a faculty member who specializes in the techniques.

SOCI 605 - NON-THESIS GRADUATE RESEARCH  
**Short Title:** NON-THESIS GRADUATE RESEARCH  
**Department:** Sociology  
**Grade Mode:** Standard Letter  
**Course Type:** Research  
**Credit Hours:** 1-9  
**Restrictions:** Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.

**Course Level:** Graduate  
**Description:** Individual research not for thesis credit. Repeatable for Credit.

SOCI 606 - THESIS RESEARCH  
**Short Title:** THESIS RESEARCH  
**Department:** Sociology  
**Grade Mode:** Standard Letter  
**Course Type:** Research  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.

**Course Level:** Graduate  
**Description:** Repeatable for Credit.
SOCI 607 - GENDER SEMINAR  
Short Title: GENDER SEMINAR  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: An overview of the construction and reproduction of gender as a social category. Course will compare various conceptualizations of gender and discuss structural-, interactional-, and individual-level processes that reproduce gender inequality. Will also explore interactions of gender with other axes of social difference, such as sexuality, race/ethnicity and social class. Graduate/Undergraduate Equivalency: SOCI 407. Mutually Exclusive: Credit cannot be earned for SOCI 607 and SOCI 407/SOCI 504.

SOCI 608 - GRADUATE RESEARCH DESIGN  
Short Title: GRADUATE RESEARCH DESIGN  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This required graduate seminar in sociological research design focuses on the logic of inquiry within the discipline, including practices of advanced empirical and theoretical contribution. Topics will span state-of-the-art analyses and their exemplars. Department Permission Required.

SOCI 609 - GRADUATE INDEPENDENT STUDY  
Short Title: GRADUATE INDEPENDENT STUDY  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Independent Study  
Credit Hours: 1-9  
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Sociological independent study under faculty supervision. Only open to graduate students. Repeatable for Credit.

SOCI 610 - PROFESSIONALIZATION WORKSHOP  
Short Title: PROFESSIONALIZATION WORKSHOP  
Department: Sociology  
Grade Mode: Satisfactory/Unsatisfactory  
Course Type: Seminar  
Credit Hour: 1  
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This professionalization workshop is designed to introduce graduate students to professionalization topics such as: giving a conference presentation, writing a fellowship or grant proposal, and the reviewing process of journals. Repeatable for Credit.

SOCI 611 - CRAFTING A DISSERTATION  
Short Title: CRAFTING A DISSERTATION  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This course will enable students to receive instructor and peer feedback on dissertation proposals and dissertation chapters. Topics covered will include how to write a dissertation, start to finish. Students must have successfully completed at least one comp exam by August 31st to be eligible.

SOCI 665 - GENDER AND HEALTH  
Short Title: GENDER AND HEALTH  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: This seminar explores the relationship between gender and health (longevity, physical illness and functioning, mental health, and health behavior). Specific topics include masculinity, disease expression, medical research, health care use, stress and social relationships, and intersectionality (race/ethnicity and sexuality) as they relate shaping health outcomes among men and women. There are additional requirements for Graduate students. Graduate/Undergraduate Equivalency: SOCI 465. Mutually Exclusive: Credit cannot be earned for SOCI 665 and SOCI 465.

SOCI 700 - DISSERTATION RESEARCH  
Short Title: DISSERTATION RESEARCH  
Department: Sociology  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 1-15  
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Sociology. Enrollment is limited to Graduate level students.  
Course Level: Graduate  
Description: Dissertation research credit. Repeatable for Credit.

Spanish & Portuguese (SPPO)  
SPPO 158 - INTRODUCTION TO LATIN AMERICAN STUDIES  
Short Title: INTRO LATIN AMERICAN STUDIES  
Department: Span Port & Latin Amer Studies  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Formerly SPAN 158. This course immerses students into Caribbean and Latin American studies by introducing them to the history, society, politics, and culture of the region, through a cross-disciplinary and a multi-national approach. Taught in English. Open to all students. Cross-list: LASR 158.
SPPO 330 - HISPANIC WRITING SEMINAR
Short Title: HISPANIC WRITING SEMINAR
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In this writing intensive seminar, students will learn the skills to think and write critically in Spanish about literary and cultural production from the global Hispanic world. Recommended Prerequisite(s): SPAN 301 or SPAN 302 or SPAN 303 or SPAN 312 or Permission of Instructor.

SPPO 331 - BRASIL ATUAL
Short Title: BRASIL ATUAL
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly PORT 331. Course examines topics in contemporary Brazil as presented in media, literature, film, and music. Works address persistent race, class, and gender inequalities, national identity, urban life, and environmental issues, among other topics. Further development of speaking, writing and vocabulary enrichment emphasized through discussions and interactive activities. Taught in Portuguese. Recommended Prerequisite(s): PORT 302, placement test, or permission of instructor.

SPPO 332 - APPROACHES TO HISPANIC LITERATURES
Short Title: APPROACHES HISPANIC LITERATURE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to Hispanic Literature where students will become familiar with the methodology of literary analysis to approach different genres and develop original and critical interpretation of texts. Course will give a wide and solid literary and analytical context for more advance courses in Spanish and Latin American literature. Recommended Prerequisite(s): SPAN 302 or Placement Test or Permission of Instrucor.

SPPO 340 - INTRODUCTION TO SPANISH LINGUISTICS
Short Title: INTRO TO SPANISH LINGUISTICS
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 352. Introduction to the study of the Spanish language covering the following areas of research: history, phonetics/phonology, morphosyntactic system, lexicon, semantics, pragmatics, sociolinguistics, and language acquisition. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 341 - DIALECTS IN CONTACT: SEARCHING FOR THE "INTERNATIONAL" FORM OF SPANISH
Short Title: DIALECTS IN CONTACT
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 34. Course will analyze the essence of language against the essence of dialects to determine (i) the logical and linguistic rationale behind judgments about language, (ii) social and political factors that lead to various decisions, and (iii) the role of popular beliefs on traditional views of proper language use. Recommended Prerequisite(s): SPAN 301 or SPAN 302 or SPAN 303 or SPAN 312 or permission of instructor.

SPPO 344 - MAPPING LATIN AMERICAN CULTURE
Short Title: MAPPING LATIN AMER CULTURE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 345. Explores key issues in Latin American culture. Important aspects of the contemporary situation in Latin America are also studied, including phenomena such as globalization, the rise of mega-cites, migration, authoritarianism, the impact of colonization and the rise of national states. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 345 - ART IN LATIN AMERICAN LITERATURE
Short Title: LATIN AMERICAN LITERATURE ART
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 343. This course explores important moments in the history of Latin American European and North American Art by reading literary works that dramatize the transformations of several key artistic movements. 19th century landscape painting, Post-impressionism, Surrealism, Muralism, and 1960s experimental art will be studied through the novels and poems of important Latin American authors. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.
SPPO 347 - INTRODUCTION TO MEDIEVAL AND EARLY MODERN SPANISH LITERATURE AND CULTURE
Short Title: MEDIEVAL&EARLY SPAN LIT&CULTUR
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course traces the literary history of Spain from the Medieval period to the 1700's. Students will analyze a wide range of masterpieces in poetry, prose, and drama that have marked the ideological and cultural development of the Iberian Peninsula. Recommended Prerequisite(s): SPAN 301 or SPAN 302 or SPAN 303 or SPAN 312 or Permission of Instructor.

SPPO 348 - INTRODUCTION TO MODERN SPANISH LITERATURE AND CULTURE, 18TH-21ST CENTURY
Short Title: INTRO MODERN SPAN LIT&CULTURE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 334. Course is a panoramic introduction to literary, ideological, cultural, and artistic trends from the Enlightenment to the present. Study will include a wide array of exceptional works, (novels, plays, essays, short stories and poems) from authors who have left milestones in modern Spanish literature. Taught in Spanish. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 349 - INTRODUCTION TO MODERN SPANISH LITERATURE AND CULTURE, 18TH-21ST CENTURY
Short Title: INTRO MODERN SPAN LIT&CULTURE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 334. Course is a panoramic introduction to literary, ideological, cultural, and artistic trends from the Enlightenment to the present. Study will include a wide array of exceptional works, (novels, plays, essays, short stories and poems) from authors who have left milestones in modern Spanish literature. Taught in Spanish. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 350 - BRAZILIAN LITERATURE & CULTURE
Short Title: BRAZILIAN LITERATURE & CULTURE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 346. Course focuses on critical readings of key texts of the 20th century. Materials drawn from Brazilian literature in translation as well as other cultural productions such as film and art. Some of the topics will include questions of national identity, social-racial relations, gender representations, and urban life. Taught in English. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 351 - LITERATURES FROM THE SOUTHERN CONE
Short Title: LIT FROM THE SOUTHERN CONE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 384. An introduction to the literature of the region known as “Cono Sur,” often considered the national literature of Argentina and Uruguay, the “gaucho literature” encompasses a wide variety of texts, from traditional ballads to novels, plays and poetry. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 352 - CARIBBEAN LITERATURE
Short Title: CARIBBEAN LITERATURE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 391. This course will introduce you to major writers and theories of Caribbean literature, by focusing on the representation of places, peoples, and practices. Close attention will be paid to historical and cultural contexts, while conducting an in-depth analysis of literary texts from different genres. Taught in Spanish. Topics vary. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 353 - CHICANO/A LITERATURE
Short Title: CHICANO/A LITERATURE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 396. A mixed-genre course focusing on the Chicano movement, the Chicano renaissance, and alternative literary and mythic traditions associated with them. Cross-list: ENGL 371, SWGS 354. Course URL: www.english.rice.edu

SPPO 354 - SECOND LANGUAGE ACQUISITION: LINGUISTIC, COGNITIVE AND SOCIAL DIMENSIONS
Short Title: SECOND LANGUAGE ACQUISITION
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 380. Second language acquisition seeks to describe the development of a second language. It also attempts to provide an explanatory account of the internal and external factors that guide this process. This course surveys various theoretical approaches to the analysis of second language (L2) acquisition. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.
SPPO 363 - CONSTRUCTS AND CONTEXTS IN L2 LEARNING: RESEARCH ON STUDY ABROAD
Short Title: RESEARCH ON STUDY ABROAD
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The object of this course is to analyze the effect of context of learning on both the definition of second language competence and the process by which that competence is acquired. Both theoretical constructs (i.e., definition and process) may be categorically different depending on the context in which acquisition occurs. Recommended Prerequisite(s): SPAN 264.

SPPO 364 - SPANISH CREATIVE WRITING
Short Title: SPANISH CREATIVE WRITING
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 388. This course will explore Spanish creative writings through an aesthetic experience. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor. Repeatable for Credit.

SPPO 368 - LATIN AMERICAN SHORT FICTION
Short Title: LATIN AMERICAN SHORT FICTION
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 388. Latin American writers have achieved great distinction in the genre of the short story. This course studies texts by some of the continent’s best-known short-story writers, such as Cortázar, Borges, Monterroso, Rulfo, Fuentes, García Márquez, Elena Garro, Ana Lydia Vega, Clarice Lispector, Benedetti, Uslar Pietri, Massiani, Lemebel, Asis, and Carpentier. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 373 - THE MEXICAN RENAISSANCE: ART, LITERATURE AND THE REVOLUTION OF 1910
Short Title: THE MEXICAN RENAISSANCE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 348. This course examines the history of the Mexican Revolution of 1910 through the cultural production that accompanied and was inspired by the political events and social transformations that marked the era. Literature (poetry, novels, short stories, essays), painting (murals), photography and other cultural manifestations (magazines, manifestos, and posters) of the first revolution of the 20th century will be studied. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 375 - A REVOLUTION FROM WITHIN: TRENDS IN CONTEMPORARY CUBAN CULTURE
Short Title: TRENDS IN CUBAN CULTURE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 392. This research seminar will explore contemporary trends in Cuban culture through literary texts, films, music and works of art. We will examine the ways in which politics and the practices of artistic representation intersect in post-revolutionary Cuba. A research trip to Cuba has been organized as part of this seminar. Course taught in Spanish. Instructor Permission Required. Cross-list: FILM 339, HART 304. Recommended Prerequisite(s): Third year Spanish or permission of instructor.

SPPO 377 - BRAZILIAN MUSIC AND SOCIAL MOVEMENTS
Short Title: BRAZIL: MUSIC&SOCIAL MOVEMENTS
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 374. Course will consider the social dimensions of various musical genres such as Bossa Nova, Tropicalia, and Hip-Hop. Through an interdisciplinary approach, will discuss music as a contextualized social activity and examine Brazilian social movements through the lens of music. Taught in English.

SPPO 380 - CURRENT ISSUES IN SPAIN
Short Title: CURRENT ISSUES IN SPAIN
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 378. Exploration of diverse cultural aspects of today’s Spain through films and newspaper articles. The topics discussed will serve as a springboard for further development of writing skills. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.
SPPO 381 - SPANISH CINEMA
Short Title: SPANISH CINEMA
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Course will examine how Spanish film has represented the sociocultural and political life of the country – from the Francoist years, exposing the image of a Catholic and homogenous Spain, to a post-Francoist era open to reveal social problems from a more secular and global perspective. Recommended Prerequisite(s): (SPAN 263 and SPAN 264) or SPAN 303 or Placement Test.

SPPO 382 - THEATER AND PERFORMANCE WORKSHOP
Short Title: THEATER & PERFORMANCE WORKSHOP
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to a wide array of Spanish plays from the Early Modern period to the present. Participants will also have the opportunity to create a series of original scenes, that they will adapt, direct and perform as the final outcome of the seminar. Recommended Prerequisite(s): SPAN 301 or SPAN 302 or SPAN 303 or SPAN 312 or Permission of Instructor.

SPPO 384 - THE SPANISH AVANT-GARDE
Short Title: THE SPANISH AVANT-GARDE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 377. This cross-genre, multimedia course examines the contributions of major figures (Picasso, Gris, Dalí, Diego, Alberti, Lorca, Bunuel, Gomez de la Serna) to the Spanish avant-garde in the 20th century. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 385 - TRENDS IN HISPANIC CINEMA
Short Title: TRENDS IN HISPANIC CINEMA
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 390. This course examines the ways in which films in both Spain and Latin America have represented the cultural contexts of their countries. Focus is on the theme of power, and the consequences on social and individual lives. Cross-list: SWGS 390. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 387 - POETRY AND CULTURE
Short Title: POETRY AND CULTURE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 376. Study of contemporary poetry and its cultural functions. Students engage with poetry through analysis and interpretation of selected Spanish poets. Students also practice writing and translating poems. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 392 - CONTEMPORARY SPANISH CULTURE AND SOCIETY
Short Title: COMTEMP SPAN CULTURE & SOCIETY
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to the history of Spanish culture and civilization, establishing a foundation of the study of contemporary social, economic, and political realities of the country. Course will examine economic development and Spain’s place in the European Union; the recent economic crisis; labor reform and its impact; and the phenomenon of immigration. Instructor Permission Required.

SPPO 403 - READINGS IN LATIN AMERICAN LIT
Short Title: READINGS IN LATIN AMERICAN LIT
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 401. Course offers methodologies for the analysis of Latin-American cultural practices, including letters (fiction), diverse modalities of visual culture (film, plastic art, photography, spectacles). Combines theoretical reading and corresponding analytical practices. Useful for students of literature, psychology, history, political science, sociology and history of art. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 410 - THE CITY IN LATIN AMERICA
Short Title: THE CITY IN LATIN AMERICA
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 402. This course will explore representations of the city in both new Latin American writings and films, with a special focus on the changing urban landscape, the representation of poverty and the excluded from the new global economy, environmental issues and biopolitics, as well as hybrid cultures and multicultural identities. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.
SPPO 411 - LITERATURE AND THE ENVIRONMENT IN LATIN AMERICA
Short Title: LATIN AMER LIT & ENVIRONMENT
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 403. This course aims to offer students a systematic contact with a representative sample of the literature and scholarship about the mutual relationships between human societies and their natural environments, particularly but not exclusively in Latin America. Taught in Spanish. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 412 - BOOM-BOOM-CRACK: LATIN AMERICAN NOVEL
Short Title: BOOM-BOOM-CRACK: LATIN AM NOVEL
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 462. Works by Asturias, Carpenter, Rufo, Onetti, Vargas Llosa, Cortazar, Fuentes, and others. Examines how Spanish American novelists from the 1940s onward appropriated the techniques of European modernist literature and infused them with new cultural content. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 415 - BORDER NARRATIVES
Short Title: BORDER NARRATIVES
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 453. This course will analyze certain types of cultural productions (fiction, movies, etc.) produced in geographical contact zones, that generate hybrid languages and genres. These are products of migrations and nomadic people. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 422 - LATIN AMERICAN CINEMA
Short Title: LATIN AMERICAN CINEMA
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 408. This course explores the national cinemas of various regions of Latin America. Special attention is given to the different periods of its development, to the close relationship between political contexts and filmmaking, to the understanding of Latin American cinema from cultural studies views, and to the current shaping of Latin America in light of globalization. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 430 - LATIN AMERICAN WOMEN'S CULTURE
Short Title: LATIN AMERICAN WOMEN'S CULTURE
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 373. An introduction to major Mexican novels of the Twentieth Century, including works by Juan Rulfo, Carlos Fuentes, Elena Garro, Jose Emilio Pacheco, Elena Poniatowska, Jorge Volpi and Cristina Rivera Garza. We will examine these works through a variety of methods including historical biographical analysis as well as through formalist approaches. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 450 - TWENTIETH CENTURY MEXICAN NOVEL
Short Title: TWENTIETH CENTURY MEXICAN NOVEL
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 456. Studies the cultural production (literary, artistic, cinematic) of intellectual women in Latin America. Examines the struggles for interpretive power in works by women from the colonial period to the present. Cross-list: SWGS 466. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.

SPPO 451 - OCTAVIO PAZ
Short Title: OCTAVIO PAZ
Department: Span Port & Latin Amer Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Formerly SPAN 468. Studies the literary and intellectual career of Nobel prize-winning Mexican poet and essayist Octavio Paz. Topics to be covered include: poetry and modernity; literature and national identity; art and the avant-garde; Paz’s role in political debates in Mexico; the reception of his work at home and abroad. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Description</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Description</th>
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<tbody>
<tr>
<td>SPPO 456</td>
<td>CHICANA/O LITERATURE</td>
<td>SPPO 456 - CHICANA/O LITERATURE</td>
<td>Span Port &amp; Latin Amer Studies</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>A variable topics course designed to build on student knowledge of chicano/a literature and culture gained earlier in the curriculum. Past topics have included the Chicano/a novel, and Transitions and Translations Chicano/a Autobiography. Cross-list: ENGL 471. Repeatable for Credit.</td>
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<td>SPPO 462</td>
<td>DON QUIJOTE</td>
<td>SPPO 462 - DON QUIJOTE</td>
<td>Span Port &amp; Latin Amer Studies</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Cervantes's masterpiece is studied in its relationship to the books of knight errantry, and to the picaresque and pastoral novels, with emphasis on the innovative techniques of Cervantes which contribute to the birth of the modern novel. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.</td>
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<td>SPPO 466</td>
<td>THE SPANISH CIVIL WAR</td>
<td>SPPO 466 - THE SPANISH CIVIL WAR</td>
<td>Span Port &amp; Latin Amer Studies</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Prelude to World War II and culmination of perennial struggles between the so-called &quot;two Spains,&quot; the Spanish Civil War (1936-39) is a watershed moment in modern Spanish and European history. Interdisciplinary, multi-media approach: the war seen through Spanish and foreign novels, poetry, film, painting, journalism, songs, and posters. Recommended Prerequisite(s): SPAN 301, 302, 303, 312, or Permission of the Instructor.</td>
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<td>SPPO 477</td>
<td>SPECIAL TOPICS</td>
<td>SPPO 477 - SPECIAL TOPICS</td>
<td>Span Port &amp; Latin Amer Studies</td>
<td>Standard Letter</td>
<td>Internship/Practicum, Lecture, Seminar</td>
<td>1-4</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Independent research projects by outstanding Hispanic Studies majors leading to a substantial honors essay, undertaken in close cooperation with a departmental faculty member, who must first approve the thesis proposal. Department Permission Required.</td>
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<td>SPPO 490</td>
<td>INDEPENDENT STUDY</td>
<td>SPPO 490 - INDEPENDENT STUDY</td>
<td>Span Port &amp; Latin Amer Studies</td>
<td>Standard Letter</td>
<td>Independent Study</td>
<td>1-3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Research in Hispanic literature, Hispanic linguistics, Hispanic culture and civilization. Open to qualified juniors and seniors interested in a topic not covered in other courses. Instructor Permission Required.</td>
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<td>SPPO 492</td>
<td>SUMMER INTERNSHIP IN MADRID</td>
<td>SPPO 492 - SUMMER INTERNSHIP IN MADRID</td>
<td>Span Port &amp; Latin Amer Studies</td>
<td>Standard Letter</td>
<td>Internship/Practicum</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Independent research projects by Spanish companies or non-governmental organizations (NGO). In this professional practice, participants will be immersed in daily business activities and special projects associated with their particular area of interest. Nearly all interactions with supervisors and colleagues will be in Spanish. 5-Week Summer Session Course. Instructor Permission Required.</td>
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<td>SPPO 495</td>
<td>HONORS THESIS</td>
<td>SPPO 495 - HONORS THESIS</td>
<td>Span Port &amp; Latin Amer Studies</td>
<td>Standard Letter</td>
<td>Independent Study</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td>Undergraduate Upper-Level</td>
<td>Independent research projects by outstanding Hispanic Studies majors leading to a substantial honors essay, undertaken in close cooperation with a departmental faculty member, who must first approve the thesis proposal. Department Permission Required.</td>
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<td>SPPO 497</td>
<td>SPECIAL TOPICS</td>
<td>SPPO 497 - SPECIAL TOPICS</td>
<td>Span Port &amp; Latin Amer Studies</td>
<td>Standard Letter</td>
<td>Internship/Practicum, Lecture, Seminar</td>
<td>1-4</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>Independent research projects by outstanding Hispanic Studies majors leading to a substantial honors essay, undertaken in close cooperation with a departmental faculty member, who must first approve the thesis proposal. Department Permission Required.</td>
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SPAN 141 - FIRST YEAR SPANISH I  
Short Title: FIRST YEAR SPANISH I  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: Development of interactional competence in Spanish (sociolinguistic and sociocultural knowledge) to communicate and interact with speakers of Spanish. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. No prior knowledge of this language is necessary. Placement Test is required. Mutually Exclusive: Credit cannot be earned for SPAN 141 and SPAN 161/SPAN 222.  
Course URL: clicspanish.blogs.rice.edu

SPAN 142 - FIRST YEAR SPANISH II  
Short Title: FIRST YEAR SPANISH II  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): SPAN 141  
Description: Continuation of SPAN 141. Development of interactional competence in Spanish (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Spanish. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for SPAN 142 and SPAN 262.  
Course URL: clicspanish.blogs.rice.edu

SPAN 204 - INTERMEDIATE SPANISH FOR BICULTURAL STUDENTS  
Short Title: INT SPAN BICULTURAL STUDENTS  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course is for students who have been exposed to Spanish at home, through relatives and/or in the community and who wish to improve their confidence and intermediate fluency by expanding their formal knowledge of the language and of Hispanic cultures. Authentic materials such as short stories, poetry, films and articles will be used to develop reading, writing, speaking and listening skills. Placement Test is required.  
Course URL: clicspanish.blogs.rice.edu

SPAN 222 - AP/OTH CREDIT IN SPANISH LANGUAGE  
Short Title: AP/OTH CREDIT SPANISH LANGUAGE  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Transfer  
Credit Hours: 3  
Course Level: Undergraduate Lower-Level  
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Credit cannot be earned for SPAN 222 and SPAN 101/SPAN 141/SPAN 161.  
Course URL: clicspanish.blogs.rice.edu

SPAN 255 - AP/OTH CREDIT IN INTERMEDIATE SPANISH  
Short Title: AP/OTH CREDIT INTERM. SPAN  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Transfer  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Description: This course provides credit for students who have successfully completed approved examinations, such as Advanced Placement exams. This credit counts toward the total credit hours required for graduation. Mutually Exclusive: Credit cannot be earned for SPAN 225 and SPAN 201/SPAN 263.  
Course URL: clicspanish.blogs.rice.edu

SPAN 263 - SECOND YEAR SPANISH I  
Short Title: SECOND YEAR SPANISH I  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): SPAN 142  
Description: Continuation of SPAN 142. Development of interactional competence in Spanish (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Spanish. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for SPAN 263 and SPAN 201/SPAN 225.  
Course URL: clicspanish.blogs.rice.edu

SPAN 264 - SECOND YEAR SPANISH II  
Short Title: SECOND YEAR SPANISH II  
Department: Cntr Lang & Intercultural Comm  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Lower-Level  
Prerequisite(s): SPAN 263  
Description: Continuation of SPAN 263. Development of interactional competence in Spanish (sociolinguistic and socio cultural knowledge) to communicate and interact with speakers of Spanish. The course is based on a student-centered, critical-thinking approach to language analysis/acquisition. Mutually Exclusive: Credit cannot be earned for SPAN 264 and SPAN 202.  
Course URL: clicspanish.blogs.rice.edu
SPAN 303 - ADVANCED SPANISH FOR BI-CULTURAL STUDENTS

Short Title: ADV SPAN BI-CULTURAL STUDENTS
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SPAN 204
Description: SPAN 303 aims to bring students to advanced proficiency in Spanish, enabling them to interact confidently in a wide variety of contexts, while providing them with cultural insights about the Hispanic world. It is designed for students who come with bi-cultural exposure and at least intermediate proficiency in Spanish.

SPAN 321 - SPECIAL TOPICS: ADVANCED SPANISH I

Short Title: SPECIAL TOPICS: ADV SPANISH I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SPAN 264
Description: This course helps students develop an advanced level of proficiency in Spanish through the analysis and use of the target language in the context of specific topics of interest that will vary.

SPAN 322 - SPECIAL TOPICS: ADVANCED SPANISH II

Short Title: SPECIAL TOPICS: ADV SPANISH II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SPAN 321
Description: This course helps students develop an advanced level of proficiency in Spanish through the analysis and use of the target language in the context of specific topics of interest that will vary.

SPAN 323 - SPANISH PROFESSIONAL APPRENTICESHIP I

Short Title: SPANISH PROFESSIONAL APPR I
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SPAN 322
Description: This hybrid course combines internship hours and course hours for students who are interested in using their Spanish-language skills in professional settings. Course meets on campus on Wednesdays; and on location during internship working hours, to be determined between student and instructor.

SPAN 324 - SPANISH PROFESSIONAL APPRENTICESHIP II

Short Title: SPANISH PROFESSIONAL APPR II
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course provides experiential learning for student show are interested in expanding their interactional and intercultural competence in Spanish in professional settings. Students participate as apprentices which includes working in contextualized strategic scenarios (simulated and/or real) such as simulations, shadowing professionals, work-related tasks, and case studies. Department Permission Required.
Course URL: clicspanishblogs.rice.edu

SPAN 325 - SPECIAL TOPICS: ADVANCED SPANISH III

Short Title: SPECIAL TOPICS: ADV SPANISH III
Department: Cntr Lang & Intercultural Comm
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This is a continuation of SPAN 323 or SPAN 324. Students develop an advanced level of proficiency and interactional competence in Spanish through analysis and use of the target language in the study abroad context. Students will facilitate class discussions with students in SPAN 322; collect samples of interactional and sociolinguistic data in various settings, and analyze and classify collected data. Department Permission Required.

Sport Management (SMGT)

SMGT 260 - INTRODUCTION TO SPORT MANAGEMENT

Short Title: INTRO TO SPORT MANAGEMENT
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Freshman or Sophomore. Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course is designed to: first, provide the student with an overview of the structure of the sport industry as well as issues facing sport organizations and how management techniques can be applied to solve business problems. Second, students will be introduced to the various sub-disciplines within sport management (marketing, law, sales, event management, etc). Third, students will become familiar with career opportunities in sport management. Special Registration is required for Juniors and Seniors.
SMGT 266 - LEADING WITH SERVICE
Short Title: LEADING WITH SERVICE
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Freshman or Sophomore. Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): SMGT 260
Description: This course will examine industry leaders in customer service, identifying the unique qualities that their employees exhibit. Students will learn the fundamentals of service delivery and various research and various research and analysis methods, then apply those in practical applications with local sports franchises. By the conclusion of this course, students will have created a customer service vision for a fictitious organization, developed training programs for employees and created measurable objectives for success. This course is for Freshmen and Sophomores only. Special Registration is required for Juniors and Seniors.

SMGT 276 - SPORT MANAGEMENT PRACTICUM
Short Title: SPORT MANAGEMENT PRACTICUM
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): SMGT 260 or KINE 260
Description: This class is designed to prepare students for their internship. Students will learn how to construct an effective resume, interview skills, business etiquette, etc. Students will also gain real-life experience by working with one of the numerous sports organizations in Houston for 100 hours during the course of the semester.

SMGT 350 - SPORT ETHICS
Short Title: SPORT ETHICS
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260 or KINE 260
Description: This course is designed to assist students in self-evaluating, examining and developing a philosophy, values, and moral reasoning skills. Major moral/ethical issues and theoretical frameworks inside and outside of sport will be researched and discussed. Students will experience the ethical decision-making process through opportunities for critical analysis drawing upon their philosophical bases. All major theories of ethics will be examined with special application made to the sport management environment.

SMGT 360 - SALES & REVENUE GENERATION IN SPORT
Short Title: SALES & REVENUE GENERATION
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260 or KINE 260
Description: In this class, students are introduced to the characteristics that are required for successful selling in the sport industry, such as developing proposals, making persuasive sales presentations, closing deals, maintaining relationships, etc. Students will also explore the various ways that revenue is generated in the sport industry.

SMGT 361 - SPORT FINANCE AND COMMUNITY ENGAGEMENT
Short Title: SPORT FINANCE
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260 or KINE 260
Description: This course will explore economic and financial principals that are significant in the sport industry. This course also addresses the issues, challenges, and opportunities of civic life and the benefits that diverse populations receive when sports organizations use their unique power to unite members of a community who otherwise might not share in the array of benefits provided.

SMGT 362 - SPORT MARKETING
Short Title: SPORT MARKETING
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260 and (HUMA 201 or LEAD 321 or BUSI 296)
Description: This course covers the essentials of sport marketing which includes planning, promotions, operations, and market analysis. Students will examine the fundamental principles used in the marketing of sport, products, events, and the importance of service quality. Recommended Prerequisite(s): SMGT 260 and (HUMA 201 or LEAD 321 or BUSI 296)

SMGT 364 - SPORT LAW
Short Title: SPORT LAW
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 260 or KINE 260
Description: This course is designed to introduce students to the American legal system and to the types of legal reasoning used by lawyers and judges. This course will also provide an overview of how various areas of sports are integrated with the American legal system.
SMGT 365 - SPORT MEDIATION  
**Short Title:** SPORT MEDIATION  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (SMGT 260 or KINE 260) and (SMGT 266)  
**Description:** This course introduces the course principles of mediation. Within the class each student will become familiar with the nature of conflict, have a better understanding of culture awareness, as well as the ethics within the field of mediation. Students will conduct a full mediation while maintaining neutrality, exhibiting negotiation skills, and drafting agreements.  

SMGT 366 - EVENT MANAGEMENT  
**Short Title:** EVENT MANAGEMENT  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (SMGT 260 or KINE 260) and SMGT 266  
**Description:** Practical application of the principles and theory related to planning, organization, and execution of sport and entertainment events. Students will case study examples of crisis management and even day coordination. During the semester, students will attend large scale events and evaluate key performance indicators. By the conclusion of this course, students will be prepared to design, run, and measure the success of events and event management teams.  

SMGT 368 - ISSUES IN CONTEMPORARY SPORT  
**Short Title:** ISSUES IN CONTEMPORARY SPORT  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** SMGT 260 or KINE 260  
**Description:** This class examines the social institution of sport and its consequences for American society and various social organizations ranging from leisure to professional sport. Topics such as deviance in sport, discrimination, women in sport, and ethics will be covered. This class will also review the socialization implications from participation in sport.  

SMGT 376 - SPORT MANAGEMENT INTERNSHIP 1  
**Short Title:** SPORT MANAGEMENT INTERNSHIP 1  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (SMGT 260 or KINE 260) and (SMGT 276 or KINE 276)  
**Description:** Internship experience for upper-level students in sport management.  

SMGT 377 - SPORT MANAGEMENT INTERNSHIP 2  
**Short Title:** SPORT MANAGEMENT INTERNSHIP 2  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (SMGT 260 or KINE 260) and (SMGT 276 or KINE 276)  
**Description:** Internship experience for upper-level students in sport management.  

SMGT 378 - SPORT MANAGEMENT INTERNSHIP 3  
**Short Title:** SPORT MANAGEMENT INTERNSHIP 3  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (SMGT 260 or KINE 260) and (SMGT 276 or KINE 276)  
**Description:** Internship experience for upper-level students in sport management.  

SMGT 379 - SPORT MANAGEMENT INTERNSHIP 4  
**Short Title:** SPORT MANAGEMENT INTERNSHIP 4  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Internship/Practicum  
**Credit Hours:** 1-6  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (SMGT 260 or KINE 260) and (SMGT 276 or KINE 276)  
**Description:** Internship experience for upper-level students in sport management. Repeatable for Credit.  

SMGT 405 - RESEARCH IN SPORT MANAGEMENT  
**Short Title:** RESEARCH IN SPORT MANAGEMENT  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Research  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** (KINE 319 or STAT 280) and (SMGT 260 or KINE 260)  
**Description:** This class is designed to provide students with experience working on actual research projects, likely with one of the professional sport franchises in Houston. At the end of the semester, the class will present its findings to the organization’s upper management.
SMGT 415 - THEORIES OF HIGH LEVEL PERFORMANCE  
**Short Title:** THEORIES-HIGH LVL PERFORMANCE  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This is a class designed for students who plan to go into coaching or training. It will provide the most current information available for training elite athletes in the area of strength, power, speed, and flexibility. Experts in the field of strength training, plyometrics, speed training, and flexibility will speak. The nature and basis of elite athlete training related to exercise physiology, biomechanics, motor learning, sport psychology, and nutrition will be explored.

SMGT 430 - INTRODUCTION TO SPORT ANALYTICS  
**Short Title:** INTRO TO SPORT ANALYTICS  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** SMGT 260 and SMGT 430  
**Description:** The focus of this course will be to provide the basics for understanding and applying analytical techniques to professional teams both on the sports side (predicting player performance and outcomes) and the business side (establishing business models). A survey into basic statistical techniques (multiple regression, discriminant analysis, etc.) will be the foundation of the class.

SMGT 440 - SPORT BUSINESS ANALYTICS  
**Short Title:** SPORT BUSINESS ANALYTICS  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** SMGT 260 and SMGT 430  
**Description:** In this age of Big Data, employees must be tech savvy with a strong background in computer and statistical analysis. Sport Business Analytics calls for special approaches to marketing and pricing. This course is designed to introduce the students to techniques that will allow for productive sport business analytics. Instructor Permission Required.

SMGT 460 - BUSINESS ANALYSIS IN SPORT  
**Short Title:** BUSINESS ANALYSIS IN SPORT  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** SMGT 260 or KINE 260  
**Description:** Students will be exposed to the aspects of effectively planning for and introducing change in sport organizations. This will include an examination of the successful management of organizational and behavioral changes, focusing on planned and unplanned changes and emphasizing development of change strategies and the measurement of change effectiveness.

SMGT 464 - ADVANCED SPORT LAW  
**Short Title:** ADVANCED SPORT LAW  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** SMGT 364  
**Description:** This course examines legal issues impacting amateur and professional sports. Students will analyze sport cases and materials that cover multiple disciplines, including contracts, torts, constitutional law, labor and employment, and criminal law. Students will augment their learning through analysis and discussion of up-to-the-minute professional and collegiate sports law developments.

SMGT 465 - SPORT CONTRACTS AND NEGOTIATION  
**Short Title:** SPORT CONTRACTS & NEGOTIATION  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** SMGT 260 and SMGT 364  
**Description:** This course introduces students to contracts and negotiations and how they are used in sport management. Students will have an updated portfolio filled with examples of their work. Successful journalists must be able to communicate through their writing, their spoken word, and also through video. Students in this class will learn all of the different journalism formats and techniques including writing short and long articles, blogging, videos, podcasts, interviews, PR writing, social media, etc. Students will complete assignments in each of these areas. When students finish the course, they will have an updated portfolio filled with examples of their work. Recommended Prerequisite(s): HUMA 201 or LEAD 321.

SMGT 467 - SPORTS JOURNALISM  
**Short Title:** SPORTS JOURNALISM  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** SMGT 260 or KINE 260 and SMGT 362 or KINE 362  
**Description:** An applied study of media in business and sport with an emphasis on press conferences, news releases, media-athlete relations, communications, print journalism, and community relations. Recommended Prerequisite(s): HUMA 201 or LEAD 321.

SMGT 470 - ADVANCED SPORT LAW  
**Short Title:** ADVANCED SPORT LAW  
**Department:** Sport Management  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** SMGT 260 or KINE 260  
**Description:** This course introduces students to contracts and negotiations and how they are used in sport management. Students will have an updated portfolio filled with examples of their work. Successful journalists must be able to communicate through their writing, their spoken word, and also through video. Students in this class will learn all of the different journalism formats and techniques including writing short and long articles, blogging, videos, podcasts, interviews, PR writing, social media, etc. Students will complete assignments in each of these areas. When students finish the course, they will have an updated portfolio filled with examples of their work. Recommended Prerequisite(s): HUMA 201 or LEAD 321.
SMGT 470 - SPORT MANAGEMENT SEMINAR
Short Title: SPORT MANAGEMENT SEMINAR
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (SMGT 260 or KINE 260) and (SMGT 276 or KINE 276)
Description: The object of this course is to expose students to upper-level problem-solving methods in the sport management industry. Students will learn by writing and solving case studies as well as discussing current issues. This class is designed for students who are pursuing a career in the sport management industry. Students will also interact with a series of speakers from the industry. Students should have completed the majority of SMGT classes before considering taking this course. Instructor Permission Required. Repeatable for Credit.

SMGT 490 - SEMINAR IN SPORTS ANALYTICS
Short Title: SEMINAR IN SPORTS ANALYTICS
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): SMGT 430 and COMP 140 and STAT 385 and STAT 405
Description: This course is designed to be the culminating experience in the Sport Analytics Minor. It will involve working with a professional or college sports team researching a real problem. Also, selected speakers will discuss cutting edge research in the field of Sports Analytics. Instructor Permission Required.

SMGT 495 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Junior or Senior. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Reading or research project to be determined by discussions between student(s) and faculty member(s). Must have the approval of the Chair of the Department of Sport Management and the participating faculty member. Instructor Permission Required.

SMGT 498 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Topics may vary. Please consult with the Sport Management Program for additional information. Repeatable for Credit.

SMGT 499 - TEACHING PRACTICUM
Short Title: TEACHING PRACTICUM
Department: Sport Management
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Advanced teaching experience for upper level students who have demonstrated a particular aptitude and interest in an area of sport management. Students assist in conducting a course in which they have previously excelled. The student will learn techniques in course management, instruction, and evaluation. The Chair of the Department of Sport Management must approve all teaching assistants. Pre-requisites: declared Sport Management major. Student must have received at least an "A" in the course serving as the practicum. Instructor Permission Required. Repeatable for Credit.

Statistics (STAT)

STAT 280 - ELEMENTARY APPLIED STATISTICS
Short Title: ELEMENTARY APPLIED STATISTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Topics include basic probability, descriptive statistics, probability distributions, confidence intervals, significance testing, simple linear regression and correlation, association between categorized variables.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 281 - HISTORY OF NUMBERS AND GAMES OF CHANCE
Short Title: NUMBER HISTORY/GAMES OF CHANCE
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Starting with the colorful history of numbers, we discover their use to characterize chance or luck through probability; students will participate in one major project and submit a report-application areas include physics, computer science, sports, finance, etc. The course is accessible to sophomores and juniors in science, engineering or business. Cross-list: COMP 281, ELEC 281.
STAT 305 - INTRODUCTION TO STATISTICS FOR BIOSCIENCES
Short Title: INTRO TO STAT FOR BIOSCIENCES
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 101 and MATH 102
Description: An introduction to statistics for Biosciences with emphasis on statistical models and data analysis techniques. Computer-assisted data analysis and examples, are explored in laboratory sessions. Topics include descriptive statistics, correlation and regression, categorical data analysis, statistical inference through confidence intervals and significance testing, rates, and proportions. Real-world examples are emphasized. Recommended Prerequisite(s): MATH 212.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 310 - PROBABILITY AND STATISTICS
Short Title: PROBABILITY & STATISTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 102
Description: Probability and the central concepts and methods of statistics including probability, distributions of random variables, expectation, sampling distributions, estimation, confidence intervals, and hypothesis testing. Cross-list: ECON 307. Recommended prerequisite(s): MATH 212.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 312 - PROBABILITY & STATISTICS FOR ENGINEERS
Short Title: PROB & STAT FOR ENGINEERS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 102
Description: Probability and the central concepts and methods of statistics including probability, distributions of random variables, expectation, sampling distributions, estimation, confidence intervals, and hypothesis testing. Examples are predominantly from civil and environmental engineering. Recommended Prerequisite(s): MATH 212.

STAT 313 - UNCERTAINTY AND RISK IN URBAN INFRASTRUCTURES
Short Title: UNCERT & RISK IN URBAN INFRASTR
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 312 or STAT 310 or ECON 307 or ECON 382 or STAT 331 or ELEC 331
Description: Practical applications and relevance of infrastructure risk are developed in the context of real engineering problems and phenomena, including unique systems and challenges of the gulf coast area. The course starts with a survey of the roles of probability in engineering and focuses on computer-based methods, the Bayesian approach, risk analysis tools, and infrastructure safety. Cross-list: CEVE 313. Repeatable for Credit.

STAT 376 - ECONOMETRICS
Short Title: ECONOMETRICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 209 or ECON 309 or ECON 446) and (ECON 308 or ECON 401 or ECON 477)
Description: Survey of estimation and forecasting models. Includes multiple regression time series analysis. A good understanding of linear algebra is highly desirable. Cross-list: ECON 310. Mutually Exclusive: Credit cannot be earned for STAT 376 and ECON 409/STAT 400.

STAT 385 - METHODS OF DATA ANALYSIS AND SYSTEM OPTIMIZATION
Short Title: METHODS FOR DATA ANALYSIS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 280 or STAT 305 or STAT 310 or ECON 307 or STAT 312
Description: The three general topic areas covered in this methodology oriented course are statistical methods including regression, sampling, and experimental design; simulation based methods in statistics, queuing and inventory problems; and an introduction to optimization methods. Excel will serve as the basic computing software.
Course URL: statistics.rice.edu/feed/Courses.aspx
STAT 405 - R FOR DATA SCIENCE
Short Title: R FOR DATA SCIENCE
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 305 or STAT 312 or (STAT 310 or ECON 307 or ECON 382) or STAT 385
Description: Students will learn how to work through data science problems within the statistical programming language R. The course covers the complete analytical process, from getting your data into R, to applying appropriate exploratory and statistical analysis, and communicating the results. Important topics in data science (e.g. databases, web scraping, and big data) and efficient programming are integrated throughout the course. Graduate/Undergraduate Equivalency: STAT 605. Mutually Exclusive: Credit cannot be earned for STAT 405 and STAT 605.

STAT 410 - LINEAR REGRESSION
Short Title: LINEAR REGRESSION
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 310 or STAT 312 or ECON 307 or ECON 382
Description: An introduction to linear regression and its applications. Topics include simple and multiple linear regression, least squares, analysis of variance, model selection, diagnostics, remedial measures. Applications to real data using statistical software are emphasized. Recommended Prerequisite(s): CAAM 335 or MATH 354 or MATH 355.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 411 - ADVANCED STATISTICAL METHODS
Short Title: ADVANCED STATISTICAL METHODS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (STAT 310 or STAT 312 or ECON 307 or ECON 382) and (STAT 410 or STAT 615)
Description: Advanced topics in statistical applications such as sampling, experimental design and statistical process control. STAT 411 will have assignments and examinations focusing more on basic concepts than on theoretical methods. Graduate/Undergraduate Equivalency: STAT 616. Mutually Exclusive: Credit cannot be earned for STAT 411 and STAT 616.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 413 - INTRODUCTION TO STATISTICAL MACHINE LEARNING
Short Title: INTRO TO STAT MACHINE LEARNING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 411 and STAT 405 or CAAM 210 or COMP 140 or COMP 130
Description: This course is an introduction to concepts, methods, and best practices in statistical machine learning. Topics covered include regularized regression, classification, kernels, dimension reduction, clustering, trees, and ensemble learning. Emphasis will be placed on applied data analysis and computation. Recommended Prerequisite(s): STAT 411 and CAAM 335 or MATH 354 or MATH 355.

STAT 415 - DATA SCIENCE CONSULTING
Short Title: DATA SCIENCE CONSULTING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 405 or COMP 140 or CAAM 210
Description: Students in this course will advise clients from across this Rice community in a data science consulting clinic, learn best practices in consulting, and gain exposure to a variety of real data science problems. Instructor Permission Required. Recommended Prerequisite(s): STAT 413 or COMP 440 or COMP 540 or COMP 330 or STAT 411. Mutually Exclusive: Credit cannot be earned for STAT 415 and STAT 515. Repeatable for Credit.

STAT 418 - PROBABILITY
Short Title: PROBABILITY
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 413 or COMP 440 or COMP 540 or COMP 330 or STAT 411
Description: Students will learn how to work through data science problems within the statistical programming language R. The course covers the complete analytical process, from getting your data into R, to applying appropriate exploratory and statistical analysis, and communicating the results. Important topics in data science (e.g. databases, web scraping, and big data) and efficient programming are integrated throughout the course. Graduate/Undergraduate Equivalency: STAT 605. Mutually Exclusive: Credit cannot be earned for STAT 405 and STAT 605.

Course URL: statistics.rice.edu/feed/Courses.aspx
STAT 419 - STATISTICAL INFERENCE
Short Title: STATISTICAL INFERENCE
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (MATH 354 or MATH 355 or CAAM 335) and STAT 418
Description: Topics include principles of data reduction, point estimation, hypothesis testing, interval estimation, Bayesian inference, Decision Theory, inference foundations of analysis of variance and regression. STAT 419 will have assignments and examinations focusing more on basic concepts than on theoretical methods. Graduate/Undergraduate Equivalency: STAT 519. Mutually Exclusive: Credit cannot be earned for STAT 419 and STAT 519.

STAT 421 - APPLIED TIME SERIES AND FORECASTING
Short Title: APPLIED TIME SERIES/FORECASTING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 410
Description: Applied time series modeling and forecasting, with applications to financial markets. STAT 621 is a graduate version of STAT 421 with advanced assignments. Graduate/Undergraduate Equivalency: STAT 621. Recommended Prerequisite(s): STAT 410.
Mutually Exclusive: Credit cannot be earned for STAT 421 and STAT 621.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 423 - PROBABILITY IN BIOINFORMATICS AND GENETICS
Short Title: PROB BIOINFORMATICS & GENETICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 310 or STAT 312 or STAT 418
Description: Course introduces the student to modern biotechnology and genomic data. Statistical methods to analyze genomic data are covered, including probability models, basic stochastic processes, and statistical modeling. Biological topics include DNA sequence analysis, phylogenetic inference, gene finding, and molecular evolution. Graduate/Undergraduate Equivalency: STAT 623. Mutually Exclusive: Credit cannot be earned for STAT 423 and STAT 623.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 425 - INTRODUCTION TO BAYESIAN INFERENCE
Short Title: INTRO TO BAYESIAN INFERENCE
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 410 and STAT 405 or COMP 210 or COMP 140 or COMP 130
Description: This course is an introduction to Bayesian inference, with emphasis on concepts and methods for analyzing data. We will consider a variety of models, including MCMC algorithms and methods for linear regression and hierarchical models. Computational methods will be emphasized. Recommended Prerequisite(s): STAT 411 or CAAM 335 or MATH 355.

STAT 440 - STATISTICS FOR BIOENGINEERING
Short Title: STATISTICS FOR BIOENGINEERING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOE 252 (may be taken concurrently)
Description: Course covers application of statistics to bioengineering. Topics include descriptive statistics, estimation, hypothesis testing, ANOVA, and regression. Offered first five weeks of the semester. BIOE 252 may be taken concurrently with STAT 440. BIOE 440/STAT 440 and BIOE 439 cannot both be taken for credit. Cross-list: BIOE 440. Mutually Exclusive: Credit cannot be earned for STAT 440 and BIOE 439.

STAT 449 - QUANTITATIVE FINANCIAL RISK MANAGEMENT
Short Title: QUAN FINANCIAL RISK MANAGEMENT
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 211 and MATH 212 and (ECON 400 or STAT 400 or ECON 409 or STAT 410) or STAT 310 or ECON 307 or STAT 312 or STAT 331 or ELEC 331
Description: This course covers the use of financial securities and derivatives to take or hedge financial risk positions. Most commonly used instruments, from simple forwards and futures to exotic options and swaptions are covered. The pricing of derivatives securities will also be studied, but the emphasis will be on the mechanics and uses of financial engineering methods. STAT 449 is mutually exclusive to ECON 449. Credit cannot be given for both. Graduate/Undergraduate Equivalency: STAT 649. Mutually Exclusive: Credit cannot be earned for STAT 449 and ECON 449.
STAT 450 - SENIOR CAPSTONE PROJECT
Short Title: SENIOR CAPSTONE PROJECT
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-3
Restrictions: Enrollment limited to students with a class of Senior. Enrollment is limited to students with a major in Statistics. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students engage in individual or team-oriented statistical projects to solve problems motivated by theory, computation, or application to real problems and data. Typical projects involve statistical modeling, data analysis, and computing to answer substantive questions in engineering or the physical, biological, or social sciences. Participants attend regular seminars addressing project development, research techniques and effective written and verbal communication skills in presenting statistical results. Repeatable for Credit.

STAT 453 - BIOSTATISTICS
Short Title: BIOSTATISTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 410
Description: An overview of statistical methodologies useful in the practice of Biostatistics. Topics include epidemiology, rates, and proportions, categorical data analysis, regression, and logistic regression, retrospective studies, case-control studies, survival analysis. Real biomedical applications serve as context for evaluating assumptions of statistical methods and models. R serves as the computing software. Graduate/Undergraduate Equivalency: STAT 553. Mutually Exclusive: Credit cannot be earned for STAT 453 and STAT 553.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 470 - FROM SEQUENCE TO STRUCTURE: AN INTRODUCTION TO COMPUTATIONAL BIOLOGY
Short Title: FROM SEQUENCE TO STRUCTURE
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Contemporary introduction to problems in computational biology spanning sequence to structure. The course has three modules: the first introduces students to the design and statistical analysis of gene expression studies; the second covers statistical machine learning techniques for understanding experimental data generated in computational biology; and the third introduces problems in the modeling of protein structure using computational methods from robotics. The course is project oriented with an emphasis on computation and problem-solving. Cross-list: BIOE 470, COMP 470. Recommended Prerequisite(s): COMP 280 and (STAT 310 or STAT 331).
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 482 - QUANTITATIVE FINANCIAL ANALYTICS
Short Title: QUANT FINANCIAL ANALYTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A modern approach to fundamental analytics of securities, the classic works of Graham and Dodd. Deconstructing the Efficient Market Hypothesis Financial Statement Analysis, Capital Market Theory, CAPM, APT, Fama-French Empirical Financial Forecasting. Graduate/Undergraduate Equivalency: STAT 682. Mutually Exclusive: Credit cannot be earned for STAT 482 and STAT 682.

STAT 484 - ENVIRONMENTAL RISK ASSESSMENT & HUMAN HEALTH
Short Title: ENVIRON RISK ASSESS&HUMAN HLTH
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 280 or STAT 305
Description: Learn and apply quantitative risk assessment methodology to estimate human health risk from environmental exposure to contamination in air, soil and water. Students will conduct a series of team projects focused on toxicology, risk based screening levels, exposure concentration estimation and risk characterization. Cross-list: CEVE 484. Graduate/Undergraduate Equivalency: STAT 684. Mutually Exclusive: Credit cannot be earned for STAT 484 and STAT 684.

STAT 485 - ENVIRONMENTAL STATISTICS AND DECISION MAKING
Short Title: ENVIR STAT & DECISION MAKING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 305 or STAT 385
Description: A project oriented computer intensive course focusing on statistical and mathematical solutions and investigations for the purpose of environmental decisions. This course is the undergraduate version of STAT 685 with reduced requirements. Graduate/Undergraduate Equivalency: STAT 685. Recommended Prerequisite(s): STAT 305 and STAT 385. Mutually Exclusive: Credit cannot be earned for STAT 485 and STAT 685.
Course URL: statistics.rice.edu/feed/Courses.aspx
STAT 486 - MARKET MODELS
Short Title: MARKET MODELS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): STAT 310 or ECONS 307 or ECONS 382 or STAT 312
Description: This course takes the classical efficient market models and superimposes upon it models for other stochastic phenomena not generally accounted for in efficient market theory, showing how risk is lessened by portfolios and other mechanisms. This undergraduate course uses computer simulations as an alternative to closed form solutions. Graduate/Undergraduate Equivalency: STAT 686. Mutually Exclusive: Credit cannot be earned for STAT 486 and STAT 686.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 490 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Statistics
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

STAT 491 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Statistics
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

STAT 496 - RTG CROSS-TRAINING IN DATA SCIENCE
Short Title: RTG CROSS-TRAINING IN DATA SCI
Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Computer Science or Statistics. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A seminar course to introduce students to topics in Data Science at the interface between Statistics and Computer Science. Students participate in the process of preparing, delivering and critiquing talks. Topics change each semester. Instructor Permission Required. Cross-list: COMP 496. Graduate/Undergraduate Equivalency: STAT 696. Mutually Exclusive: Credit cannot be earned for STAT 496 and STAT 696. Repeatable for Credit.

STAT 498 - RESEARCH THEMES IN THE MATHEMATICAL SCIENCES
Short Title: RESEARCH THEMES IN MATH. SCI.
Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A seminar course that will cover selected theme of general research in the mathematical sciences from the perspectives of mathematics, computational and applied mathematics and statistics. The course may be repeated multiple times for credit. Cross-list: CAAM 498, MATH 498. Graduate/Undergraduate Equivalency: STAT 698. Mutually Exclusive: Credit cannot be earned for STAT 498 and STAT 698. Repeatable for Credit.

STAT 499 - MATHEMATICAL SCIENCES SEMINAR
Short Title: MATHEMATICAL SCIENCES
Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course prepares a student for research in the mathematical sciences. Topics will change each semester. Current topics include bioinformatics, biomathematics, computational finance, simulation driven optimization, and data simulation. Each semester may introduce new topics. Graduate/Undergraduate Equivalency: STAT 699. Repeatable for Credit.
Course URL: www.statistics.rice.edu

STAT 502 - NEURAL MACHINE LEARNING I
Short Title: NEURAL MACHINE LEARNING I
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of major neural machine learning (Artificial Neural Network) paradigms. Analytical discussion of supervised and unsupervised neural learning algorithms and their relation to information theoretical methods. Practical applications to data analysis such as pattern recognition, clustering, classification, function approximation/ regression, non-linear PCA, projection pursuit, independent component analysis, with lots of examples from image and digital processings. Details are posted at www.ece.rice.edu/~erzsebet/ANNcourse.html.
Cross-list: COMP 502, ELEC 502.
Course URL: www.ece.rice.edu/~erzsebet/ANNcourse.html

STAT 503 - TOPICS IN METHODS AND DATA ANALYSIS
Short Title: TOPICS METHODS&DATA ANALYSIS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Applications of least squares and general linear mode. Cross-list: POLI 503.
STAT 509 - ADVANCED PSYCHOLOGICAL STATISTICS I
Short Title: ADVANCED PSYC STATISTICS I
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to students with a major in Psychology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction to inferential statistics, with emphasis on analysis of variance. Students who do not meet registration requirements as Graduate and Psychology Majors must receive instructor permission to register. Cross-list: PSYC 502.

STAT 510 - ADVANCED PSYCHOLOGICAL STATISTICS II
Short Title: ADVANCED PSYC STATISTICS II
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): PSYC 502 or STAT 509
Description: A continuation of PSYC 502, focusing on multiple regression. Other multivariate techniques and distribution-free statistics are also covered. Cross-list: PSYC 503.

STAT 514 - INTRODUCTION TO BIOSTATISTICS
Short Title: INTRODUCTION TO BIOSTATISTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment limited to students with a major in Bioengineering. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Presents basic and advanced methods of statistics as applied to problems in bioengineering. Demonstrates techniques for data organization, exploration, and presentation. Foundations of statistical estimation, inference, and testing are reviewed. Optimal planning of experiments is explored. Advanced techniques include multiple regression, variable selection, logistic regression, analysis of variance, survival analysis, multiple measurements and measurements over time. Additional topics, such as Bayesian methods, will be discussed as time allows. Labs will use the statistical software JMP and/or R. Cross-list: BIOE 514.

STAT 515 - DATA SCIENCE CONSULTING
Short Title: DATA SCIENCE CONSULTING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students in this course will advise clients from across this Rice community in a data science consulting clinic, learn best practices in consulting, and gain exposure to a variety of real data science problems. Instructor Permission Required. Recommended Prerequisite(s): STAT 413 or COMP 440 or COMP 540 or COMP 330 or STAT 411. Mutually Exclusive: Credit cannot be earned for STAT 515 and STAT 415. Repeatable for Credit.

STAT 518 - PROBABILITY
Short Title: PROBABILITY
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics include random variables, distributions, transformations, moment generating functions, common families of distributions, independence, sampling distributions, and basic stochastic processes. STAT 518 will have more advanced assignments and examinations focusing on theoretical methods. Graduate/Undergraduate Equivalency: STAT 418. Mutually Exclusive: Credit cannot be earned for STAT 518 and STAT 418.

STAT 519 - STATISTICAL INFERENCE
Short Title: STATISTICAL INFERENCE
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 418. Mutually Exclusive: Credit cannot be earned for STAT 519 and STAT 419.

STAT 522 - ADVANCED BAYESIAN STATISTICS
Short Title: ADVANCED BAYESIAN STATISTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 422 or STAT 622
Description: Modern Topics in Bayesian Statistics.
STAT 525 - BAYESIAN STATISTICS
Short Title: BAYESIAN STATISTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers Bayesian Inference and methods for analyzing data. The emphasis will be on applied data analysis rather than theoretical development. We will consider a variety of models, including linear regression, hierarchical models, and models for categorical data. Recommended Prerequisite(s): STAT 519 and STAT 615 and STAT 605.

STAT 532 - FOUNDATIONS OF STATISTICAL INFERENCE I
Short Title: FOUNDATIONS OF STAT INF I
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 519
Description: The first semester in a two-semester sequence in mathematical statistics: random variables, distributions, small and large sample theorems of decision theory and Bayesian methods, hypothesis testing, point estimation, and confidence intervals; topics such as exponential families, univariate and multivariate linear models, and nonparametric inference will also be discussed. Required for graduate students in statistics.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 533 - FOUNDATIONS OF STATISTICAL INFERENCE II
Short Title: FOUNDATIONS OF STAT INF II
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 532
Description: A continuation of STAT 532. Required for Ph.D. students in statistics.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 540 - PRACTICUM IN STATISTICAL MODELING
Short Title: PRACTICUM IN STATISTICAL MODELING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 2
Restrictions: Enrollment is limited to students with a major in Statistics. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course introduces current theoretical and applied problems encountered in statistical practice. The content changes each semester in response to contemporary topics. Designed for graduate students in statistics. Repeatable for Credit.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 541 - MULTIVARIATE ANALYSIS
Short Title: MULTIVARIATE ANALYSIS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 410 or STAT 615
Description: Study of multivariate data analysis and theory. Topics include normal theory, principal components, factor analysis, discrimination, estimation and hypothesis testing, multivariate analysis of variance and regression clustering.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 542 - SIMULATION
Short Title: SIMULATION
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 519 and (STAT 615 or STAT 410)
Description: Topics in stochastic simulation including: random number generators; Monte Carlo methods, resampling methods, Markov Chain Monte Carlo, importance sampling and simulation based estimation for stochastic processes.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 545 - GLM & CATEG'L DATA ANALYSIS
Short Title: GLM & CATEG'L DATA ANALYSIS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 519 or STAT 615 or STAT 410
Description: Contingency tables, association parameters, chi-squared tests, general theory of generalized linear models, logistics regression, loglinear models, poisson regression.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 547 - SURVIVAL ANALYSIS
Short Title: SURVIVAL ANALYSIS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 519 and STAT 615
Description: Lifetime tables, cumulative distribution theory, censored data, Kaplan-Meier survival curves, log-rank tests, Cox proportional hazards models, parametric and non parametric estimation, hypothesis testing.
Course URL: statistics.rice.edu/feed/Courses.aspx
STAT 549 - FUNCTIONAL DATA ANALYSIS
Short Title: FUNCTIONAL DATA ANALYSIS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 533 and STAT 581
Description: Statistical methods for functional data; spaces of functions; pre-processing of functional data; probability models for functional data; basis representations including spline functions, orthogonal bases such as wavelets, and functional principal components; methods of inference for functional data including both frequentist and Bayesian methods.

STAT 550 - NONPARAMETRIC FUNCTION ESTIMATION
Short Title: NONPARAMETRIC FUNCTION EST
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of topics in data analysis including data visualization, multivariate density estimation, and nonparametric regression. Advanced applications will include clustering, discrimination, dimension reduction, and bump-hunting using nonparametric density procedures.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 551 - ADVANCED TOPICS IN TIME SERIES
Short Title: ADVANCED TOPICS IN TIME SERIES
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 552 or STAT 621 or STAT 622
Description: The course will cover current topics in both modeling and forecasting discrete and continuous time series. A brief coverage will also be given to spatial and spatial-temporal processes.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 552 - APPLIED STOCHASTIC PROCESSES
Short Title: APPLIED STOCHASTIC PROCESSES
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 518
Description: This course covers the theory of some of the most frequently used stochastic processes in application; discrete and continuous time, Markov chains, Poisson and renewal processes, and Brownian motion.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 553 - BIOSTATISTICS
Short Title: BIOSTATISTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 615
Description: Same as STAT 453 with advanced problem sets. Graduate/Undergraduate Equivalency: STAT 453. Mutually Exclusive: Credit cannot be earned for STAT 553 and STAT 453.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 555 - BIOSTATISTICS
Short Title: BIOSTATISTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 615
Description: Same as STAT 453 with advanced problem sets. Graduate/Undergraduate Equivalency: STAT 453. Mutually Exclusive: Credit cannot be earned for STAT 553 and STAT 453.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 557 - NONPARAMETRIC FUNCTION ESTIMATION
Short Title: NONPARAMETRIC FUNCTION EST
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Survey of topics in data analysis including data visualization, multivariate density estimation, and nonparametric regression. Advanced applications will include clustering, discrimination, dimension reduction, and bump-hunting using nonparametric density procedures.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 561 - APPLIED STOCHASTIC PROCESSES
Short Title: APPLIED STOCHASTIC PROCESSES
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 518
Description: This course covers the theory of some of the most frequently used stochastic processes in application; discrete and continuous time, Markov chains, Poisson and renewal processes, and Brownian motion.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 581 - MATHEMATICAL PROBABILITY I
Short Title: MATHEMATICAL PROBABILITY I
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 582 - MATHEMATICAL PROBABILITY II
Short Title: MATHEMATICAL PROBABILITY II
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 581
Description: Continuation of STAT 581.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 583 - INTRODUCTION TO RANDOM PROCESSES & APPLICATIONS
Short Title: INTRO RANDOM PROCESSES & APPL
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Review of basic probability; Sequences of random variables; Random vectors and estimation; Basic concepts of random processes; Random processes in linear systems, expansions of random processes; Wiener filtering; Spectral representation of random processes, and white-noise integrals. Cross-list: CAAM 583, ELEC 533.

STAT 590 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Statistics
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-15
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.
STAT 591 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Statistics
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

STAT 600 - GRADUATE SEMINAR IN STATISTICS
Short Title: GRADUATE SEMINAR IN STATISTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Statistics. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students participate in the process of researching professional literature (journal articles, book chapters, dissertations), preparing, delivering and critiquing talks. Literature topics change each semester. Repeatable for Credit.

Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 601 - STATISTICS COLLOQUIUM
Short Title: STATISTICS COLLOQUIUM
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Repeatable for Credit.

STAT 602 - NEURAL MACHINE LEARNING AND DATA MINING II
Short Title: NEURAL MACHINE LEARNING II
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ELEC 502 or COMP 502 or STAT 502
Description: Advanced topics in ANN theories, with a focus on learning high-dimensional complex manifolds with neural maps (Self-Organizing Maps, Learning Vector Quantizers and variants). Application to data mining, clustering, classification, dimension reduction, sparse representation. The course will be a mix of lectures and seminar discussions with active student participation, based on most recent research publications. Students will have access to professional software environment to implement theories. Cross-list: COMP 602, ELEC 602. Repeatable for Credit.

Course URL: www.ece.rice.edu/~erzsebet/NMLcourseII.html

STAT 603 - GRADUATE SEMINAR IN STATISTICS
Short Title: GRADUATE SEMINAR IN STATISTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students participate in the process of researching professional literature (journal articles, book chapters, dissertations), preparing, delivering and critiquing talks. Literature topics change each semester. Repeatable for Credit.

STAT 604 - COMPUTATIONAL ECONOMICS
Short Title: COMPUTATIONAL ECONOMICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers numerical methods most commonly used in Economics, including solving systems of equations, numerical optimization, stochastic dynamic programming, numerical differentiation and integration, monte carlo methods, and solving ordinary and partial differential equations. Cross-list: ECON 504.

STAT 605 - R FOR DATA SCIENCE
Short Title: R FOR DATA SCIENCE
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students will learn how to work through data science problems within the statistical programming language R. The course covers the complete analytical process, from getting your data into R, to applying appropriate exploratory and statistical analysis, and communicating the results. Important topics in data science (e.g. databases, web scraping, and big data) and efficient programming are integrated throughout the course. STAT 605 includes more advanced assignments and/or examinations than STAT 405. Graduate/Undergraduate Equivalency: STAT 405. Mutually Exclusive: Credit cannot be earned for STAT 605 and STAT 405.

STAT 606 - SAS STATISTICAL PROGRAMMING
Short Title: SAS STATISTICAL PROGRAMMING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers numerical methods most commonly used in Economics, including solving systems of equations, numerical optimization, stochastic dynamic programming, numerical differentiation and integration, monte carlo methods, and solving ordinary and partial differential equations. Cross-list: ECON 504. This course covers numerical methods most commonly used in Economics, including solving systems of equations, numerical optimization, stochastic dynamic programming, numerical differentiation and integration, monte carlo methods, and solving ordinary and partial differential equations. Cross-list: ECON 504.

Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course covers the following: (1) DATA step including arrays, merging, do-loop processing, if then else statements, set statements importing and exporting, space optimization, (2) PROC TABULATE and PROC REPORT, (3) Brief functions survey, e.g. random number generators, character and mathematical functions, time and date functions etc., (4) Formats, (5) Brief survey of statistical PROC's, (6) SAS ODS (Output Delivery System) from statistical procedures, (7) Output datasets from statistical procedures, (8) PROC IML and Statistical Graphics Procedures (SGPLOT, SGPANEL, SGSCATTER), (9) PROC SQL (includes built-in short course on basic SQL), (10) PROC IML including functions, subroutines and optimization etc., (11) Macro programming facility. Priority registration is given to STAT majors.
STAT 610 - ECONOMETRICS I
Short Title: ECONOMETRICS I
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Estimation and inference in single equation regression models, multicollinearity, autocorrelated and heteroskedastic disturbances, distributed lags, asymptotic theory, and maximum likelihood techniques. Emphasis is placed on the ability to analyze critically the literature. Cross-list: ECON 510.

STAT 611 - ECONOMETRICS II
Short Title: ECONOMETRICS II
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics in linear and nonlinear simultaneous equations estimation, including qualitative and categorical dependent variables models and duration analysis. Applied exercises use SAS and the Wharton Quarterly Econometric Model. Cross-list: ECON 511.

STAT 613 - STATISTICAL MACHINE LEARNING
Short Title: STAT MACHINE LEARNING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is an advanced survey of statistical machine learning theory and methods. Emphasis will be placed methodological, theoretical, and computational aspects of tools such as regularized regression, classification, kernels, dimension reduction, clustering, graphical models, trees, and ensemble learning. Recommended Prerequisite(s): STAT 615 and STAT 605 and STAT 519.

STAT 615 - REGRESSION AND LINEAR MODELS
Short Title: REGRESSION AND LINEAR MODELS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (STAT 310 or STAT 312 or ECON 307 or ECON 382) and (MATH 355 or CAAM 335)
Description: A survey of regression, linear models, and experimental design. Topics include simple and multiple linear regression, single- and multi-factor studies, analysis of variance, analysis of covariance, model selection, diagnostics. Data analysis using statistical software is emphasized.
Course URL: ece.rice.edu/~erzebet/STAT615.html

STAT 616 - ADVANCED STATISTICAL METHODS
Short Title: ADVANCED STATISTICAL METHODS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 615
Description: Advanced topics in statistical applications such as sampling, experimental design and statistical process control. STAT 616 will have more advanced assignments and examinations focusing on theoretical methods. Graduate/Undergraduate Equivalency: STAT 411. Mutually Exclusive: Credit cannot be earned for STAT 616 and STAT 411.

STAT 620 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on advanced topics in Statistics. Repeatable for Credit.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 621 - APPLIED TIME SERIES AND FORECASTING
Short Title: APPLIED TIME SERIES/FORECASTING
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 615 (may be taken concurrently)
Description: Applied time series modeling and forecasting, with applications to financial markets with advanced problem sets. This is a graduate version of STAT 421 with advanced assignments. The courses STAT 615 and STAT 431 may be taken concurrently with STAT 621 if courses are not in history. Graduate/Undergraduate Equivalency: STAT 421. Mutually Exclusive: Credit cannot be earned for STAT 621 and STAT 421.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 623 - PROBABILITY IN BIOINFORMATICS AND GENETICS
Short Title: PROB BIOINFORMATICS & GENETICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 615 (may be taken concurrently)
Description: Applied time series modeling and forecasting, with applications to financial markets with advanced problem sets. This is a graduate version of STAT 421 with advanced assignments. The courses STAT 615 and STAT 431 may be taken concurrently with STAT 621 if courses are not in history. Graduate/Undergraduate Equivalency: STAT 421. Mutually Exclusive: Credit cannot be earned for STAT 621 and STAT 421.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 624 - APPLIED TIME SERIES/FORECASTING
STAT 625 - ADVANCED BAYESIAN INFERENCE
Short Title: ADVANCED BAYESIAN INFERENCE
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 525
Description: This course focuses on the Bayesian inference with emphasis on theory and applications. In this course, we will cover advancements and challenges in modern Bayesian inference, and illustrate a variety of theoretical and computational methods, simulation techniques, and hierarchical models that are suitable to analyze complex data. Repeatable for Credit.

STAT 630 - TOPICS IN CLINICAL TRIALS
Short Title: TOPICS IN CLINICAL TRIALS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 519 and STAT 615
Description: This course deals with fundamental concepts in the design of clinical studies, ranging from early dose-finding studies (phase I) to screening studies (phase II) to randomized comparative studies (phase III). The goal is to prepare the student to read the clinical trial literature critically and to design clinical studies. Additionally, the faculty will introduce newer designs for clinical studies that incorporate prior knowledge and/or satisfy optimality considerations. Topics include protocol writing; randomization; sample size calculation; study design options; interim monitoring; adaptive designs; multiple end points; and writing up the results of a clinical trial for publication.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 648 - GRAPHICAL MODELS AND NETWORKS
Short Title: GRAPH MODELS & NETWORKS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 519
Description: Graphical models – aka Bayes networks, Markov networks, Gaussian networks, etc. – have been widely used to represent complex phenomena with dependence. The course aims to stimulate interest in graphical models and covers directed and undirected graphical models, exponential-family representations of graphical models, statistical inference, finite-sample and large-sample properties, and applications.

STAT 649 - QUANTITATIVE FINANCIAL RISK MANAGEMENT
Short Title: QUAN FINANCIAL RISK MANAGEMENT
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 519 or STAT 615
Description: This course covers the use of financial securities and derivatives to take or hedge financial risk positions. Most commonly used instruments, from simple forwards and futures to exotic options and swaptions are covered. The pricing of derivatives securities will also be studied, but the emphasis will be on the mechanics and uses of financial engineering methods. Students receiving graduate credit in STAT 649 will be expected to address additional homework and test questions targeting a graduate level understanding of the material. Graduate/Undergraduate Equivalency: STAT 449.

STAT 650 - STOCHASTIC MODELS IN POPULATION DYNAMICS AND POPULATION GENETICS
Short Title: STOCH CONTRL & STOCH DIFF EQU
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 581
Description: This course is devoted to stochastic models of biological phenomena at cell and molecular lever, using tools of probability and statistics. The course starts with a refresher on conditional expectations and martingale convergence, Markov and point processes, and generating functions and functionals. It continues with branching process models of proliferations and then with Markov chain models of population genetics. Most examples concern growth and mutation of biological cells, with particular emphasis on cancer.
Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 682 - QUANTITATIVE FINANCIAL ANALYTICS
Short Title: QUANT. FINANCIAL ANALYTICS
Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A modern approach to fundamental analytics of securities, the classic works of Graham and Dodd. Deconstructing the Efficient Market Hypothesis Financial Statement Analysis, Capital Market Theory, CAPM, APT, Fama-French Empirical Financial Forecasting. Graduate/Undergraduate Equivalency: STAT 482. Mutually Exclusive: Credit cannot be earned for STAT 682 and STAT 482.
STAT 684 - ENVIRONMENTAL RISK ASSESSMENT & HUMAN HEALTH

Short Title: ENVIRON RISK ASSESSMENT & HUMAN HLTH

Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3

Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 518 and (STAT 615 or STAT 410)

Description: Learn and apply quantitative risk assessment methodology to estimate human health risk from environmental exposure to contamination in air, soil and water. Students will conduct a series of team projects focused on toxicology, risk based screening levels, exposure concentration estimation and risk characterization. Cross-list: CEVE 684. Graduate/Undergraduate Equivalency: STAT 484. Mutually Exclusive: Credit cannot be earned for STAT 684 and STAT 484.

Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 685 - ENVIRONMENTAL STATISTICS AND DECISION MAKING

Short Title: ENVIR STAT & DECISION MAKING

Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3

Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 305 or STAT 385

Description: A project oriented computer intensive course focusing on statistical and mathematical solutions and investigations for the purpose of environmental decisions. This course is required for EADM students. Graduate/Undergraduate Equivalency: STAT 485. Mutually Exclusive: Credit cannot be earned for STAT 685 and STAT 485.

Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 686 - MARKET MODELS

Short Title: MARKET MODELS

Department: Statistics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3

Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): STAT 518 and (STAT 615 or STAT 410)

Description: This course takes the classical efficient market models and superimposes upon it models for other stochastic phenomena not generally accounted for in efficient market theory, showing how risk is lessened by portfolios and other mechanisms. This graduate course uses computer simulations as an alternative to closed form solutions with advanced problem sets. Graduate/Undergraduate Equivalency: STAT 486. Mutually Exclusive: Credit cannot be earned for STAT 686 and STAT 486.

Course URL: statistics.rice.edu/feed/Courses.aspx

STAT 686 - RTG CROSS-TRAINING IN DATA SCIENCE

Short Title: RTG CROSS-TRAINING IN DATA SCI

Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1

Restrictions: Enrollment is limited to students with a major in Computer Science or Statistics. Enrollment is limited to Graduate level students.
Course Level: Graduate

Description: A seminar course to introduce students to topics in Data Science at the interface between Statistics and Computer Science. Students participate in the process of preparing, delivering and critiquing talks. Topics change each semester. Instructor Permission Required. Cross-list: COMP 696. Graduate/Undergraduate Equivalency: STAT 496. Mutually Exclusive: Credit cannot be earned for STAT 696 and STAT 496. Repeatable for Credit.

STAT 687 - RESEARCH THEMES IN THE MATHEMATICAL SCIENCES

Short Title: RESEARCH THEMES IN MATH. SCI.

Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3

Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

Description: A seminar course that will cover selected theme of general research in the mathematical sciences from the perspectives of mathematics, computational and applied mathematics and statistics. The course may be repeated multiple times for credit. Cross-list: CAAM 698, MATH 698. Graduate/Undergraduate Equivalency: STAT 498. Mutually Exclusive: Credit cannot be earned for STAT 698 and STAT 498. Repeatable for Credit.

STAT 688 - RESEARCH THEMES IN MATH. SCI.

Short Title: RESEARCH THEMES IN MATH. SCI.

Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3

Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

Description: A seminar course that will cover selected theme of general research in the mathematical sciences from the perspectives of mathematics, computational and applied mathematics and statistics. The course may be repeated multiple times for credit. Cross-list: CAAM 698, MATH 698. Graduate/Undergraduate Equivalency: STAT 498. Mutually Exclusive: Credit cannot be earned for STAT 698 and STAT 498. Repeatable for Credit.

Course URL: www.statistics.rice.edu

STAT 696 - RTG CROSS-TRAINING IN DATA SCIENCE

Short Title: RTG CROSS-TRAINING IN DATA SCI

Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1

Restrictions: Enrollment is limited to students with a major in Computer Science or Statistics. Enrollment is limited to Graduate level students.
Course Level: Graduate

Description: A seminar course to introduce students to topics in Data Science at the interface between Statistics and Computer Science. Students participate in the process of preparing, delivering and critiquing talks. Topics change each semester. Instructor Permission Required. Cross-list: COMP 696. Graduate/Undergraduate Equivalency: STAT 496. Mutually Exclusive: Credit cannot be earned for STAT 696 and STAT 496. Repeatable for Credit.

STAT 699 - MATHEMATICAL SCIENCES SEMINAR

Short Title: MATH. SCI. SEMINAR

Department: Statistics
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-3

Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

Description: A seminar course that will cover selected theme of general research in the mathematical sciences from the perspectives of mathematics, computational and applied mathematics and statistics. The course may be repeated multiple times for credit. Cross-list: CAAM 698, MATH 698. Graduate/Undergraduate Equivalency: STAT 498. Mutually Exclusive: Credit cannot be earned for STAT 698 and STAT 498. Repeatable for Credit.

Course URL: www.statistics.rice.edu

STAT 800 - THESIS

Short Title: THESIS

Department: Statistics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 1-15

Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate

Description: Repeatable for Credit.
Systems/Synthetic/Phys Biology (SSPB)

SSPB 501 - PHYSICAL BIOLOGY
Short Title: PHYSICAL BIOLOGY
Department: Systems/Synthetic/Phys Biology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Basic introduction to a biophysical view of living systems, from the subcellular to the multicellular scales. Topics include: biomolecular dynamics, cellular biomechanics, cell motility and cell division, calcium signaling, action potential propagation, and tissue organization. Cross-list: BIOE 502.

SSPB 502 - INTRO COMPUTATIONAL SYSTEMS BIOLOGY: MODELING & DESIGN PRINCIPLES OF BIOCHEM NETWORKS
Short Title: INTRO SYSTEMS BIOLOGY MODELING
Department: Systems/Synthetic/Phys Biology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The course summarizes techniques for quantitative analysis and simulations of basic circuits in genetic regulation, signal transduction and metabolism. We discuss engineering approaches adapted to computational systems biology and aim to formulate evolutionary design principles explaining organization of networks in terms of their physiological demands. We discuss biochemical simulation methodology and software as well as recent advances in the field. Topics include end-product inhibition in biosynthesis, optimality and robustness of the signaling networks and kinetic proofreading. More emphasis on recent advances in the field - paper reading and presentations. Cross-list: BIOE 552. Recommended Prerequisite(s): Basic knowledge of biochemistry, cell biology, linear algebra, and ordinary differential equations is expected.

SSPB 503 - SYNTHETIC BIOLOGY
Short Title: SYNTHETIC BIOLOGY
Department: Systems/Synthetic/Phys Biology
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Design of biology at scales from molecules to multicellular organisms will be covered by lecture, primary literature, and student presentations. Students will write a research proposal at the end of the course. Cross-list: BIOE 508.

SSPB 550 - GRADUATE SEMINAR
Short Title: GRADUATE SEMINAR
Department: Systems/Synthetic/Phys Biology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to students with a major in Systems/Synthetic/Phys Biology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar course to introduce SSPB students to current research topics and activities in the systems, synthetic, and physical biology fields. Repeatable for Credit.

SSPB 575 - INTRODUCTION TO RESEARCH
Short Title: INTRODUCTION TO RESEARCH
Department: Systems/Synthetic/Phys Biology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 2
Restrictions: Enrollment is limited to students with a major in Systems/Synthetic/Phys Biology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Introduction of first-year graduate students to the research programs and laboratories of individual faculty members. Repeatable for Credit.

SSPB 599 - GRADUATE TEACHING IN SSPB
Short Title: GRADUATE TEACHING IN SSPB
Department: Systems/Synthetic/Phys Biology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervised instruction in teaching systems, synthetic, and physical biology. Repeatable for Credit.

SSPB 800 - GRADUATE RESEARCH
Short Title: GRADUATE RESEARCH
Department: Systems/Synthetic/Phys Biology
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-15
Restrictions: Enrollment is limited to students with a major in Systems/Synthetic/Phys Biology. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate students will conduct independent research/thesis project under the direction of their advisor. Repeatable for Credit.

Theatre (THEA)

THEA 100 - STAGE CRAFT
Short Title: STAGE CRAFT
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to materials, tools, and standard theatre production techniques. Theory and practice of scenic building and painting techniques, creation of props, sound support requirements, and running crew during performance. No Lab hours required.
THEA 101 - THEATRE TECHNOLOGY: COSTUME CONSTRUCTION
Short Title: THEA TECH: COSTUME CONSTRUCTION
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This is a class in the basic terminology and craft of acting. It will encompass voice and movement training, as well as basic technical theatre terminology and vocabulary for the actor. The course work will progress from ensemble/group work and individual exercises/monologues to scenes. Space in classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor.

THEA 103 - THEATRE TECHNOLOGY
Short Title: THEATRE TECHNOLOGY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to lighting and sound equipment, tools, and board operation. Theory and practice of lighting and sound materials, hang and focus, programming both sound and lights boards as well as introduction to projection elements. No lab required.

THEA 202 - COSTUME AND PATTERN DRAFTING AND DRAPING FOR STAGE
Short Title: PATTERN DRAFTING AND DRAPING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): THEA 101
Description: This course enables students to explore pattern-making, design, fit and alteration of costumes for the stage. The course will familiarize students with the draping method of pattern development and the flat-patterning method of pattern development in order to create three-dimensional period and contemporary costumes for the theatre based on two-dimensional research and theatrical designer drawings. Instructor Permission Required.

THEA 207 - MAKEUP FOR THE STAGE
Short Title: MAKEUP FOR THE STAGE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This is a hands-on class that explores the principals of stage makeup materials and skills, methods and techniques that are used in an actor’s transformation for the stage. This includes techniques for moderate and extreme aging, injuries and character roles and period styles. Class will use the application of analytical and research skills in the visual development of the character. Class size limited to 10.

THEA 270 - BIG PAINTING: MATERIALS AND TECHNIQUES FOR THEATRICAL PAINTING
Short Title: BIG PAINTING FOR THEATRE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Big Painting: Materials and Techniques for Theatrical Painting will examine the materials and techniques usually associated with scenic and theatrical painting but as applied to the context of 21st century contemporary art practices. Students will learn how to make big paintings. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster. Cross-list: ARTS 270.

THEA 300 - INTRODUCTION TO THEATRE DESIGN
Short Title: INTRODUCTION TO THEATRE DESIGN
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to the theory and practice of theatre design through exploration of the principles and elements of design as they apply to scenery, lighting, and costumes with an emphasis on text analysis and research. Students will complete and present a variety of projects.

THEA 301 - ACTING I
Short Title: ACTING I
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to the fundamentals of acting through the exploration of actor training techniques based on the theories of Stanislavsky, Strasburg, Adler, Meisner, and Hagen, emphasizing the actor’s primary tools: voice, body, emotional life, and imagination.
THEA 302 - ACTING II
Short Title: ACTING II
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): THEA 301
Description: Text analysis for the actor with particular emphasis on a thorough investigation of given circumstances and dramatic action. Students will work on scenes from Ibsen to contemporary playwrights. Space in classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor.

THEA 303 - INTRODUCTION TO THEATRE
Short Title: INTRODUCTION TO THEATRE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A survey course of the art and theory of the theatre through an examination of dramatic literature from the Greeks through the modern era. The course will also explore the craft of the theatre as it is practiced today. Requires attending several theatre productions in local Houston venues. Cross-list: ENGL 390.
Course URL: www.english.rice.edu

THEA 304 - COSTUME DESIGN
Short Title: COSTUME DESIGN
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Exploration of costume design and the designers’ role in the collaborative process. Students will read diverse plays then present design projects that explore character, storytelling, and the relationship between performer and audience. Students will experiment with rendering techniques to explore the visual language of period and contemporary clothing.

THEA 305 - LIGHTING DESIGN
Short Title: LIGHTING DESIGN
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): THEA 300
Description: Exploration of the role that lighting plays in a production and the lighting designer’s place as an artist in the collaboration process. Emphasis on the practical application of the controllable properties of light as they apply to theatre. Students will be required to complete a variety of projects including light labs responding to music and culminating in a final lighting project.

THEA 306 - SCENIC DESIGN
Short Title: SCENIC DESIGN
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): THEA 300
Description: Advanced examination of the principles of scenic design including research, rendering, technical drawing, model construction, text analysis and the role of the scenic designer in collaboration with directors, actors, and other designers. Students will read and analyze a variety of plays in different periods and styles, and then, based on text analysis and research, complete and present design projects.

THEA 307 - HISTORY OF ARCHITECTURE, INTERIORS, AND CLOTHING FOR THEATRE DESIGNERS
Short Title: HIST FOR THEATER DESIGNERS
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: HISTORY OF ARCHITECTURE, INTERIORS, AND CLOTHING FOR THEATRE DESIGNERS ***** Survey of the major period styles of buildings, homes, furnishings, and clothing from ancient Egypt through the 20th century including a critical analysis of the interdependent nature of the evolution of design and the relationship to the cultures in which they were created. Repeatable for Credit.

THEA 308 - IMPROVISATION FOR STAGE AND SCREEN
Short Title: IMPROV FOR STAGE AND SCREEN
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This is a course in the practical training of comedic, long-form, improvisation. Students will learn how to craft scenes spontaneously using tools like character dynamic, status, comedic pattern, beat structuring, and agreement. Classic forms of scenic improv will be taught and the course will also examine the role of improvisation in comedy films, video, and the creation of sketch comedy. Students will get to practice their skills by crafting videos in the class’ culmination run of improv shows. Cross-list: FILM 308.

THEA 309 - MUSICAL THEATRE STUDIO
Short Title: MUSICAL THEATRE STUDIO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Practical training and experience in musical theatre performance. This course will focus on the particular challenges that musical theatre presents as distinct from non-musical theatre. Performance techniques will emphasize the skills necessary for successful presentation of a musical number by an actor, as well as how to prepare an effective audition.
THEA 310 - THE SPOKEN TEXT
Short Title: THE SPOKEN TEXT
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): THEA 301
Description: An exploration of language through voice, movement and text as one of the actor's primary means of communication and expression. The student will analyze, rehearse, and perform scenes from the work of William Shakespeare and his contemporaries. Recommended prerequisite(s): ENGL 321.

THEA 311 - HISTORY OF MUSICAL THEATRE
Short Title: HISTORY OF MUSICAL THEATRE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is designed to familiarize students with the repertoire of a uniquely American art form that has had a widespread cultural influence. It will present a historical perspective of the decades of musical theatre from the 1920s to the present, with particular emphasis on representative innovative examples of change and the transition from musical comedy into musical theatre.

THEA 312 - DIRECTING I
Short Title: DIRECTING I
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): THEA 301
Description: An introductory course exploring the tools and craft of the stage director. Students will learn how to analyze dramatic text and will gain a fundamental knowledge of the director's basic skills, including composition, picture, movement, rhythm, and pantomimic dramatization. Recommended prerequisite(s): THEA 303 or 300.

THEA 315 - THEATRE IN WESTERN CULTURE: A HISTORICAL INTRODUCTION
Short Title: INTRO TO THEATRE HISTORY
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Through reading and watching a selection of major plays and exploring other primary historical and critical sources, students in this course will study the development of the western dramatic tradition from ancient roots to modern day. Students will explore how the theatrical experience reflects and affects the society in which it exists and will consider how theater holds a mirror up to cultural power, taboos, and changes.

THEA 320 - GENDER, SEXUALITY AND THE ADAPTATION OF TRANSITIONAL LITERATURE TO PERFORMANCE
Short Title: GENDER AND PERFORMANCE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the embodiment of gender and sexuality through the oral interpretation of transnational literature. Students will learn how to analyze and adapt to performance novels and short stories from various global and historical contexts that exemplify the genre of the "coming of age" narrative. Cross-list: SWGS 320.

THEA 322 - DIRECTING SHAKESPEARE
Short Title: DIRECTING SHAKESPEARE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): THEA 301
Description: Staging Shakespeare's plays for modern audiences: learning to speak the lines "trippling off the tongue", analyzing textual clues, and researching the period to find correlations to contemporary society in the process of active rehearsal. Students will work with THEA 310 to stage a final scene. Recommended prerequisite(s): THEA 310.

THEA 323 - VOICE AND SPEECH FOR THEATRE
Short Title: VOICE AND SPEECH FOR THEATRE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Development of an expressive speaking voice through awareness and overcoming physical and vocal habits and limitations, including alignment, relaxation, breath support, resonance, tone and projection. Recommended prerequisite(s): THEA 301.

THEA 324 - MOVEMENT FOR STAGE AND STAGE COMBAT
Short Title: COMBAT & MOVEMENT FOR STAGE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Introduction to body dynamics and stage combat through partner exercises, physical stretching and conditioning, ensemble movement, full body awareness, focus, action and counter-action, precision, and economy of effort. Recommended prerequisite(s): THEA 301.
THEA 325 - ACTING FOR FILM
Short Title: ACTING FOR FILM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Prerequisite(s): THEA 102 or THEA 301
Description: This course provides an introduction to the art of acting on camera. It emphasizes specific techniques of speech, movement, character development, and the creation of relationships as they relate to the recorded medium (film, television, commercials, industrial films). The elements of study include proper voice placement, appropriate acting styles, and subtlety in performance. Student performances will be videotaped for study.

THEA 330 - CONTEMPORARY DRAMATIC LITERATURE
Short Title: CONTEMP DRAM LITERATURE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): THEA 301
Description: In this course we will examine contemporary American plays that have had a significant impact on theatrical form or that are highly reflective of contemporary society. Playwrights whose work will be studied will include Mamet, Guare, Lucas, Wilson and many others.

THEA 331 - THEATRE PRODUCTION
Short Title: THEATRE PRODUCTION
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Practical application of skills acquired in previous THEA courses in a realized Theatre Production program as a company member. Admission to class requires either an audition, interview, or portfolio review with the director and/or production manager. Possible roles include: actor, assistant director, stage manager, assistant stage manager, designer, and technical support in scenery, costumes, lighting, or sound. Prerequisites: permission of instructor. Instructor Permission Required. Repeatable for Credit.

THEA 332 - CRITICAL STUDIES OF MULTIMEDIA ARTS
Short Title: CRITICAL STU OF MULTIMEDIA ART
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Critical Studies for Multimedia Arts is a course designed to familiarize art and non-art majors with key theories and core concepts in modern and contemporary multimedia art. Students will examine a broad spectrum of specific topics in contemporary artwork related conceptually to: space/time; bodies and performance; "sculptural" studies in an expanded field and video & film space. This is a multi-dimensional class consisting of guest lectures, artist-speakers, and field trips to local museums, galleries and alternative art spaces. This course will include discussions on readings, writings and special projects. This promises to be a fun and thought-provoking class and is designed to enhance studio practice and encourage interest in the visual arts. Cross-list: ARTS 332, FILM 332, FOTO 332.

THEA 396 - THEATRE INTERNSHIP
Short Title: THEATRE INTERNSHIP
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is a field-based, supervised, professional learning experience designed to enhance classroom learning. Students will be responsible for identifying and securing internship positions and must obtain permission from the department chairman and have a department faculty sponsor. All interns are required to keep an internship journal recording duties and activities; the journal will be used as the basis of a five-page paper summarizing the internship experience. Documentation of the work produced during the internship is required, portfolio, CD, DVD, etc. Instructor Permission Required. Repeatable for Credit.

THEA 432 - SPECIAL PROBLEMS: DIRECTING AND DESIGN
Short Title: SPEC PROB: DIRECT & DESIGN
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent study. Instructor Permission Required. Repeatable for Credit.

THEA 435 - SPECIAL PROBLEMS: ADVANCED TOPICS
Short Title: SPEC PROB:ADVANCED TOPICS
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Independent study. Instructor Permission Required. Repeatable for Credit.
Tibetan (TIBT)

TIBT 233 - TIBETAN LANGUAGE, LITERATURE AND CULTURE I
Short Title: TIBETAN LANG LIT & CULTURE I
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introducing the Tibetan alphabet and basics of grammar through reading section of a classic Tibetan text. In addition, readings in English in Indian and Tibetan Buddhist materials, also on the art, history, geography and/or modern era in those areas. Final includes a paper drawn from readings and class discussion. Cross-list: RELI 233.

TIBT 234 - TIBETAN LANGUAGE, LITERATURE AND CULTURE II
Short Title: TIBETAN LANG LIT & CULTURE II
Department: Religion
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Continued training in Tibetan language-extending vocabulary and facility with grammar. Final includes a paper drawn from readings and class discussion. Cross-list: RELI 234. Repeatable for Credit.

TIBT 332 - ADVANCED TIBETAN LANGUAGE AND CULTURE
Short Title: ADV TIBETAN LANGUAGE & CULTURE
Department: Religion
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): RELI 132 or TIBT 132
Description: This class builds on RELI 232 and 234, now including more challenging material in Tibetan, and continuing the trajectory of gaining familiarity with Buddhist philosophical systems as these touch on epistemology, ontology, and contemplative practice. Cross-list: RELI 332. Repeatable for Credit.

University Courses (UNIV)

UNIV 101 - JETT-MOELLER RESEARCH INTRODUCTION
Short Title: JETT-MOELLER RESEARCH INTRO
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The course will provide foundational research skills to a select group (7) of freshman students - equivalent of Century Scholars. Instruction will be provided by faculty and Fondren Library staff, under the coordination of the Office of Fellowships & Undergraduate Research and Humanities Research Center. Department Permission Required. Cross-list: HURC 101. Repeatable for Credit.

UNIV 105 - SCHOLARLY APPROACHES TO SCIENCE AND ENGINEERING
Short Title: SCHOLARLY APPROACHES TO S&E
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Intensive Learning Experience
Credit Hours: 0
Course Level: Undergraduate Lower-Level
Description: A six-week, academically intensive, pre-college program for pre-matriculating students who intend to major in science or engineering. The program includes coursework in Calculus, Chemistry, and Physics, with a focus on the most challenging topics from the freshman curricula; daily homework and group-work; and complementary seminars on design, bioscience research, and discrete math. Department Permission Required.

UNIV 110 - FOUNDATIONS FOR SELF-DISCOVERY AND LIFELONG LEARNING
Short Title: FIRST YEAR FOUNDATIONS
Department: University Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course is designed to provide new students with the knowledge and tools to succeed at Rice. Combining classroom discussion, information from campus departments, self-assessments and reflections, and other interactive activities, this class will focus on key issues new students will encounter when transitioning to college. This course is limited to first-year students only.

UNIV 181 - ACADEMIC ENGLISH SKILLS FOR VISITING STUDENTS
Short Title: ENGLISH FOR VISITING STUDENTS
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course reviews the written and oral English skills needed by visiting international students to succeed in upper-division courses at Rice. Students will learn to express ideas effectively in individual and group conversations; to give academic presentations; to critique, report, and interpret research findings in writing; and to become better self-editors of their writing. Instructor Permission Required.

UNIV 194 - CTIS WORKSHOP
Short Title: CTIS WORKSHOP
Department: Dean of Undergraduates
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 0
Course Level: Undergraduate Lower-Level
Description: CTIS Workshop will draw from a public health model of violence prevention to teach Freshman and transfer students the dynamics of domestic and sexual violence, consent and bystander intervention. Students will understand the impacts of healthy relationships and consent, as well as successful models shown to increase gender equality, healthy sexual communication and empathy. This course is only available to first time matriculants.
UNIV 201 - CENTURY SCHOLARS PROGRAM
Short Title: CENTURY SCHOLARS PROGRAM
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class is intended for freshmen and sophomores who are exploring careers and academic majors (juniors and seniors are also welcome to enroll). In the class, students will learn about career options that match their interests, personality, and values; become more familiar with the world of work and various career options; understand the connections between careers and major choice; learn about services that will enhance their marketability and academic experiences (internships, study abroad programs, scholarships/grants); and develop an action plan to reach their goals. This class is ideally suited for students who have no idea what they want to do after graduation.

UNIV 212 - CAREER AND LIFE OPTIONS
Short Title: CAREER AND LIFE OPTIONS
Department: University Courses
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class is intended for freshmen and sophomores who are exploring careers and academic majors (juniors and seniors are also welcome to enroll). In the class, students will learn about career options that match their interests, personality, and values; become more familiar with the world of work and various career options; understand the connections between careers and major choice; learn about services that will enhance their marketability and academic experiences (internships, study abroad programs, scholarships/grants); and develop an action plan to reach their goals. This class is ideally suited for students who have no idea what they want to do after graduation.

UNIV 215 - ALTERNATIVE SPRING BREAK LEADERSHIP COURSE
Short Title: ASB
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: UNIV 215 is required of all Alternative Spring Break student site leaders. This course consists of weekly 1.5 hour meetings that will include lectures, discussions, group activities, work sessions, and panel presentations. Instructor Permission Required. Repeatable for Credit.

UNIV 216 - ALTERNATIVE SPRING BREAK LEADERSHIP COURSE
Short Title: ASB LEADERSHIP COURSE
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Prerequisite(s): UNIV 215
Description: The course aims to: 1) analyze service philosophy and mechanisms for implementing a mutually beneficial short-term service program. 2) equip students with the knowledge, skills, and confidence necessary to lead a group of their peers. 3) provide a platform for self-assessment and an opportunity for personal and professional development for student leaders. Instructor Permission Required. Repeatable for Credit.
Course URL: ccl.rice.edu

UNIV 220 - ADVISING PRACTICUM
Short Title: ADVISING PRACTICUM
Department: University Courses
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Designed for first year members of the PAA program. This course will focus on individually designed and faculty guided action plans. Students will design plans that enhance the role, effectiveness, and/or educational breadth and depth of academic advising at the individual, college, or university level. Instructor Permission Required. Repeatable for Credit.

UNIV 250 - RICE HEALTH ADVISORS
Short Title: RICE HEALTH ADVISORS
Department: University Courses
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This class is designed to introduce students to the principles of peer health education. Students will assess their own personal health status as well as major health risks among their peers. They will learn effective strategies for reducing these risks and promoting healthy lifestyles to college students. Enrollment is restricted, students must be in good academic and judicial standing and complete an application. This course is a pre-requisite to becoming a Rice Health Advisor. Instructor Permission Required.

UNIV 295 - EXPLORING CAREERS THROUGH AN INTERNSHIP
Short Title: CAREERS THRU INTERNSHIP
Department: University Courses
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Designed for currently enrolled undergraduate students from all areas of study to gain experience in a work place setting, earn course credit, and further develop professional skills. Students meet individually with a career counselor to process their experience and complete an action plan to market their qualifications to potential employers and graduate schools. Students arrange internship, receive approval from the course instructor, and may not receive financial compensation while enrolled in the class. Instructor Permission Required.

UNIV 299 - SCIENTIA: LECTURES IN SCIENCE AND CULTURE
Short Title: SCIENTIA SCIENCE & CULTURE
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Annual lecture series, panel discussions and discussion talks on topics bridging science, culture and art. 4 lectures plus 2 discussion talks. Lectures are on specified dates, usually Tuesdays. Discussion talks scheduled at semester beginning. Topics vary year to year. Cross-list: COLL 299. Repeatable for Credit.
UNIV 301 - UNDERGRADUATE RESEARCH
Short Title: UNDERGRADUATE RESEARCH
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to a range of ethical issues that arise in community-based participatory research. Drawing on literature review and case studies, the class brings together students who will carry out CBR projects abroad on a Loewenstein Fellowship. We will also focus on cultural communication and how the international landscape influences the role of the researcher.

UNIV 304 - RESEARCH ETHICS IN THE COMMUNITY
Short Title: RESEARCH ETHICS
Department: University Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class introduces students to a range of ethical issues that arise in community-based participatory research. Drawing on literature review and case studies, the class brings together students who will carry out CBR projects abroad on a Loewenstein Fellowship. We will also focus on cultural communication and how the international landscape influences the role of the researcher.

UNIV 305 - INTERNATIONAL SERVICE
Short Title: INTERNATIONAL SERVICE
Department: University Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course meets every other week. Objectives are to (1) examine the history of international service and service ethics, (2) develop broad knowledge of history, culture, and politics related to the country of service, and to (3) engage students in conversations about global society and international service work. Instructor Permission Required. Repeatable for Credit.

UNIV 306 - TRIP LOGISTICS
Short Title: TRIP LOGISTICS
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Corequisite: UNIV 305
Description: This course meets every other week. This course prepares students for trip logistics related to traveling and conducting service outside the U.S. Instructor Permission Required. Repeatable for Credit.

UNIV 307 - SYNTHESIZING YOUR SERVICE EXPERIENCE
Short Title: SYNTHESIZING YOUR EXPERIENCE
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: UNIV 307 will focus on synthesizing the service experience. Students will: reflect on the host country’s culture, the social issues being addressed, and personal learning and growth; articulate the experience in relation to students’ academic, career, and personal goals; and, create a portfolio to showcase their service achievements. Instructor Permission Required. Recommended Prerequisite(s): UNIV 305 and UNIV 306. Repeatable for Credit.

UNIV 310 - RICE LEGAL LAB
Short Title: RICE LEGAL LAB
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course provides hands-on exposure to the practical legal environment, including legal research, legal writing, and Texas court processes, with optional work placing the Texas legal environment into an international comparative context. Instructor Permission Required. Repeatable for Credit.

UNIV 311 - JUDICIAL INTERNSHIP - RICE LEGAL LAB
Short Title: JUDICIAL INTERNSHIP
Department: University Courses
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Students will serve judicial internships with Texas state or federal judges; required travel component over spring break, with associated costs and lab fee. Instructor Permission Required. Repeatable for Credit.

UNIV 313 - INTRODUCTION TO RESEARCH ABROAD
Short Title: INTRO TO RESEARCH ABROAD
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is designed to help undergraduate students develop skills to design, refine, and carry out an individual research project in an international context. This is a preparatory course for students who plan to apply for international scholarships such as Fulbright, Thinkswiss, Wagoner, DAAD or for students who will design an international research project as part of their study abroad program or their honors thesis.
UNIV 320 - ADVANCED ACADEMIC ADVISING PRACTICUM
Short Title: ADVANCED ADVISING PRACTICUM
Department: University Courses
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Designed for current members of the PAA program. This course will focus on individually designed and faculty guided action plans. Students will design plans that enhance the role, effectiveness, and/or educational breadth and depth of academic advising at the individual, college, or university level. Instructor Permission Required. Repeatable for Credit.

UNIV 321 - ADVANCED ACADEMIC FELLOWS/MENTORS PRACTICUM
Short Title: ADV FELLOWS/MENTORS PRACTICUM
Department: University Courses
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Designed for current members of the Academic Fellows/Mentors program. This course will focus on individually designed and faculty guided action plans. Students will design plans that enhance the role and effectiveness of the academic support provided by Fellows/Mentors at the individual, college, or university level. Instructor Permission Required. Repeatable for Credit.

UNIV 395 - RICE SCHOLARS ABROAD PREDEPARTURE
Short Title: RICE SCHOLARS ABROAD PREDEPART
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class is for students completing a Rice Scholars Abroad research project. It requires acceptance into that program and permission of the instructor. Instructor Permission Required. Repeatable for Credit.

UNIV 399 - RICE SCHOLARS ABROAD DIRECTED RESEARCH
Short Title: RICE SCHLARS ABROAD DIR RES
Department: University Courses
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This class is for students participating in the Rice Scholars Abroad program and is to be completed before the student goes abroad. Acceptance into that program and permission of the instructor are required. Instructor Permission Required. Repeatable for Credit.

UNIV 400 - STUDENT AFFAIRS INTERNSHIP
Short Title: STUDENT AFFAIRS INTERNSHIP
Department: University Courses
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Repeatable for Credit.

UNIV 401 - INDEPENDENT STUDY: INTERNATIONAL EDUCATION SURVEY
Short Title: IND STUDY: INTERNATIONAL ED
Department: University Courses
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The independent study is intended for upperclassmen who are considering working in the field of international education. Individualized meetings with the instructor and personalized coursework investigate ways to bridge current theoretical research in the field of international education with real-life practicalities in international education offices. Instructor Permission Required. Repeatable for Credit.

UNIV 402 - CIVIC LEADERSHIP CAPSTONE I
Short Title: CIVIC LEADERSHIP CAPSTONE I
Department: University Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: UNIV 402 is a requirement for the Certificate in Civic Leadership. The course prepares students to develop and implement high-level, independent, community-based projects, and enhances students' capacity to lead in diverse community settings. Students are required to develop a project proposal in collaboration with a community partner and faculty advisor. Instructor Permission Required.

UNIV 403 - CIVIC LEADERSHIP CAPSTONE II
Short Title: CIVIC LEADERSHIP CAPSTONE II
Department: University Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): UNIV 402
Description: UNIV 403 is a requirement for the Certificate in Civic Leadership. This course requires students to implement and complete their capstone project, present their findings at a conference or symposium, and submit a final reflection paper. Students who enroll in 403 and do not graduate may be permitted to implement their project during the summer. Instructor Permission Required.

UNIV 420 - PRE-DEPARTURE STUDY ABROAD SEMINAR
Short Title: PRE-DEPARTURE STUDY ABR SEM
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar provides a cultural introduction to study abroad students to help them maximize their international experience and engagement with host cultures. Students will acquire an introductory understanding of the prominent concepts in global citizenship, ethics, and responsibilities while abroad. The course will also introduce students to international research opportunities. Students may additional times outside the original posted time listed during the 2nd Half of Full Semester.
UNIV 500 - PRINCIPLES OF EFFECTIVE COLLEGE TEACHING
Short Title: PRINCIPLES EFFECTIVE TEACHING
Department: University Courses
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course provides an overview of essential, research-based methods used by college instructors to enhance the quality of student learning. Topics will include course and syllabus design, student engagement, classroom management, and more. This course will culminate with the development of a syllabus and a statement of teaching philosophy.

UNIV 501 - RESEARCH ON TEACHING AND LEARNING
Short Title: RESEARCH TEACHING & LEARNING
Department: University Courses
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course explores scholarship on teaching and learning in detail with special attention to the breadth of approaches and methodologies. The culminating project will be a literature review in an area of interest.

UNIV 502 - PRACTICUM IN COLLEGE TEACHING
Short Title: PRACTICUM IN COLLEGE TEACHING
Department: University Courses
Grade Mode: Standard Letter
Course Type: Internship/PRACTICUM
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): UNIV 500 and UNIV 501
Description: This practicum allows students to design and deliver teaching demonstrations and to receive feedback on their work. The course will also focus on the place of teaching in the broader landscapes of higher education and the academic job market.

UNIV 505 - INTER-INSTITUTIONAL TRANSFER COURSE
Short Title: INTER-INSTITUTIONAL TRANSFER
Department: University Courses
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is used when a Rice student transfers coursework taken through the inter-institutional program at UH, BCM, UTHSC, TAMHSC, UTMB-Galveston. The transfer course will carry the title of the course at the respective university. Department Permission Required. Repeatable for Credit.

UNIV 594 - RESPONSIBLE CONDUCT OF RESEARCH
Short Title: RESPONSIBLE CONDUCT - RESEARCH
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Responsible conduct of research (RCR) is defined as the practice of scientific investigation with integrity. It involves the awareness and application of established professional norms and ethical principles in the performance of all activities related to scientific research. (Formerly BIOC/BIOE 594)

UNIV 599 - TEACHING PORTFOLIO
Short Title: TEACHING PORTFOLIO
Department: University Courses
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): UNIV 500 and UNIV 501
Description: This independent study serves as a capstone to the UNIV sequence on teaching and learning. Students will meet individually with the instructor to plan and complete a teaching portfolio.

UNIV 600 - INTRODUCTION TO ACADEMIC READING AND WRITING FOR INTERNATIONAL GRADUATE STUDENTS
Short Title: ACADEMIC READING AND WRITING
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course teaches fundamental academic reading and writing skills to international graduate students in the first two years of their studies. Students will learn how scholars construct arguments and use evidence to support claims, and they will practice writing texts that are relevant to their own courses and careers.

UNIV 601 - ORAL COMMUNICATION SKILLS FOR INTERNATIONAL GRADUATE STUDENTS
Short Title: ORAL COMMUNICATION SKILLS
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will introduce students to expectations and assumptions of North American audiences, strategies for expressing ideas in individual and group conversations, and oral and visual skills needed for academic presentations. Pronunciation challenges will be diagnosed for individual students; students will use appropriate speaking programs in the Rice Language Lab; and, final projects will be related to students’ studies or research.
UNIV 602 - ACADEMIC WRITING FOR INTERNATIONAL GRADUATE STUDENTS
Short Title: ACADEMIC WRITING
Department: University Courses
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 2
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will address writing at both the macro- and micro-level, engaging students in such academic writing tasks as critiquing, reporting, and interpreting research findings, illustrating and justifying the significance of research, while also attending to mechanical topics. Writing assignments in the course will be linked to students’ studies, courses, or research. One-on-one conferences with instructors and CWOVC staff will be required.

Visual Arts (ARTS)

ARTS 101 - DRAWING FOR THE NON ART MAJOR
Short Title: DRAWING FOR THE NON ART MAJOR
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Drawing for the Non Art Major is intended to introduce basic, fundamental art practice to students not intending to major in art. This course will work to develop perceptive and interpretive skills - working both inside and outside traditional thought - to translate three-dimensional objects into two-dimensional work. Students will work in multiple black and white media and will be introduced to linear perspective and artistic composition. Students will be required to participate in class discussions and critiques. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster.

ARTS 103 - CREATIVE 2-D DESIGN
Short Title: CREATIVE 2-D DESIGN
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Study of the elements and principles of design and drawing using traditional and digital means. The emphasis in the class is on a foundation to culture practice and the critical approaches to art and technology. Students will be required to participate in class discussions and critiques. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster.

ARTS 165 - BEGINNING SCULPTURE
Short Title: BEGINNING SCULPTURE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the concepts and forms of contemporary sculpture. Exploration of materials (including plaster, clay, cardboard, fabric, wood, and found objects) and sculpture techniques such as mold making and woodworking. Shop and studios are available days and evening throughout the week. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster.

ARTS 200 - SPECIAL PROBLEMS IN STUDIO ART I
Short Title: SPECIAL PROB IN STUDIO ART I
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Study of problems at the introductory level in creative art. Topics may vary. Please consult with your faculty advisor for additional information. This class may be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.

ARTS 225 - BEGINNING DRAWING
Short Title: BEGINNING DRAWING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course introduces students to the basic techniques, materials and processes of drawing. Students will explore line, tone, space, form, composition, and content through a variety of drawing assignments in dry and wet media. Students learn how to draw from direct observation. No previous drawing experience is required.
ARTS 230 - COMICS AND SEQUENTIAL ART
Short Title: COMICS AND SEQUENTIAL ART
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An introduction to the art of combining words and pictures: diverse applications such as storyboarding for stage and screen, comic books and graphic novels, and serial or multiples in a variety of media all fall under the umbrella of Sequential Art. Through instruction, demos, readings and practice, students will learn the history and implementation of linear visual narratives utilizing the Comics Art Teaching and Study Workshop as a resource. Students in this class will also participate in the construction and establishment of a permanent research center for the study of Comic Book Art within the Department of Visual and Dramatic Arts. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster. Cross-list: FILM 275.

ARTS 262 - ART OF DIY: PROBLEM SOLVING AND MAKING
Short Title: ART OF DIY: PROBLEM SOLVING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The utilization of D.I.Y. (Do It Yourself) communities will be a centralized resource used to guide and complete audio work within the class. Keeping in mind the question: within contemporary society, how has the ability to produce and problem solve on an individual basis changed? The focuses of this class are to produce diverse technically proficient works of art that draw from and inform the student’s current research. The class will also, during the course of the semester, build and implement a large, open-source DIY laser cutter. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster. Instructor Permission Required.

ARTS 263 - ART OF DIY: PROBLEM SOLVING AND MAKING II
Short Title: ART OF DIY: PROBLEM SOLVING II
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: The focus of this class will be to first build a DIY 3-D printer. We will utilize the laser cutter built in the previous DIY course to make the necessary components for the printer. We will then focus our attention on utilizing these tools to construct works of art that draw from and inform the students current research and interests. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster. Instructor Permission Required.

ARTS 270 - BIG PAINTING: MATERIALS AND TECHNIQUES FOR THEATRICAL PAINTING
Short Title: BIG PAINTING FOR THEATRE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Big Painting: Materials and Techniques for Theatrical Painting will examine the materials and techniques usually associated with scenic and theatrical painting but as applied to the context of 21st century contemporary art practices. Students will learn how to make big paintings. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster. Cross-list: THEA 270.

ARTS 280 - HISTORY & AESTHETICS OF FILM
Short Title: HISTORY & AESTHETICS OF FILM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the art and aesthetics of film as an artifact produced within certain social contexts. Includes style, narration, mise-en-scene, editing, sound, and ideology in classical Hollywood cinema, as well as independent, alternative, notification, and Third World cinemas. Cross-list: FILM 280, HART 280.

ARTS 294 - SPECIAL PROBLEMS IN STUDIO ART: JUNIOR FIELD TRIP
Short Title: JUNIOR FIELD TRIP
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Study of problems at the introductory level in creative art. Topics may vary. Please consult with department for additional information. May be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.

ARTS 300 - SPECIAL PROBLEMS IN STUDIO ART II
Short Title: SPECIAL PROB IN STUDIO ART II
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of problems at the intermediate level in creative art. Topics may vary. Please consult with your faculty advisor for additional information. This class may be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.
ARTS 301 - BEGINNING PAINTING  
Short Title: BEGINNING PAINTING  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Studio  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course introduces students to the basic language, tools, and materials of painting. Students will learn painting techniques and concepts, starting with painting from observation and ending with more student-directed projects. Lectures and filed trips will explore painting through an art historical context as well as a contemporary one.

ARTS 310 - COLLABORATIVE PRINTMAKING  
Short Title: COLLABORATIVE PRINTMAKING  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Studio  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course is designed to interactively educate the student about the collaborative print process beyond artistic dialog, allowing each student to work as artist-printmaker, economist, and business planner. The course will examine the process of taking artwork from the beginning concept to the finished product to the marketplace — all the while staying within a budget. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster.

ARTS 311 - BEGINNING PRINTMAKING  
Short Title: BEGINNING PRINTMAKING  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Studio  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course will give an introduction to prints and printmaking through the study of original works on paper and the opportunity to produce printed works of art. Works will include etchings, lithograph, linocut, and monoprints. Enrollment is limited. The instructor will formulate the course roster and may allow additional majors and underclassmen to enroll.

ARTS 314 - SCREEN PRINTING I  
Short Title: SCREEN PRINTING I  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ARTS 101 or ARTS 225  
Description: Instruction in color screen-printing processes. Emphasis will be on figurative/narrative work with strong print experimentation. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster.

ARTS 315 - LINO + MONOPRINTING  
Short Title: LINO + MONOPRINTING  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ARTS 101 or ARTS 225  
Description: Introduction to Monotype. Includes black-and-white and color Monotype printing. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster.

ARTS 320 - MONOTYPE I  
Short Title: MONOTYPE I  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Studio  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Includes black-and-white, color, chine-colle, and additional monotype printing techniques to produce one of a kind prints. Creative and personal imagery is emphasized.

ARTS 322 - 3-D PRINTMAKING  
Short Title: 3-D PRINTMAKING  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Laboratory  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ARTS 225  
Description: This course will produce 3-dimensional works utilizing the traditional and non-traditional print processes of linocut, photocopy, transfer, vinyl cutter, and monoprinting techniques. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster.
ARTS 323 - DRAWING STUDIO
Short Title: DRAWING STUDIO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Prerequisite(s): ARTS 101 or ARTS 225
Description: A continuation of Beginning Drawing, where students continue to investigate the concepts, materials, and possibilities of drawing. Students will explore further drawing in all its permutations, experimenting with scale, new materials, and new techniques. Assignments will continue focusing on working from life while also offering opportunities to work more subjectively.

ARTS 325 - LIFE DRAWING
Short Title: LIFE DRAWING
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 225
Description: This course introduces methods and theories of life drawing. Students will work from short and long poses on exercises emphasizing gesture, proportion, composition, and character. A variety of media and approaches will be introduced. Homework and required visits to museums and galleries will build on what students practice in class.

ARTS 326 - COLLAGE
Short Title: COLLAGE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ARTS 225
Description: This course introduces students to drawing from the model. Students will work from short and long poses on exercises emphasizing gesture, proportion, composition, and character. A variety of media and approaches will be introduced. Homework and required visits to museums and galleries will build on what students practice in class.

ARTS 327 - DOCUMENTARY PRODUCTION
Short Title: DOCUMENTARY PRODUCTION
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of the expressive possibilities of documentary production using digital systems. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: ANTH 324, FILM 327.

ARTS 328 - FILMMAKING I
Short Title: FILMMAKING I
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Dramatic film production class that requires the making of one digital video and one 16mm film. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: FILM 328.

ARTS 329 - FILM FORM
Short Title: FILM FORM
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Viewing, analysis, and discussion of modern and classic films. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Cross-list: FILM 329.

ARTS 330 - INTERMEDIATE STUDIES: POP ART & ITS ORIGINS:
ENGLAND & AMERICA C. 1955-1968
Short Title: INTERMEDIA STUDIES
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Pop Art whether American, British, or European, had - and has as its underlying and unifying agenda - a commentary or critique concerning the impact of "popular" culture (film, television, advertising, music, fashion, etc.) on contemporary society, especially in creating a new synthesis of "popular" and "high" culture in the visual arts. This, in part, was a reaction against the lofty, idealistic aspirations of post-war abstraction. This course will examine the philosophical and aesthetic origins and development of what came to be known as Pop Art.

ARTS 331 - POSTMODERNISM: ART FROM 1976 TO PRESENT
Short Title: POSTMODERNISM:1976-PRSNT
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Several influences reenergized the art scene in the late 1970s. Among the most significant were a new presence of European art and a new generation of American artists, accompanied by a return to figurative painting, the growth of the Feminist art scene, and new tendencies in abstraction. This course examines the artists, forms, and terms that have emerged since Documenta VII, held in Kassell, Germany in 1982. Among the many artists covered are Baselitz, Beuys, Chia, Clemence, Cucci, Fischl, Lucian, Freud, Gilbert and George, Kiefer, Longe, Marianni, Richter, Salle, Schnabel, and Sultan.
**ARTS 332 - CRITICAL STUDIES OF MULTIMEDIA ARTS**
*Short Title:* CRITICAL STUDIES OF MULTIMEDIA ART  
*Department:* Visual and Dramatic Arts  
*Grade Mode:* Standard Letter  
*Course Type:* Seminar  
*Credit Hours:* 3  
*Restrictions:* Graduate level students may not enroll.  
*Course Level:* Undergraduate Upper-Level  
*Description:* Critical Studies for Multimedia Arts is a course designed to familiarize art and non-art majors with key theories and core concepts in modern and contemporary multimedia art. Students will examine a broad spectrum of specific topics in contemporary artwork related conceptually to: space/time; bodies and performance; “sculptural” studies in an expanded field and video & film space. This is a multi-dimensional class consisting of guest lectures, artist-speakers, and field trips to local museums, galleries and alternative art spaces. This course will include discussions on readings, writings and special projects. This promises to be a fun and thought-provoking class and is designed to enhance studio practice and encourage interest in the visual arts. Cross-list: FILM 332, FOTO 332, THEA 332.

**ARTS 349 - PRINTMAKING STUDIO**
*Short Title:* PRINTMAKING STUDIO  
*Department:* Visual and Dramatic Arts  
*Grade Mode:* Standard Letter  
*Course Type:* Studio  
*Credit Hours:* 3  
*Restrictions:* Graduate level students may not enroll.  
*Course Level:* Undergraduate Upper-Level  
*Prerequisite(s):* ARTS 225  
*Description:* Exploration of etching, lithography, photo gravure, and monoprinting. Enrollment is limited. The instructor will formulate the course roster and may allow additional majors and underclassmen to enroll.

**ARTS 358 - GROTESQUE, IMPURE, AND HYBRID PRACTICES IN ART**
*Short Title:* MONSTER STUDIO  
*Department:* Visual and Dramatic Arts  
*Grade Mode:* Standard Letter  
*Course Type:* Studio  
*Credit Hours:* 3  
*Course Level:* Undergraduate Upper-Level  
*Restrictions:* Graduate level students may not enroll.  
*Description:* This course should be taken in conjunction with Monster (HUMA 368 or BIOC 368). Topics discussed in that seminar will act as prompts for studio projects. Students will work independently and in groups on assignments addressing the monstrous in art, culminating in a final exhibition. Intended for all skill and experience levels.

**ARTS 366 - SCULPTURE STUDIO**
*Short Title:* SCULPTURE STUDIO  
*Department:* Visual and Dramatic Arts  
*Grade Mode:* Standard Letter  
*Course Type:* Studio  
*Credit Hours:* 3  
*Restrictions:* Graduate level students may not enroll.  
*Course Level:* Undergraduate Upper-Level  
*Prerequisite(s):* ARTS 165  
*Description:* Study of advanced problems in various sculptural media. Limited enrollment. The roster is formulated on the first day of class by the instructor, who may allow additional registration for majors and under-classmen. It is necessary to attend the first class meeting to confirm your place on the class roster. Cross-list: ARCH 367.

**ARTS 368 - PHYSICAL COMPUTING FOR ART**
*Short Title:* PHYSICAL COMPUTING FOR ART  
*Department:* Visual and Dramatic Arts  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture/Laboratory  
*Credit Hours:* 3  
*Restrictions:* Graduate level students may not enroll.  
*Course Level:* Undergraduate Upper-Level  
*Description:* This class will explore how we relate to other humans and our environment through digital technology. We will begin constructing projects on traditional computers; however, the projects in the class will expand beyond these confines. The class will focus on a hands-on experience of making interactive art projects, performance installations, interactive moving images, and sound within the context of contemporary art. Space in studio class is limited. Registration does not guarantee a place in class. The class roster will be formulated on the first day of class by the individual instructor. Repeatable for Credit.

**ARTS 370 - OUTSIDE CONTEXT: ART, ARTISTS AND AUDIENCES BEYOND THE WHITE CUBE**
*Short Title:* OUTSIDE CONTEXT  
*Department:* Visual and Dramatic Arts  
*Grade Mode:* Standard Letter  
*Course Type:* Lecture/Laboratory  
*Credit Hours:* 3  
*Restrictions:* Graduate level students may not enroll.  
*Course Level:* Undergraduate Upper-Level  
*Description:* Outside Context: Art, Artists, and Audiences beyond the White Cube concerns the history and practice of making artwork in mass media forms. Contexts that are traditionally the baliwick of advertising and entertainment, and now more often, a place where artists implement work that engages wider audiences. Combining lectures and practice, students will participate in the development of new artworks in mass media and public forms. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster.

**ARTS 378 - EXHIBITION DESIGN**
*Short Title:* EXHIBITION DESIGN  
*Department:* Visual and Dramatic Arts  
*Grade Mode:* Standard Letter  
*Course Type:* Seminar  
*Credit Hours:* 3  
*Restrictions:* Graduate level students may not enroll.  
*Course Level:* Undergraduate Upper-Level  
*Description:* This course will explore the world of museums and galleries through exhibition design. Students will study the curatorial process and exhibition preparation including concept development, educational goals, budget, installation, and publicity. Discussions, workshops, museum visits, and guest lectures will provide students the opportunity to gain practical experience in museum/gallery work.
ARTS 383 - STUDIO ART INTERNSHIP
Short Title: STUDIO ART INTERNSHIP
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Description: This course is a field-based, supervised, professional learning experience designed to enhance classroom learning. Students will be responsible for identifying and securing internship positions and must obtain permission from the department chairman and have a department faculty sponsor. All interns are required to keep an internship journal recording duties and activities; the journal will be used as the basis of a five-page paper summarizing the internship experience. Documentation of the work produced during the internship is required, portfolio, CD, DVD, etc. Instructor Permission Required. Repeatable for Credit.

ARTS 384 - TEXT AND IMAGE
Short Title: TEXT AND IMAGE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: This interdisciplinary course will explore the relationship between language, text, and the visual arts. The class will examine poet/artist collaborations, text-focused artistic movements such as Dada, Surrealism, and the early text-based works of the 1960s, along with contemporary artists and writers who push the boundaries of their fields. Field trips, readings, group discussions, and class critique will all be integral to this course. Students will develop projects, either through individual investigation or group collaboration, examining how words and images might intersect. The semester will culminate in a publication of these projects. This course has limited enrollment. The roster is formatted on the first day class by the instructor, who may allow additional registration for majors and underclassmen. It is necessary to attend the first class meeting to confirm your place on the class roster.

ARTS 388 - CRITICAL STUDIES FOR STUDIO PRACTICE
Short Title: CRIT STUDIES STUDIO PRACTICE
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: Critical Studies for Studio Practice is a course designed to familiarize art and non-art majors with key theories and concepts in modern and contemporary art. This is a multi-dimensional class consisting of guest lectures, artist-speakers, and art field trips to local museums, galleries, and alternative art spaces. The course will include discussions on readings, writing, and special projects. This promises to be a fun and thought-provoking class and is designed to enhance studio practice and encourage interest in the visual arts.

ARTS 396 - SPEC PROBLEMS: MOBILE ARTS PROJECT
Short Title: SPEC PROB: MOBILE ARTS PROJECT
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Graduate level students may not enroll.
Description: The purpose of this course is to prepare undergraduate art majors to develop and cultivate behavior, habits, and methods through which to best represent themselves and their work in a professional environment within the contemporary art world. The course will focus on the curriculum vitae, photographic records, presses, books, catalogues, as well as general tax issues, resale certificates, basic financial planning, web design, and the use of presentational tools such as PowerPoint. Students will learn how to write cover letters, artistic statements, press releases, and project proposals related to grants and/or residencies. This course is intended for visual art majors. Instructor Permission Required.

ARTS 398 - SURVIVAL GUIDE FOR THE EMERGING ARTIST
Short Title: SURVL GUIDE EMERG ART
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to students with a major in Visual and Dramatic Arts. Graduate level students may not enroll.
Description: The purpose of this course is to prepare undergraduate art majors to develop and cultivate behavior, habits, and methods through which to best represent themselves and their work in a professional environment within the contemporary art world. The course will focus on the curriculum vitae, photographic records, presses, books, catalogues, as well as general tax issues, resale certificates, basic financial planning, web design, and the use of presentational tools such as PowerPoint. Students will learn how to write cover letters, artistic statements, press releases, and project proposals related to grants and/or residencies. This course is intended for visual art majors. Instructor Permission Required.

ARTS 400 - SPECIAL PROBLEMS IN STUDIO ART III
Short Title: SPECIAL PROB IN STUDIO ART III
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-6
Restrictions: Graduate level students may not enroll.
Description: Study of problems at the advanced level in creative art. Topics may vary. Please consult with your faculty advisor for additional information. This class may be used in awarding transfer credit. Instructor Permission Required. Repeatable for Credit.
ARTS 401 - PAINTING STUDIO  
Short Title: PAINTING STUDIO  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Studio  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ARTS 301  
Description: A continuation of practices and concepts introduced in Beginning Painting. Individual expression will be encouraged through a series of assignments that explore scale, subject matter, and process. Experimentation in different, painterly media will be encouraged. Students will continue to learn how to discuss painting through in-class critique. Mutually Exclusive: Credit cannot be earned for ARTS 401 and ARTS 303.

ARTS 428 - FILMMAKING II  
Short Title: FILMMAKING II  
Department: Visual and Dramatic Arts  
Grade Mode: Standard Letter  
Course Type: Studio  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ARTS 327 or ARTS 328  
Description: 16mm film production course utilizing handmade cinema techniques. Space in class is limited. Registration does not guarantee a place in class. The class roster is formulated the first day of class by the individual instructor. Cross-list: FILM 444.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARTS 447</td>
<td>SPECIAL PROBLEMS IN LIFE DRAWING</td>
<td>ARTS 447 - SPECIAL PROBLEMS LIFE DRAWING</td>
<td>Visual and Dramatic Arts</td>
<td>Standard Letter</td>
<td>Independent Study</td>
<td>1-6</td>
<td>Graduate level students may not enroll.</td>
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<tr>
<td>ARTS 449</td>
<td>PRINTMAKING STUDIO</td>
<td>ARTS 449 - PRINTMAKING</td>
<td>Visual and Dramatic Arts</td>
<td>Standard Letter</td>
<td>Studio</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
<td></td>
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<tr>
<td>ARTS 450</td>
<td>SPECIAL PROBLEMS IN PRINTMAKING</td>
<td>ARTS 450 - SPECIAL PROBLEMS PRINTMAKING</td>
<td>Visual and Dramatic Arts</td>
<td>Standard Letter</td>
<td>Independent Study</td>
<td>1-6</td>
<td>Graduate level students may not enroll.</td>
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</tr>
<tr>
<td>ARTS 457</td>
<td>SPECIAL PROBLEMS IN SCULPTURE</td>
<td>ARTS 457 - SPECIAL PROBLEMS SCULPTURE</td>
<td>Visual and Dramatic Arts</td>
<td>Standard Letter</td>
<td>Independent Study</td>
<td>1-6</td>
<td>Graduate level students may not enroll.</td>
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<tr>
<td>ARTS 460</td>
<td>ADVANCED COMPUTER GRAPHICS</td>
<td>ARTS 460 - ADVANCED COMPUTER GRAPHICS</td>
<td>Visual and Dramatic Arts</td>
<td>Standard Letter</td>
<td>Lecture/Laboratory</td>
<td>4</td>
<td>Graduate level students may not enroll.</td>
<td><a href="http://www.owlnet.rice.edu/~comp460">www.owlnet.rice.edu/~comp460</a></td>
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<td>ARTS 465</td>
<td>ADVANCED SCULPTURE</td>
<td>ARTS 465 - ADVANCED SCULPTURE</td>
<td>Visual and Dramatic Arts</td>
<td>Standard Letter</td>
<td>Studio</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
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<tr>
<td>ARTS 475</td>
<td>ADVANCED PAINTING</td>
<td>ARTS 475 - ADVANCED PAINTING</td>
<td>Visual and Dramatic Arts</td>
<td>Standard Letter</td>
<td>Studio</td>
<td>3</td>
<td>Graduate level students may not enroll.</td>
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<td>ARTS 494</td>
<td>SPECIAL PROBLEMS IN PRINTMAKING</td>
<td>ARTS 494 - SPECIAL PROBLEMS PRINTMAKING</td>
<td>Visual and Dramatic Arts</td>
<td>Standard Letter</td>
<td>Independent Study</td>
<td>1-6</td>
<td>Graduate level students may not enroll.</td>
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ARTS 499 - SENIOR STUDIO
Short Title: SENIOR STUDIO
Department: Visual and Dramatic Arts
Grade Mode: Standard Letter
Course Type: Studio
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Senior. Enrollment is limited to students with a major in Visual and Dramatic Arts. Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Required seminar for all studio track majors. This course is designed to guide the senior major in focused preparation of their work of the annual senior exhibition. Classes will consist of lectures, visits and critiques by artists and curators, and intensive independent studio work. Prerequisites: Students must receive permission from their faculty advisor or department chair to register for this class; only department majors who have senior academic standing will be allowed to register for this course. Department Permission Required. Repeatable for Credit.

Women, Gender, & Sexuality (SWGS)

SWGS 101 - INTRODUCTION TO WOMEN & GENDER
Short Title: INTRO WOMEN & GENDER
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to the Study of Women, Gender, and Sexuality: An introductory survey of issues in the study of gender, such as women's social, political, and legal status in the US and globally; feminist perspectives on sexuality, race, the body, globalization, labor, culture; and the implications of these perspectives for social and critical theory. The course also introduces the concept of engaged research and the public service components of feminist activity.

SWGS 111 - INTRODUCTION TO FEMINIST PHILOSOPHY
Short Title: INTRO TO FEMINIST PHILOSOPHY
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Feminist philosophy both uses philosophical methods to investigate feminism, and critiques philosophy from a feminist perspective. This course introduces the student to feminist philosophy from historical and contemporary perspectives, investigating topics of both feminist and philosophical interest such as gender, sexuality, family, class, race, equality, justice, politics, science, and knowledge. Cross-list: PHIL 111.

SWGS 130 - WOMEN AND NAZI GERMANY
Short Title: WOMEN AND NAZI GERMANY
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Through literature, art and filmmaking this course will explore how the Nazi dictatorship affected the lives of women. From "Aryan" women who participated in it, to how German women of Jewish descent were marginalized; analyzing women as victims and perpetrators of the Holocaust; and exploring the memory of Nazism. This course is limited to first-year students only, any others will be removed from this course. Cross-list: FSEM 130, GERM 130.

SWGS 201 - INTRODUCTION TO LESBIAN, GAY, BISEXUAL, AND TRANSGENDER STUDIES
Short Title: INTR LESBIAN, GAY, BISEX&TRAN
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Introduction to Lesbian, Gay, Bisexual, & Transgender Studies - An introduction to the interdisciplinary examination of sexual desires, sexual orientations, and the concept of sexuality, with a focus on the construction of lesbian, gay, bisexual, and transgender identities. The course looks at how identities interact with other social phenomena such as government, family, popular culture, scientific inquiry, and especially gender, and highlights the complexity and variability of sexualities of both across historical periods and in relation to race, class, ethnicity and nation. The course also introduces the concept of engaged research and the public service component of LGBT activity.

SWGS 205 - LANGUAGE AND SOCIETY
Short Title: LANGUAGE AND SOCIETY
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course treats language as a social phenomenon to show how language, personal identity and institutions of social control inter-relate. The course focuses on linguistic interaction in daily life and how gender, ethnic, class, activity, and geographic variation affect language use. Cross-list: LING 205.
SWGS 225 - WOMEN IN GREECE AND ROME
Short Title: WOMEN IN GREECE AND ROME
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of the depiction of women in Greek and Roman mythology, literature, and art. Includes a study of the lives of Greek and Roman women as evidenced by archaeological as well as literary materials. Cross-list: CLAS 225.
Course URL: classicallegacy.rice.edu

SWGS 234 - U.S. WOMEN'S HISTORY I: COLONIAL BEGINNINGS TO THE CIVIL WAR
Short Title: U.S. WOMEN'S HISTORY, I
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines the emergence of religion-based movements' concern with gender roles in society. We will investigate, for instance, the extent to which women participants have been willing or able to reshape the central ideas of such movements. Cross-list: CLAS 225.

SWGS 235 - U.S. WOMEN'S HISTORY II: CIVIL WAR TO THE PRESENT
Short Title: U.S. WOMEN'S HISTORY, II
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: Survey of American women's history examines the lives of elite, working, black, Indian and white women, and traces changes in women's legal, political, and economic status from the mid-17th century through the Civil War. Topics include slavery, suffrage, sexuality, and feminism. Cross-list: HIST 241.

SWGS 240 - GENDER AND POLITICIZED RELIGION
Short Title: GENDER & POLITICIZED RELIGION
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: This course examines the emergence of religion-based politics in various Asian countries - particularly Hindu and Muslim - focusing on the women participants in these movements as well as the movements' concern with gender roles in society. We will investigate, for instance, the extent to which women participants have been willing or able to reshape the central ideas of such movements. Cross-list: ASIA 240, RELI 285. Mutually Exclusive: Credit cannot be earned for SWGS 240 and SWGS 340.

SWGS 240 and SWGS 340.

SWGS 250 - SEX, MONEY, AND POWER AROUND THE WORLD
Short Title: SEX, MONEY, AND POWER
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An interdisciplinary course exploring lives and well-being in the context of gendered international and domestic politics and economic processes. Emphasis on the implications of power relations at levels from the household to the global for women and men around the world (with particular attention to Asia). Cross-list: ASIA 251, POLI 250.

SWGS 273 - MEDICINE AND MEDIA
Short Title: MEDICINE AND MEDIA
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Lower-Level
Description: An interdisciplinary exploration of the role of imaging technologies in the practice of medicine, and the role of mass media in shaping our understandings of the body, health, and disease. This course examines visual media structure "ways of seeing" for physicians and for the public. Emphasis will be placed on developing media literacy skills. Cross-list: ENGL 273.
Course URL: www.english.rice.edu

SWGS 301 - ARTHURIAN LITERATURE
Short Title: ARTHURIAN LITERATURE
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A survey of the origins and development of the Arthurian legend from the earliest chronicles in the sixth century and later medieval French, Welsh, Irish, and English Arthurian poems to modern adaptations of Arthurian material, including films. Cross-list: ENGL 317, MDEM 317.

SWGS 303 - GENDER AND SCIENCE
Short Title: GENDER AND SCIENCE
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to the historical, philosophical and social dimensions of science and technology through the lens of feminist and gender studies. It will explore the ways in which science has factored in producing cultural norms for gender and race, how gender figures in the authority of science, and the role of gender in scientific institutions.

SWGS 303 - GENDER AND SCIENCE
Short Title: GENDER AND SCIENCE
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to the historical, philosophical and social dimensions of science and technology through the lens of feminist and gender studies. It will explore the ways in which science has factored in producing cultural norms for gender and race, how gender figures in the authority of science, and the role of gender in scientific institutions.
SWGS 305 - CHAUCER
Short Title: CHAUCER
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to Geoffrey Chaucer’s The Canterbury Tales, Middle English, and the political and cultural climate of the fourteenth century. Cross-list: ENGL 316, MDEM 316.

SWGS 306 - HUMAN SEXUALITY
Short Title: HUMAN SEXUALITY
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is designed to explore the physiological, psychological, and sociological parameters of human sexuality, while providing accurate information and helping students develop healthy attitudes toward sexuality. Cross-list: HEAL 306.

SWGS 308 - THE FUTURE OF FOOD: FEMINIST, QUEER, AND CRITICAL APPROACHES
Short Title: FOOD FEMINIST QUEER APPROACHES
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines food studies, food movements, and food politics through feminist, queer, and critical approaches, analyzing throughout the course food’s relationships to gender, class, race, disability, sexuality, and geography. The course will include sharing food with one another, going on field trips, and participating in an engaged food justice project. Repeatable for Credit.

SWGS 314 - DIVINE SEX: GENDER AND DIVINITY IN THE MIDDLE AGES
Short Title: DIVINE SEX
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine key medieval works, with special attention to women’s writing, focusing on gender construction in mysticism and theology. Primary readings will include works by Hildegard of BinGen, Birgitta of Sweden, Margery Kempe, and others. Cross-list: MDEM 314, RELI 314.

SWGS 315 - GENDER AND ISLAM
Short Title: GENDER AND ISLAM
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Explores the lives of Muslim women in Asia, the Middle East, Europe, and North America; analyzes constructions of gender in the Islamic world overtime; the challenges faced from such diverse quarters as colonial administrators, Western feminists, and states; as well as movements and individuals within the Muslim world. Cross-list: ASIA 315, RELI 315.

SWGS 318 - ISRAELI WOMEN WRITERS
Short Title: ISRAELI WOMEN WRITERS
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: In the last 25 years there has been an explosion of women’s poetry and fiction in Israel. In this course we will explore Israeli women’s writing since the inception of the state of Israel and examine what the work of contemporary women writers means for Israeli culture, society, and politics. Cross-list: JWST 318.

SWGS 319 - FEMINIST PHILOSOPHY
Short Title: FEMINIST PHILOSOPHY
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course is an introduction to feminist philosophy, including texts by both historical and contemporary thinkers (e.g. Wollstonecraft, Mill, de Beauvoir, MacKinnon, Gilligan, Irigaray). We shall discuss both feminists’ radical critiques of traditional values and beliefs, and feminist alternative views of justice, ethical judgment, and truth. Cross-list: PHIL 319.

SWGS 320 - GENDER, SEXUALITY AND THE ADAPTATION OF TRANSNATIONAL LITERATURE TO PERFORMANCE
Short Title: GENDER AND PERFORMANCE
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines the embodiment of gender and sexuality through the oral interpretation of transnational literature. Students will learn how to analyze and adapt to performance novels and short stories from various global and historical contexts that exemplify the genre of the “coming of age” narrative. Cross-list: THEA 320.
SWGS 321 - EXHIBITING SEXUALITIES
Short Title: EXHIBITING SEXUALITIES
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: This class investigates how sexuality has been constructed, avoided, celebrated, and suppressed in museums. In addition to studying a genealogy of sexual display and spectatorship in museums, students will also do the work of collectors, curators, and critics of artistic, historical, and scientific displays of sex and sexuality. Cross-list: HART 399.

SWGS 324 - SOCIOLOGY OF GENDER
Short Title: SOCIOLOGY OF GENDER
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: Relationship between gender and social role. Development of the contemporary sexual division of labor and process of socialization with reference to family, education, media, and occupations. Cross-list: SOCI 306.

SWGS 325 - SOCIOLOGY OF THE FAMILY
Short Title: SOCIOLOGY OF THE FAMILY
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: This course will teach students the important influences and consequences of American family life. We will consider issues such as sex and sexualities, marriage and cohabitation, divorce, family structure, same-sex marriage, domestic violence, and household labor. We will also examine the role of social institutions and social inequality in shaping family norms and constraints on family behaviors. Cross-list: SOCI 334.

SWGS 327 - TOPICS IN WOMEN WRITERS
Short Title: TOPICS IN WOMEN WRITERS
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: A variable topics course that focuses on women from various traditions. Cross-list: ENGL 381. Repeatable for Credit.
Course URL: www.english.rice.edu

SWGS 329 - THE AMERICAN WEST AND ITS OTHERS
Short Title: THE AMERICAN WEST & ITS OTHERS
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: Survey of a body of literature, film, and critical theory about the American West and the concept of regionalism. Explores region in relation to the nation and its borders, global media, coloniality, indignity and race, gender, and an ethics of place. Cross-list: ENGL 369.
Course URL: www.english.rice.edu

SWGS 331 - PSYCHOLOGY OF GENDER
Short Title: PSYCHOLOGY OF GENDER
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: Overview of research and theory on gender in psychology. Cross-list: PSYC 331.

SWGS 332 - SEX, SELF, AND SOCIETY IN ANCIENT GREECE
Short Title: SOCIETY IN ANCIENT GREECE
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: An introductory venture into conducting fieldwork in the past. The course treats a wide range of artifacts, from philosophical essays to vase paintings. It derives its focus from a rich corpus of recent research into the ancient problemization of desire and self-control. Cross-list: ANTH 325.

SWGS 333 - MASCULINITIES
Short Title: MASCULINITIES
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Description: This course deals with masculinities in the West, concentrating on concepts of masculine protagonism and personhood. Readings explore identities constructed in realms such as law, politics, finances, art, the home, and war. Cross-list: ANTH 311.
SWGS 335 - THE LIFE CYCLE: A BIOCULTURAL VIEW  
Short Title: LIFE CYCLE: A BIOCULTURAL VIEW  
Department: Stdy of Women, Gender, & Sxlyt  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: The human life cycle from conception to death. Focus is on the interaction between biological processes and culture. Cross-list: ANTH 388.

SWGS 336 - THE ANTHROPOLOGY OF THE HISTORICAL IMAGINATION  
Short Title: THE HISTORICAL IMAGINATION  
Department: Stdy of Women, Gender, & Sxlyt  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Explores ideas of history and attitudes toward the past as culturally conditioned phenomena. Emphasizes history as a statement of cultural values as well as conceptualizations of cause, change, time, and reality. Cross-list: ANTH 308.

SWGS 338 - 19TH CENTURY WOMEN'S NARRATIVES  
Short Title: 19TH C. WOMEN'S NARRATIVES  
Department: Stdy of Women, Gender, & Sxlyt  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course examines the experiences of women in the United States during the nineteenth century through first-hand accounts and scholarly readings. Students will ready a variety of materials to explore the social and legal status of women and consider the impact of race on women's lives. Cross-list: HIST 338.

SWGS 343 - JANE AUSTEN'S WORLDS  
Short Title: JANE AUSTEN'S WORLDS  
Department: Stdy of Women, Gender, & Sxlyt  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: An exploration of Jane Austen as Regency writer and contemporary icon. The course will focus both on Austen's writing her novels, her juvenilia and her letters and on visual and textual adaptations of her work. Cross-list: ENGL 343.

SWGS 345 - HISTORY OF FEMINISM  
Short Title: HISTORY OF FEMINISM  
Department: Stdy of Women, Gender, & Sxlyt  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Explores feminism as political thought and social movement in various times and places. Readings will include classic as well as non-canonical texts. We will consider the historical contexts of feminist action, and examine controversies over and within feminisms. Cross-list: HIST 340.

SWGS 346 - SEMINAR ON LOVE: MAKING LOVE IN MODERN ART AND THOUGHT  
Short Title: MAKING LOVE IN MODERN ART  
Department: Stdy of Women, Gender, & Sxlyt  
Grade Mode: Standard Letter  
Course Type: Seminar  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This seminar explores various conceptions of love from the classical era to our postmodern age. Ranging from eros to philia to agape, we will examine literary, philosophical, and artistic expressions of love in painting, cinema, literature, psychoanalysis, philosophy, religion, and culture. Cross-list: HART 346.

SWGS 348 - SEX AND GENDER IN MODERN JEWISH CULTURE  
Short Title: SEX & GENDER IN JEWISH CULTURE  
Department: Stdy of Women, Gender, & Sxlyt  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: How has Jewish identity historically been constructed as gendered, and how has that affected Jewish self-perception and representation as well as the representations of others? This course explores the intersection between gender and Jewishness from several different historical and cultural perspectives, using literature, film, and philosophy. Cross-list: JWST 348. Mutually Exclusive: Credit cannot be earned for SWGS 348 and RELI 347/SWGS 347.

SWGS 350 - GENDER AND SYMBOLISM  
Short Title: GENDER AND SYMBOLISM  
Department: Stdy of Women, Gender, & Sxlyt  
Grade Mode: Standard Letter  
Course Type: Seminar  
Distribution Group: Distribution Group II  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: Examinations of beliefs concerning men, women, and gender in different cultures, including the West, relating to issues of symbolism, power, and the distribution of cultural models. Cross-list: ANTH 327.
SWGS 353 - ILLNESS, DISABILITY, AND THE GENDERED BODY
Short Title: DISABILITY AND GENDERED BODIES
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course draws on critical disability studies and medical anthropology to explore how gender and sexuality matter in contexts of illness and disability across a range of institutional, social, and national contexts. We pay particular attention to the ways illness and disability expose, disturb, or reframe normative arrangements of gender. Cross-list: ANTH 354. Graduate/Undergraduate Equivalency: SWGS 554. Mutually Exclusive: Credit cannot be earned for SWGS 353 and SWGS 554.

SWGS 354 - CHICANO/A LITERATURE
Short Title: CHICANO/A LITERATURE
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A mixed-genre course focusing on the Chicano movement, the Chicano renaissance, and alternative literary and mythic traditions associated with them. Cross-list: ENGL 354. Cross-list: GERM 338, HUMA 373.

SWGS 358 - EUROPEAN WOMEN FILMMAKERS
Short Title: EUROPEAN WOMEN FILMMAKERS
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Filmmaking has celebrated its first hundred years. Women's contributions were significant and deserve to widen the film canon for all filmgoers. This course will concentrate on films by European women directors, taking into account aesthetic particularities, gender commitment, and post-feminist attempts. Importance will also be given to the contexts and conditions of women's film production. All films subtitled in English. Taught in English. Cross-list: ENGL 354, ANTH 354. Graduate/Undergraduate Equivalency: SWGS 554. Mutually Exclusive: Credit cannot be earned for SWGS 353 and SWGS 554.

SWGS 361 - NEW GERMAN FILM: HITLER’S CINEMATIC CHILDREN
Short Title: NEW GERM FILM: HITLER’S CINEMA
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: From the 1960 to 2000, Germany has developed a very distinct auteur cinema with independent filmmakers such as Fassbinder, Herzog, Wenders, Adlon, Trotta, Sander, Brueckner, Doerie, Garnier, Tykwer, and others. The first 20 years of German film were oriented on coming to terms with the fascist past; the second 20 years focused on more contemporary issues. Film, critical reading and class discussion in English. All films are subtitled in English and will be assessed with podium technology. Taught in English. Cross-list: GERM 338, HUMA 373.

SWGS 364 - QUEER LITERARY CULTURES
Short Title: QUEER LITERARY CULTURES
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to queer literary theory by reading works in several genres, from Sappho to the present day, including Shakespeare, Dickinson, Tennyson, Whitman, Proust, Stein and Woolf. Cross-list: ENGL 354.

SWGS 367 - LITERATURE AND CULTURE OF THE US-MEXICO BORDERLANDS
Short Title: LIT & CULT, US-MEX BORDERLANDS
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: The course focuses on the cross-national cultures of the US-Mexico borderlands with attention to key issues in the history of the region: haunted modernities, organized resistance, migration, labor, and the traffic in bodies, drugs, and other goods. Readings include novels, short stories, critical essays, histories, film, and video. Cross-list: ENGL 367.

SWGS 370 - AFRICAN AMERICAN LITERATURE
Short Title: AFRICAN AMERICAN LITERATURE
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course that traces, through various genres and themes, African American literary history from the late eighteenth century to the present. Attention is given to theories and critiques of African American literature and culture. Cross-list: ENGL 370.

Course URL: www.english.rice.edu
SWGS 372 - SURVEY OF VICTORIAN FICTION
Short Title: VICTORIAN FICTION
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course provides an interdisciplinary overview of the body; race; labor; rights, needs, and desires. Cross-list: ENGL 382. Repeatable for Credit.
Course URL: www.english.rice.edu

SWGS 373 - WOMEN'S SOCIAL MOVEMENTS IN LATIN AMERICA AND THE CARIBBEAN
Short Title: WOMEN'S SOCIAL MOVEMENTS
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course focusing on concepts that drive and divide social movements centered on gender equality, women's issues, and sexual identity in the two-thirds and one-third world, among them feminism; the body; race; labor; rights, needs, and desires. Cross-list: ENGL 382. Repeatable for Credit.
Course URL: www.english.rice.edu

SWGS 374 - FEMINIST AND QUEER THEORY IN THE AFRICAN DIASPORA
Short Title: FEM THEORY IN AFRICAN DIASPORA
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will investigate the contemporary writings of Latina and African American women in urban spaces across the U.S. Understanding these women's experiences in relationship to each other will reveal the shared, yet distinct, trajectories that orient their struggle to resist poverty, racism, homophobia, and sexual and reproductive violence. Cross-list: LASR 375.

SWGS 375 - LATINA AND AFRICAN AMERICAN WOMEN'S ACTIVISM IN THE URBAN METROPOLIS
Short Title: WOMEN'S ACTIVISM URBAN METRO
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course focusing on concepts that drive and divide social movements centered on gender equality, women's issues, and sexual identity in the two-thirds and one-third world, among them feminism; the body; race; labor; rights, needs, and desires. Cross-list: ENGL 382.
Course URL: www.english.rice.edu

SWGS 376 - CHICANA AND LATINA EXPERIENCE THRU FILM
Short Title: CHICANA/LATINA EXP THRU FILM
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This seminar explores the Chicana and Latina experience in the U.S. We examine these women's response to each other and forces of conquest, capitalism, and patriarchy. Novels, oral life histories, film, and art will be used to interrogate these women's conceptualization and assertion of feminism, activism, and history. Cross-list: LASR 376.

SWGS 377 - RACE, POWER AND THE POLITICS OF PLACE
Short Title: RACE, POWER, PLACE
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines how the social construction of space informs processes of racial formation, gender, and sexuality by focusing largely on Latina communities in the Americas.

SWGS 378 - LITERATURE OF THE AMERICAS
Short Title: LITERATURE OF THE AMERICAS
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A mixed-genre variable topics course that examines literatures in English from North and South America, including the Caribbean. The focus of the course may vary from a survey of a specific geographical region or a group of writers, to a theme that incorporates more than one geographical region or national literature. Cross-list: ENGL 378. Repeatable for Credit.
Course URL: www.english.rice.edu

SWGS 380 - FEMINIST THEORY
Short Title: FEMINIST THEORY
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A course focusing on concepts that drive and divide social movements centered on gender equality, women's issues, and sexual identity in the two-thirds and one-third world, among them feminism; the body; race; labor; rights, needs, and desires. Cross-list: ENGL 382.
Course URL: www.english.rice.edu
SWGS 384 - MODERN GIRL AND ASIA IN THE WORLD  
**Short Title:** MOD GIRL & ASIA IN THE WORLD  
**Department:** Stdy of Women, Gender, & Sxltv  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Using the textbook “The Modern Girl Around the World,” this course examines the phenomenon of the so-called modern girl in Asia and the world, 1890-1949. Topics include: modernity, consumer culture, sexuality, and liberation. Cross-list: ASIA 328, HIST 384.

SWGS 385 - SEXUAL DEBATES IN THE U.S.: SOCIAL AND CULTURAL CONTEXTS OF SUPREME COURTS DECISIONS  
**Short Title:** SEXUAL DEBATES IN U.S.  
**Department:** Stdy of Women, Gender, & Sxltv  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** How do sex acts and sexualities enter public conversations over time? This course surveys a variety of sexual debates in the United States with a focus on the social and cultural contacts and the legacies of those debates. Topics vary, but examples include miscegenation, obscenity, abortion and sodomy.

SWGS 389 - YOUTH STUDIES  
**Short Title:** YOUTH STUDIES  
**Department:** Stdy of Women, Gender, & Sxltv  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** A variable topics course exploring the cultural productions of youth, their social geographies, and youth as a critical field important to the theorization of activism, technology, law and incarceration, medicine, consumerism, citizenship, immigration, labor, posthumanism. Previous topics: Generation X, Third Wave Feminism, Obama and the Youth Vote, Twilight culture, Harry Potter & Gen Y. Cross-list: ENGL 389.  
**Course URL:** [www.english.rice.edu](http://www.english.rice.edu)

SWGS 390 - TRENDS IN HISPANIC CINEMA  
**Short Title:** TRENDS IN HISPANIC CINEMA  
**Department:** Stdy of Women, Gender, & Sxltv  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course examines the ways in which films in both Spain and Latin America have represented the cultural contexts of their countries. Focus is on the theme of power, and the consequences on social and individual lives. Cross-list: SPPO 385. Recommended prerequisite(s): Third-year Spanish or permission of instructor.

SWGS 393 - SCIENCE, FEMINISM AND CHRISTIANITY IN THE AMERICAN 20TH CENTURY  
**Short Title:** SCIENCE/FEMINISM/CHRISTIANITY  
**Department:** Stdy of Women, Gender, & Sxltv  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course examines a history of sex and gender at the intersection of American science and American Christianity over the past century. Students will be invited to interrogate the boundaries between scientific and religious discourse as they investigate how these have interacted in producing sex and gender identity.

SWGS 394 - HUMAN DEVELOPMENT IN GLOBAL AND LOCAL COMMUNITIES  
**Short Title:** HUMAN DEVELOPMENT  
**Department:** Stdy of Women, Gender, & Sxltv  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Distribution Group:** Distribution Group I  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** HUMA 371 or SOCI 371  
**Description:** This course explores poverty and gender in local and global communities. Readings consider human deprivations and well-being in the context of social norms, gender relations, and governmental structures. Also examined are policies meant to improve human capabilities, including both the overall effects of such policies and their differential consequences for children, women and men. Cross-list: SOCI 394.

SWGS 395 - FEMINIST KNOWLEDGES  
**Short Title:** FEMINIST KNOWLEDGES  
**Department:** Stdy of Women, Gender, & Sxltv  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** In this course we will examine various methodologies used by feminist scholars in the social sciences and the humanities. Particular attention will be devoted to interdisciplinary feminist inquiries in science, ethnography, and epistemology.

SWGS 398 - THE TEN MOST IMPORTANT SUPREME COURT DECISIONS IN U.S. HISTORY  
**Short Title:** TOPICS IN LEGAL HISTORY  
**Department:** Stdy of Women, Gender, & Sxltv  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Course on selected topics in legal history. Cross-list: HIST 398.
SWGS 399 - WOMEN IN CHINESE LITERATURE  
Short Title: WOMEN IN CHINESE LITERATURE  
Department: Stdy of Women, Gender, & Sxltly  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course examines women's roles in Chinese literature as writers, readers, and characters, focusing particularly on the tension between women’s lived bodily experiences and the cultural experiences inscribed on the female body and how, in the process, women have contrarily gendered patriarchal culture into their own. It will also touch on Chinese women's incorporation of the Western Tradition. Cross-list: ASIA 399, MDEM 379.

SWGS 400 - CONSTRUCTING IDENTITIES IN MODERN FICTION  
Short Title: CONSTR IDENTITY MODERN FICTION  
Department: Stdy of Women, Gender, & Sxltly  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course will explore the construction of racial, sexual, gendered, and ethnic identities in modern fiction, with a particular concern for the connections among identity, literary form, and social categories of meaning. Readings include Woolf, Colette, Duras, Djebar, Morisson, Winterson, Baraoui, and others.

SWGS 405 - AUSTEN ONLY: NOVELS & FILM  
Short Title: AUSTEN ONLY. NOVELS & FILM  
Department: Stdy of Women, Gender, & Sxltly  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: An in-depth exploration of Jane Austen as author and icon. Material will include all her fiction as well as portions of her letters and biography. Recent film and television adaptations of her novels will also be critically examined. Cross-list: ENGL 443.

Course URL: www.english.rice.edu

SWGS 412 - WOMEN, SEXUALITY & LITERARY  
Short Title: WOMEN, SEXUALITY & LITERARY  
Department: Stdy of Women, Gender, & Sxltly  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): LING 301 or ANTH 301 or LING 311 or ANTH 323 or LING 501 or ANTH 501 or LING 511 or ANTH 523  
Description: This course covers contemporary sociolinguistic theory and methodologies. We examine the linguistic consequences to speakers of their group memberships such as gender, race, class and sexuality. Cross-list: LING 415.

SWGS 424 - WOMEN IN FRANCE  
Short Title: WOMEN IN FRANCE  
Department: Stdy of Women, Gender, & Sxltly  
Grade Mode: Standard Letter  
Course Type: Lecture  
Distribution Group: Distribution Group I  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: This course studies women in education, the workplace, politics, and in social and cultural institutions in French society. The class explores the history of the French women's movement and analyzes French concepts of gender and feminism in comparison to American models. Cross-list: FREN 424. Recommended Prerequisite(s): FREN 202.

SWGS 430 - QUEER THEORY  
Short Title: QUEER THEORY  
Department: Stdy of Women, Gender, & Sxltly  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Graduate level students may not enroll.  
Course Level: Undergraduate Upper-Level  
Description: An examination of key issues in queer theory that links those issues to other major literary and cultural theory of the past quarter century. As such the course will also serve as an introduction to psychoanalytic theory, postculturalism, deconstruction, postcolonial theory, film studies and recent work on the relationship between science and literature. Cross-list: ENGL 498. Repeatable for Credit.

Course URL: www.english.rice.edu
SWGS 434 - SEEING SEX IN EUROPEAN ART, 1400-1700
Short Title: SEEING SEX IN EUROPEAN ART
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine the visual history of sexuality from 1400-1700. It will explore how imagery structured sexual desire; the role of erotic sacred art; the rise of pornography; the intersection of spatial topography and sexuality; the linkage of licit and illicit sexualities; and the sexuality of artist and patrons. Cross-list: HART 434, MDEM 434. Graduate/Undergraduate Equivalency: SWGS 534. Mutually Exclusive: Credit cannot be earned for SWGS 434 and SWGS 534.

SWGS 440 - WOMEN IN MUSIC
Short Title: WOMEN IN MUSIC
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Study of gender in music, including aesthetics and representation, and of the major roles women have assumed in music, especially as composers, performers, and patrons. While the course emphasizes the Western art tradition, other types of music are explored as well. Cross-list: MUSI 526.

SWGS 449 - CULTURES OF SEXUALITY
Short Title: CULTURES OF SEXUALITY
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: What is "sexuality" across cultural milieux? This course analyzes understandings and practices of sexuality from a global, comparative perspective, including different social configurations of gender and intimacy, reproduction, sensuality and the erotic. Case studies explore the complex relationships between sexuality and gender, ethnicity, nationalism, globalization, commodification, politics, media, health and medicine. Cross-list: ANTH 449.

SWGS 453 - STUDIES IN AFRICAN AMERICAN LITERATURE
Short Title: AFRICAN AMERICAN STUDIES
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of African American literature gained earlier in the curriculum. Recent topics include Black Women Writers. Cross-list: ENGL 470. Repeatable for Credit.

SWGS 462 - 20TH-21ST CENTURY AMERICAN STUDIES
Short Title: 20TH-21ST CENTURY AMER STUDIES
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A variable topics course designed to build on student knowledge of twentieth and twenty-first century U.S. literature and/or culture gained earlier in the curriculum. Recent topics have included social justice and contemporary fiction. Cross-list: ENGL 462. Repeatable for Credit.

SWGS 465 - GENDER AND HEALTH
Short Title: GENDER AND HEALTH
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course will examine the relationship between gender and health, both physical and mental. We will begin the semester by examining issues related to gender and health in the U.S. and spend the second half of the semester examining gender and health in an international context. Instructor Permission Required. Cross-list: SOCI 465.

SWGS 466 - LATIN AMERICAN WOMEN'S CULTURE
Short Title: LATIN AMERICAN WOMEN'S CULTURE
Department: Stdy of Women, Gender, & Sxlty
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Studies the cultural production (literary, artistic, cinematic) of intellectual women in Latin America. Examines the struggles for interpretive power in works by women from the colonial period to the present. Cross-list: SPPO 430.
SWGS 470 - ADVANCED SEMINAR IN POVERTY, JUSTICE, AND CAPABILITIES
Short Title: POVERTY, JUSTICE, CAPABILITIES
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ASIA 329 may be taken concurrently) or SOCI 394 (may be taken concurrently) or SWGS 394 (may be taken concurrently) or SOCI 372 (may be taken concurrently) or SWGS 322 (may be taken concurrently) and (HUMA 280 or SOCI 280 or HUMA 371 or SOCI 371)
Description: Through interdisciplinary readings, this seminar explores how global, national, and domestic structures and institutions influence the day-to-day lives and capabilities of different groups and individuals. We will study historical and contemporary efforts by activists and policymakers to confront social inequities. ASIA 329 or SOCI 372 or SWGS 322 or SOCI 394 or SWGS 394 may be taken concurrently with SWGS 470.

SWGS 472 - TOPICS IN RICHARDSON'S CLARISSA
Short Title: RICHARDSON'S CLARISSA
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: A seminar-style course that reads and examines Richardson’s 1500 page novel from a range of critical perspectives. Topics considered will include gender; economics; history of the novel; history of marriage; and philosophical perspectives on literature. Cross-list: ENGL 432. Repeatable for Credit.
Course URL: www.english.rice.edu

SWGS 480 - FEMINIST LITERARY THEORY
Short Title: FEMINIST LITERARY THEORY
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An introduction to the core concepts and writing of the field.

SWGS 485 - GENDER AND HOLLYWOOD CINEMA IN THE 1950'S
Short Title: GENDER AND HOLLYWOOD 1950'S
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course examines representations of gendered subjectivity in Hollywood cinema during the 1950s. Some of the topics to be addressed include the uneasy relationships between normative domesticity and heterosexual masculinity, and issues of voyeurism and eroticism, and the ongoing conflict between liberated individualism and social conformity in corporate culture and bourgeois society. Cross-list: HART 485.

SWGS 492 - GENDER HISTORIES OF MODERN CHINA
Short Title: GENDER HISTORIES: MODERN CHINA
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Seminar with some lectures considers late imperial through 21st century China using conceptual tools (masculinity, femininity, gynotechnics, globalization, representation). Examines late Qing gender order, revolutionary era, party-state formation, and the Great Transformations of late 20th and early 21st centuries using visual culture, film, primary texts, and secondary histories. Cross-list: ASIA 492, HIST 492.

SWGS 494 - PRE-SEMINAR IN ENGAGED RESEARCH
Short Title: PRE-SEMINAR: ENGAGED RESEARCH
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: This course prepares students for the Spring semester and practicum sequence (496 and 497) by establishing a baseline of skills in research design and filing paperwork with the Institutional Review Board at Rice and elsewhere as needed.

SWGS 495 - INDEPENDENT STUDY
Short Title: INDEPENDENT STUDY
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-4
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Open to SWGS majors only. Instructor Permission Required.

SWGS 496 - ENGAGED RESEARCH PRACTICUM
Short Title: ENGAGED RESEARCH PRACTICUM
Department: Stdy of Women, Gender, & Sxltv
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: An applied research complement to the Seminar consisting of six hours/week participating in a research-based project at a local public service agency that addresses the needs of women or is focused on gender and/or sexuality related work. Planning for the practicum takes place during the previous fall semester in consultation with the SWGS Director. Practicum projects are presented to a public audience. Permission of the instructor and some background in the study of women, gender or sexuality required.
SWGS 497 - ENGAGED RESEARCH SEMINAR
Short Title: ENGAGED RESEARCH SEMINAR
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Taken in conjunction with SWGS 496, the Seminar develops students' research skills and situates the practicum project within a range of perspectives on feminist theory and practice, grassroots organizing, and policy-making around the issues of women, gender, and sexuality, for example, domestic violence, gender and the prison industry, reproductive freedom, the feminization of AIDS. Permission of the instructor and some background in gender or sexuality studies are required.

SWGS 498 - RESEARCH IN THE STUDY OF WOMEN GENDER SEXUALITY
Short Title: RES STUDY WOMEN GENDER SXLTY
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Research seminar for SWGS seniors to fulfill capstone requirement. Open to SWGS majors only.

SWGS 499 - RESEARCH IN THE STUDY OF WOMEN GENDER SEXUALITY
Short Title: RES STUDY WOMEN GENDER SXLTY
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Graduate level students may not enroll.
Course Level: Undergraduate Upper-Level
Description: Research seminar for SWGS seniors to fulfill capstone requirement. Open to SWGS majors only. Instructor Permission Required.

SWGS 501 - FEMINIST DEBATES
Short Title: FEMINIST DEBATES
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course identifies and traces three streams of thought by debates about major issues in women's studies. While the content of these streams will vary-the course will always be attentive to the historical and theoretical context of the debates in question and to the intersection of these debates with others. Topics might include: public and private spheres; the relation between the local and the global links between gender and sexuality; the problem of identity; the relation between activist and academic feminism.

SWGS 502 - GENDER, THE DISCIPLINES, AND INTERDISCIPLINARITY
Short Title: GENDER, DISCIPL, & INTERDISCIP
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): SWGS 501
Description: Structured as a workshop, this course offers SWGS certificate students critically to engage cross-disciplinary feminist scholarship as they integrate the study of women, gender and/or sexuality into their doctoral writing by transforming existing papers into works that are of publishable quality.

SWGS 503 - DIRECTED READING
Short Title: DIRECTED READING
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Independent Study
Credit Hours: 1-3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Directed reading under the supervision of a SWGS faculty member with permission of the instructor. May count only once toward major requirements. Instructor Permission Required.

SWGS 517 - MEDIEVAL WOMEN WRITERS
Short Title: MEDIEVAL WOMEN WRITERS
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An examination of the most significant medieval European women authors from the tenth through the seventeenth centuries, from the Byzantine Empire to France, Germany, Italy, England, Austria, Belgium, Bohemia, and Spain. See course web page for additional information. Cross-list: ENGL 517.

SWGS 520 - SHAKESPEARE AND DIFFERENCE
Short Title: SHAKESPEARE AND DIFFERENCE
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Please consult the English department website for additional information. Cross-list: ENGL 520.
Course URL: wwwenglish.rice.edu
SWGS 522 - FEMINIST ECONOMICS
Short Title: FEMINIST ECONOMICS
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is an introductory course covering a range of theoretical and policy issues in contemporary feminist economics. Topics include: the social construction of economic knowledge; disciplinary debates; global economic issues relating to gender, race, ethnicity, and sexual orientation; economic justice; children and family policy; unpaid work; inequities in pay, wealth, and resources; and gender budgets. No prior training in economics is required.

SWGS 525 - SEX, SELF, AND SOCIETY IN ANCIENT GREECE
Short Title: SOCIETY IN ANCIENT GREECE
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An introductory venture into conducting fieldwork in the past. The course treats a wide range of artifacts, from philosophical essays to vase paintings. It derives its focus from a rich corpus of recent research into the ancient problematization of desire and self-control. Cross-list: ANTH 525.

SWGS 534 - SEEING SEX IN EUROPEAN ART, 1400-1700
Short Title: SEEING SEX IN EUROPEAN ART
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: For each lecture, Graduate Students will be assigned additional readings. They will write an annotated bibliography of all these readings to be turned in at the end of the semester. We will meet for an additional every two or three weeks to discuss interpretive and methodological problems and ideas associated with the readings. Graduate Students will be expected to complete all the requirements of the class in addition to writing a substantial research paper due at the end of the semester. Cross-list: HART 534. Graduate/Undergraduate Equivalency: SWGS 434. Mutually Exclusive: Credit cannot be earned for SWGS 534 and SWGS 434.

SWGS 542 - VICTORIAN FICTION
Short Title: VICTORIAN FICTION
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional information. Recent topics have included "The Victorian Marriage Plot", "The History of the Novel, Part II"; and "Victorian and Modern Sexualities". Cross-list: ENGL 542. Repeatable for Credit.
Course URL: www.english.rice.edu

SWGS 545 - WOMEN AND GENDER: EUROPE AND BEYOND
Short Title: WOMEN & GENDER: EUR & BEYOND
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Graduate seminar exploring recent work in key areas of research on women and gender, nationalisms; the modern welfare state; and the challenges which histories of working-class women have posed to definitions of politics, feminism, class, and family. Settings include colonial Britain, India, Africa, Netherlands, Indonesia, France, and Germany. Students can choose to take this course as either a reading or a research seminar. Cross-list: HIST 545.

SWGS 546 - SPECIAL TOPICS: 20TH CENTURY BRITISH LITERATURE
Short Title: SP. 20TH CENTURY BRITISH LIT
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Cross-list: ENGL 546. Repeatable for Credit.
Course URL: www.english.rice.edu

SWGS 554 - ILLNESS, DISABILITY, AND THE GENDERED BODY
Short Title: DISABILITY AND GENDERED BODIES
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course draws on critical disability studies and medical anthropology to explore how gender and sexuality matter in contexts of illness and disability across a range of institutional, social, and national contexts. We pay particular attention to the ways illness and disability expose, disturb, or retrench normative arrangements of gender. Cross-list: ANTH 554. Graduate/Undergraduate Equivalency: SWGS 353. Mutually Exclusive: Credit cannot be earned for SWGS 554 and SWGS 353.

SWGS 556 - SEMINAR IN SOCIOLINGUISTICS
Short Title: SEMINAR IN SOCIOLINGUISTICS
Department: Stdy of Women, Gender, & Sxly
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): LING 415
Description: This course will examine the concepts of social class and community of practice in depth as they relate to sociolinguistic variation. Specific attention will be paid to how these concepts are treated in the field of linguistics, as well as complimentary fields such as sociology and anthropology. Cross-list: LING 556.
SWGS 577 - THE KNOWING BODY: BUDDHISM, GENDER, AND THE SOCIAL WORLD
Short Title: BUDDHISM, GENDER, & SOCIETY
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Western thought tends to regard mind and body dualistically, a view with significant impact on religious, cultural, gendered, and social processes. This course juxtaposes received Western assumptions with Buddhist perspectives (especially Tibetan Buddhist), mapping Western and Buddhist categories onto each other to better understand the implications of each. Mutually Exclusive: Credit cannot be earned for SWGS 577 and SWGS 323.

SWGS 580 - SEXUALITY, SANCTITY, AND PSYCHOANALYSIS
Short Title: SEX, SANCTITY, PSYCHOANALYSIS
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: An advanced mapping of the psychoanalytic study of religion through a close reading of psychoanalytically informed studies of saint, founding figures, and charismatic teachers, with a particular focus on sexuality and gender and their relationships to the expression and representation of holiness in the history of religions.

SWGS 581 - CULTURAL STUDIES: CONTEMPORARY LITERATURE, CULTURE AND POLITICS
Short Title: CONTEMPLIT, CULTURE & POLI
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A variable topics course. Please consult the English department website for additional course information. Recent topics have included Contemporary Issues in U.S. Culture and Studies in Sexuality: Thinking Sex Under Neo-Liberalism. Cross-list: ENGL 581. Repeatable for Credit.
Course URL: www.english.rice.edu

SWGS 583 - READING MATERIAL
Short Title: READING MATERIAL
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course considers the contesting claims made on the term "material" and their implications for how we read critically, with particular attention to the question of class; the material status of nature and the body; gender, race, and sexual identities. Cross-list: ENGL 583.

SWGS 584 - THINKING SEX UNDER NEO-LIBERALISM
Short Title: THINKING SEX UNDER NEO-LIB
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Taking as its historical period in the social crises defining the emergence of neo-liberal capitalism in the late twentieth century, this course focuses on new formations of gender and sexuality in US and transnational culture and inquires into critical concepts being forwarded to address it. Cross-list: ENGL 584.

SWGS 585 - POSTCOLONIALISM AND BEYOND
Short Title: POSTCOLONIALISM AND BEYOND
Department: Stdy of Women, Gender, & Sxlt
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: A course that serves both as an introduction to postcolonial theory and as a reevaluation of its political and ethical ends vis-a-vis recent debates around globalization and cosmopolitanism. For additional course information please consult the English department website. Cross-list: ENGL 585.
Course URL: www.english.rice.edu
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Achard, Michel, 1997. Professor of Linguistics and French Studies

Adam, Hajo, 2012. Assistant Professor of Management

Ajayan, Pulickel M., 2007. Benjamin M. and Mary Greenwood Anderson Professor in Engineering and Professor of Materials Science and NanoEngineering, Chemistry, and Chemical and Biomolecular Engineering, Department Chair of Materials Science and NanoEngineering
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Akins, Brian, 2012. Assistant Professor of Accounting

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BS (1995) Georgia Institute of Technology; MArch (1999) Rice University

Albert, Laurence (Larry), 2001. Visiting Critic
BA (1986) Yale University; MArch (1997) Rice University

Alemayehu, Lawrence B., 1994. NMR Manager and Lecturer of Chemistry
BS (1975) City College of New York; PhD (1980) University of Chicago

Alexander, David, 2003. Professor of Physics and Astronomy
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Al-Zand, Karim, 2002. Associate Professor of Composition and Theory

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Anding, Roberta, 1997. Lecturer of Kinesiology
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Angelaki, Dora E., 2012. Adjunct Professor of Electrical and Computer Engineering, Adjunct Professor of Psychology

Antoulas, Athanasios C., 1985. Professor of Electrical and Computer Engineering
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Aparicio, Jaime, 2016. Lecturer of Kinesiology
BS (2002) Texas A&M University; BS (2009) University of Texas–Pan American; DPT (2014) Texas Women’s University

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Aresu, Bernard, 1977. Laurence H. Favrot Professor of French
Arnold, William, M., 2009. Professor in the Practice of Management
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Ashagirij, Dilep, 2014. Lecturer of Chemical and Biomolecular Engineering.

Atherholt, Robert, 1984. Professor of Oboe
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Atkinson, E. Neely, 1985. Senior Lecturer of Statistics

Babakhani, Aydin, 2011. Associate Professor of Electrical and Computer Engineering
BS (2003) Sharif University of Technology, Iran; MS (2005), PhD (2008) California Institute of Technology

Back, Kerry E., 2009. J. Howard Creekmore Professor of Finance
BA (1978) Western Kentucky University; PhD (1983) University of Kentucky

Bachelot, Benoist, 2017. Huxley Research Instructor of BioSciences

Bader, Graham, 2008. Associate Professor of Art History, Department Chair of Art History

Bae, Kyung-Hee, 2012. Lecturer of the Program in Writing and Communication
BS (1993) Seoul Women's University; MA (2003) University of Houston

Baig, Fatima, 2016. Lecturer of German
BA (2001) Rupert Charles University; PhD (2011) University of Iowa

Bailar, Melissa, 2012. Professor in the Practice of Humanities
BA (1997) Rice University; PhD (2005) Rice University

Bailey, Walter B., 1982. Associate Professor of Musicology
BMus (1976) Lewis and Clark College; MA (1979), PhD (1982) University of Southern California

Baker, George C., 2012. Lecturer of Improvisation

Balaninlar, Lisa A., 2007. Associate Professor of History

Ball, Zachary T., 2006. Associate Professor of Chemistry, Associate Department Chair of Chemistry for Undergraduate Studies

Ballestero, Andrea, 2012. Assistant Professor of Anthropology

Bao, Gang, 2015. Foyt Family Professor of Bioengineering and Professor of Bioengineering
BS (1976) Shandong University; (1981) MSc, Shandong University; PhD (1987) Lehigh University

Baranik, Richard G., 1992. Victor E. Cameron Professor of Electrical and Computer Engineering

Baring, Matthew G., 2000. Professor of Physics and Astronomy

Barlow, Tani E., 2008. T. T. and W. F. Chao Professor of History
BA (1975) San Francisco State University; MA (1979), PhD (1985) University of California–Davis

Barnett, Gregory, 2002. Professor of Musicology

Barnhill, Allen, 2010. Associate Professor of Trombone
BM (1977) Eastman School of Music

Barrera, Enrique V., 1990. Professor of Materials Science and NanoEngineering
BS (1979), MS (1985), PhD (1987) University of Texas–Austin

Barrett, Deborah, 1998. Professor of the Practice of Professional Communication
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Barron, Andrew R., 1995. Charles W. Duncan Jr.–Welch Professor of Chemistry, Professor of Materials Science and NanoEngineering
BS (1983), PhD (1986) Imperial College of Science and Technology, University of London

Bartel, Bonnie, 1995. Ralph and Dorothy Looney Professor of Biochemistry and Cell Biology
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BS (1967) Middle East Technological University; MS (1969), PhD (1974) University of Michigan

Beaird, Robert, 2015. Instructor of Physics and Astronomy
BS (2003) Centenary College of Louisiana; MS (2008), PhD (2011) Louisiana State University

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Bharadwaj, Palash, 2016. Assistant Professor of Electrical and Computer Engineering

Bhat, Krishna, 2017. Adjunct Assistant Professor of Electrical and Computer Engineering

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BSc (1962) University of Assiut, Egypt; MS (1965), PhD (1967) Washington University

Biswal, Ibani Lisa, 2006. Associate Professor of Chemical and Biomolecular Engineering and of Materials Science and NanoEngineering, Associate Department Chair of Chemical & Biomolecular Engineering

Blackburn, James B., 1981. Professor in the Practice of Environmental Law
BA (1969), JD (1972) University of Texas–Austin; MS (1974) Rice University

Blanch, Joakim O., 2010. Adjunct Associate Professor of Computational and Applied Mathematics

Blättler, Damian, 2013. Assistant Professor of Music Theory

Blumenthal-Barby, Martin, 2009. Associate Professor of German Studies
MA, MPhil (2006), PhD (2008) Yale University

Boggiano, Aymara, 2015. Lecturer of Spanish
BA (1982), MA (1987) Ohio State University

Boles, John B., 1981. William Pettus Hobby Professor of History, Associate of Will Rice College
BA (1965) Rice University; PhD (1969) University of Virginia

Bondos, Sarath, 2004. Adjunct Assistant Professor of Biochemistry and Cell Biology

Bongmba, Elias K., 1995. Harry and Hazel Chavanne Professor of Christian Theology, Professor of Religion, Associate of Wiess College

Boriek, Aladin, 1997. Adjunct Professor of Mechanical Engineering

Borle, Sharad, 2003. Associate Professor of Marketing

Boshernitzan, Michael, 1982. Professor of Mathematics
Bottero, Jean-Yves. 1996. Adjunct Professor of Civil and Environmental Engineering
Docteur d'Etat es Sciences Physiques (1979) Université de Nancy, France

Bowdoin, Natasha. 2013. Assistant Professor in Visual and Dramatic Arts
BA (2003) Brandeis University; MFA (2007) Tyler School of Art

Boyer, Dominic C. 2009. Professor of Anthropology

Boylan, Richard Thomas. 2005. Professor of Economics

Braam, Janet. 1990. Professor of Biochemistry and Cell Biology and Department Chair of BioSciences
BS (1980) Southern Illinois University; PhD (1985) Sloan-Kettering Division of Cornell Graduate School of Medical Sciences

Brace, Paul. 1996. Clarence L. Carter Professor of Political Science, Magister of Hanszen College

Bradford, Gwendolyn M. 2010. Associate Professor of Philosophy

Bradshaw, Stephen J. 2010. Associate Professor of Physics and Astronomy

Brake, Matthew. 2016. Assistant Professor of Mechanical Engineering

Brandt, Anthony K. 1998. Professor of Composition and Theory

Bratter, Jenifer L. 2006. Associate Professor of Sociology

Breikjern, Heather. 2010. Lecturer of Theatre

Brennan, Marcia. 2001. Professor of Religion and Art History, Faculty Fellow at Center for Teaching Excellence

Brinkley, Douglas G. 2007. Professor of History

Broyd, Baruch. 1975. Andrew W. Mellon Professor of Humanities, Professor of Philosophy
BA (1962) Brooklyn College; MA (1965), PhD (1967) Princeton University

Broker, Karin L. 1980. Professor of Visual Arts
BFA (1972) University of Iowa; MFA (1980) University of Wisconsin–Madison

Brooks, Philip R. 1964. Professor of Chemistry
BS (1960) California Institute of Technology; PhD (1964) University of California—Berkeley

BA (1969), MA (1972) Texas Tech University; PhD (1977) University of Pennsylvania

Brown, James N. 1992. Professor of Economics
BA (1973) University of Redlands; MA (1975), PhD (1980) University of Chicago

Brown, Richard. 1984. Professor of Percussion, Chair of Percussion and Harp
BME (1969) Temple University; MMus (1971) Catholic University of America

Brown, Tony N. 2016. Professor of Sociology

Browning, Logan D. 1991. Professor of the Practice; Publisher, Executive Editor, SEL Studies in English Literature, 1500–1900
BA (1977) University of the South; MA (1980) Oxford University; PhD (1999) University of North Carolina—Chapel Hill

Buchman, Rachel. 2005. Lecturer of Music
BA (1978) Vassar College

Butler, Alexander W. 2009. Professor of Finance

Butler, Barbara. 2013. Professor of Trumpet and Director of Artist Diploma Program
BMus (1974) Northwestern University

Buyse, Leone. 1997. Joseph and Ida Kirkland Mullen Professor of Flute, Chair of Woodwinds

Byrd, Alexander X. 2001. Associate Professor of History

Byrne, John H. 1994. Adjunct Professor of Psychology and Electrical and Computer Engineering
BS (1968), MA (1970), PhD (1973) New York University School of Engineering

Byrne, Michael D. 1999. Professor of Psychology


Caldwell, Peter C. 1994. Samuel G. McCann Professor of History, Department Chair of History

Calvi, Rossella. 2016. Assistant Professor of Economics

Boyler, Ricardo. 1996. Adjunct Professor of History
BS (1987), MS (1990), PhD (1994) University of Texas–Austin

Boynton, Barry. 1995. Professor of Biology and Director of the Center for Environmental Science
Campana, Jr., Joseph A., 2006. Alan Dugald McKillop Chair in English, Associate Professor of English Literature

Cannady, William Tillman, 1964. Professor of Architecture
BArch (1961) University of California–Berkeley; MArch (1962) Harvard University

Caprette, David R., 1992. Lecturer of Biochemistry and Cell Biology
BS (1974) Case Western Reserve University; MS (1979), PhD (1982) Cleveland State University

Carroll, Royce A., 2007. Associate Professor of Political Science

Carson, Daniel D., 2009. Schlumberger Chair of Advanced Studies and Research, Professor of Biochemistry and Cell Biology
BS (1975) University of Pennsylvania; PhD (1979) Temple University

Carter, Richard, 1997. Adjunct Professor of Computational and Applied Mathematics
BS (1979) Mississippi State University; PhD (1986) Rice University

Cartwright Jr, Robert S., 1980. Professor of Computer Science

BA (1969) Rice University; MFA (1971) California Institute of the Arts; BArch (1972) Rice University

Cates, Mary Susan, 2003. Lecturer of Biochemistry and Cell Biology
BS (1995) University of Houston; PhD (2000) Rice University

Cavallaro, Joseph R., 1988. Professor of Electrical and Computer Engineering and Computer Science

Chaguine, Petr, 2005. Assistant Research Professor of Physics and Astronomy
MS (1982) Institute for Physics and Technology, Moscow PhD (1991) Institute for High Energy Physics, Russia

Chambers, Gregory, 2017. Assistant Professor of Mathematics
BS, MS (2009), PhD (2014) University of Toronto

Chan, Anthony A., 1993. Professor of Physics and Astronomy

Chan, Jesse, 2013. Assistant Professor of Computational and Applied Mathematics
BA (2008) Rice University; PhD (2013) University of Texas–Austin

Chang, Michelle, 2017. Assistant Professor of Architecture

Chang-Diaz, Franklin R., 1998. Adjunct Professor of Physics and Astronomy
BS (1973) University of Connecticut; PhD (1977) Massachusetts Institute of Technology

Channing, Kathleen, 2018. Dean of the School of Humanities, Andrew W. Mellon Professor of History

Chapman, Walter G., 1990. William W. Akers Professor of Chemical and Biomolecular Engineering, Associate Dean for Energy in the George R. Brown School of Engineering

Chappell, James, 2017. Assistant Professor of BioSciences
BS (2008), PhD (2013) Imperial College, London

Chaudhuri, Swarat, 2011. Associate Professor of Computer Science

Chaudry, Divya, 2016. Lecturer of Hindi

Chavez, Sergio, 2010. Assistant Professor of Sociology

Chen, Ang, 2017. Assistant Professor of Computer Science
BEng (2009) Wuhan University; PhD (2017) University of Pennsylvania


Chen, Wei, 2005. Adjunct Professor of Civil and Environmental Engineering
BS (1992) Nankai University, Tianjin, China; MS (1997), PhD (2000) Rice University

Chiu, Wah, 2004. Adjunct Professor of Computer Science
BA (1969), PhD (1975) University of California–Berkeley

Clibor, Joseph, 2001. Adjunct Professor of the Practice in Civil Engineering Management
BS (1976), MS (1978) Purdue University

Citino, Nathan, 2015. Associate Professor of History

Ciufolini, Marco A., 2000. Adjunct Professor of Chemistry
BS (1978) Spring Hill College; PhD (1981) University of Michigan

Clark, Barbara, Associate Professor of Voice

Clementi, Cecilia, 2001. Wiess Career Development Chair, Professor of Chemistry and of Chemical and Biomolecular Engineering

Clements, Niki, 2014. Watt and Lilly Jackson Assistant Professor of Biblical Studies, Assistant Professor of Religion
Cohan, Daniel, 2006. Associate Professor of Civil and Environmental Engineering  

Cohan, Dinah A., 2009. Assistant Professor of Marketing  
MA, MS (1999) Ulyanovsk State University, Russia; PhD (2009) Duke University

Cohen, G. Daniel, 2003. Samuel W. and Goldye Marian Spain Associate Professor of Jewish Studies, Associate of McMurtry College  

Coker, Marya, 2016. Lecturer of Chemical and Biomolecular Engineering  
BS (2009), PhD (2013) University of Calgary

Connelly, Brian, 2010. Assistant Professor of Architecture  

Colman, Scott, 2010. Assistant Professor of Architecture  

Colopy, Andrew, 2014. Assistant Professor of Architecture  

Cone, Michael, 2015. Instructor of Physics and Astronomy  
BA, BS (2003) Truman State University; PhD (2014) Texas A&M University

Connelly, Brian, 1984. Artist Teacher of Piano and Director of Piano Chamber Music and Accompanying Program  
BMus (1980), MMus (1983) University of Michigan

Cook, David, 2001. Associate Professor of Religion, Associate of Brown College  

Cooper, Keith D., 1990. L. John and Ann H. Doerr Chair in Computational Engineering, Professor of Computer Science, Professor of Electrical and Computer Engineering  
BS (1978), MA (1982), PhD (1983) Rice University

Cordero, Zachary, 2016. Assistant Professor of Material Science and NanoEngineering  
BSc (2010), PhD (2015) Massachusetts Institute of Technology

Cornwell, John M., 2007. Associate Vice President for Institutional Effectiveness, Adjunct Professor of Psychology  
BA (1977) Capital University; MS (1982) Georgia Institute of Technology; PhD (1987) University of Tennessee

Costello, Leo, 2005. Associate Professor of Art History  

Cowan, Kenneth, 2012. Associate Professor of Organ  

Cox, Alan L., 1991. Professor of Computer Science and of Electrical and Computer Engineering  

Cox, Dennis, 1992. Professor of Statistics  
BA (1972) University of Colorado; MS (1976) University of Denver; PhD (1980) University of Washington

Cox, Kenneth R., 2000. Professor in the Practice of Chemical and Biomolecular Engineering  
BS (1974) Ohio State University; MS (1977), PhD (1979) University of Illinois

Crawford, Margaret, 2013. Lecturer of Education  
BS (1967) Northwestern University; MEd (1989) University of St. Thomas

Cread, Shelah, 2013. Lecturer of Education  
BA (1998), MEd (2001) University of Texas–Austin; PhD (2013) Texas A&M University

Creek, Jefferson L., 2007. Adjunct Professor of Chemical and Biomolecular Engineering  
BS (1967) Middle Tennessee State University; MS (1969), PhD (1975) Southern Illinois University–Carbondale


Crossey, Diane, 2015. Professor in the Practice of Sport Management  
BBA (1992), MS (1994) University of Massachusetts

Crotty, Kevin, 2012. Assistant Professor of Finance  

Crowell, Steven G., 1983. Joseph and Joanna Nazro Mullen Professor of Philosophy, Professor of Philosophy  

Cruz, Miguel, 2007. Adjunct Assistant Professor of Bioengineering  
BS (1983) University of Puerto Rico; PhD (1989) University of Puerto Rico–School of Medicine

Cummins-Muñoz, Elizabeth, 2015. Lecturer of the Program in Writing and Communication  

Cunha Flávio, 2014. Professor of Economics  

Cutbetherston, Gilbert Morris, 1963. Professor of Political Science  
BA (1959) University of Kansas; PhD (1963) Harvard University

Cutler, Scott E., 2001. Professor in the Practice of Computer Technology  
BS (1973), MS (1973), PhD (1976) Massachusetts Institute of Technology

Dabak, Anand, 2003. Adjunct Associate Professor of Electrical and Computer Engineering  

Dabney, James B., 2000. Adjunct Professor of Mechanical Engineering  
Dacso, Clifford C., 2010. Adjunct Professor of Electrical and Computer Engineering
BA (1972), MA (1972) University of Pennsylvania; MD (1975) Baylor College of Medicine; MPH (1980) University of Texas School of Public Health; MBA (1990) Pepperdine University

Dai, Pengcheng, 2013. Professor of Physics and Astronomy
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Damanik, David, 2006. Robert L. Moody, Sr. Chair of Mathematics, Professor of Mathematics

Dane, Erik, 2007. Associate Professor of Management

Dannemiller, James L. Illinois–Urbana-Champaign
BA (2001), MBA (2002) Tulane University; PhD (2007) University of

D'Arcy, Scott S. Houston

DeAngelis, David, 2012. Assistant Professor of Finance

Denney, Justin T., 2010. Associate Professor of Sociology

Denny, Bryan T., 2016. Assistant Professor of Psychology

DeHovsepiyan, Joan, 2001. Artist Teacher of Viola
BM (1991), MM (1994) Eastman School of Music

Dermont, Amber, 2013. Gladys Louise Fox Associate Professor of English

Derrick, Scott S., 1990. Associate Professor of English
BA (1975) Albright College; MA (1978) University of Chicago; PhD (1987) University of Pennsylvania

DesRoches, Reginald, 2017. William and Stephanie Sick Dean of the George R. Brown School of Engineering and Professor of Civil and Environmental Engineering
BS (1990), MS, PhD (1998) University of California–Berkeley

Dholakia, Utpal, 2001. George R. Brown Chair of Marketing and Professor of Management

Diamond, John, 2006. Adjunct Assistant Professor of Economics and Lecturer of Economics

Diaz Montalvo, Thais, 2017. Lecturer of Spanish

Dib, Lina, 2014. Lecturer of the Program in Writing and Communication

Dick, Christopher H., 2005. Adjunct Professor of Electrical and Computer Engineering
BSc (1984), PhD (1996) La Trobe University, Melbourne, Australia

Dickins, Gerald R., 2001. Professor of Earth, Environmental and Planetary Sciences
BS (1989) University of California, Davis; MS (1993), PhD (1996) University of Michigan

Dickinson, Debra, 1993. Artist Teacher of Opera Studies
BS (1975) Northwestern University; MA (1991) Hunter College

Dickinson, Mary, 2006. Adjunct Professor of Bioengineering

Dickman, J. David, 2012. Adjunct Professor of Psychology, Director of the Neuroscience Program
BA (1979) University of Oklahoma; MS, PhD (1985) University of Wyoming

Diddel, Roberta M., 1985. Adjunct Assistant Professor and Lecturer of Psychology
BA (1976) Wesleyan University; PhD (1989) Boston University

Diehl, Michael, 2005. Associate Professor of Bioengineering and of Chemistry

Diep, Cassandra, 2017. Lecturer of Kinesiology
BA (2007) Rice University; MS (2009), PhD (2012) Texas A&M University

Disch, James G., 1973. Associate Professor of Sport Management
BS (1969), MEd (1970) University of Houston; PED (1973) Indiana University

Djerejian, Edward P., 1994. Edward A. and Hermena Hancock Kelly University Chair for Senior Scholars, Janice and Robert McNair Director of the James A. Baker III Institute for Public Policy
BS (1960), Doctor of Humanities (Hon) (1992) Georgetown University
Do, Kim-Anh, 1999. Adjunct Professor of Statistics
BS (1983) Queensland University; MS (1985), PhD (1990) Stanford University

Dobelman, John, 2008. Professor in the Practice, Director of Professional
Master’s Program

Dodds, Stanley A., 1977. Associate Professor of Physics and Astronomy, 
Associate of Wiess College BS (1968) Harvey Mudd College; PhD (1975) 
Cornell University

Doerr, Harold K., 2004. Adjunct Assistant Professor of Psychology 
BA (1979) Rutgers University; MD (1987) University of Texas Health 
Science Center

Estate Finance

Domingues Da Silva, Daniel, 2017. Assistant Professor of History 
BA (2004), MA (2009), PhD (2011) Emory University

Dongarra, Jack, 1988. Adjunct Professor of Computer Science 
BS (1972) Chicago State University; MS (1973) Illinois Institute of 
Technology; PhD (1980) University of New Mexico

Doody, Terrence Arthur, 1970. Allison Sarofim Distinguished Teaching 
Professor, Professor of English

Dove, Charles, 2001. Professor in the Practice of Film, Director of Rice 
Cinema

Dow, David R., 2012. Rorschach Visiting Professor in History 

Dravis, Jeffrey, J., 1987. Adjunct Professor of Earth, Environmental and 
Planetary Sciences
BS (1971) St. Mary’s University; MS (1977) University of Miami; PhD (1980) Rice University

Drezek, Rebekah Anna, 2002. Professor of Bioengineering and of 
Electrical and Computer Engineering
BSE (1996) Duke University; PhD (2001) University of Texas–Austin

Drozler, André W., 1987. Professor of Earth, Environmental and Planetary 
Sciences
MS (1978) University of Neuchatel; PhD (1984) University of Miami

Du, Rui-Rui, 2004. Professor of Physics, Astronomy, and Nanoscale 
Physics
BS (1982) Fudan University; PhD (1990) University of Illinois

Duarte, Jefferson, 2008. Gerald D. Hines Associate Professor of Real 
Estate Finance
BS (1991) Eng. Instituto Tecnologico de Aeronautica, Brazil; MBA (2000), 
PhD (2000) University of Chicago

Dudey, Marc Peter, 1990. Associate Professor of Economics
BA (1980) University of Wisconsin at Madison; MS (1986) University of 
Southern California; PhD (1984) Princeton University

Dueñas-Osorio, Leonardo, 2006. Associate Professor of Civil and 
Environmental Engineering
Universidad de los Andes, Bogotá, Colombia; MS (2000) Pontificia

University of Pittsburgh

Dunham, James F., 2001. Professor of Viola and Chamber Music
BFA (1972), MFA (1974) California Institute of the Arts

Dunn, Susan, 2002. Artist Teacher of Voice
B Mus (1985), Graduate Diploma of Music (1987) Queensland 
Conservatorium of Music

Dunning, F. Barry, 1972. Sam and Helen Worden Professor of Physics and 
Astronomy BSc (1966), PhD (1969) University College, London

Duno-Gottberg, Luis, 2008. Associate Professor of Spanish, Portuguese 
and Latin American Studies, Department Chair of Spanish, Portuguese 
and Latin American Studies, Magister of Baker College
University of Pittsburgh

Durian, David, 2017. Lecturer of Linguistics

Ecklund, Elaine Howard, 2008. Herbert S. Autrey Chair and Professor of Sociology

Ecklund, Karl M., 2008. Associate Professor of Physics and Astronomy

Egan, Scott, 2014. Assistant Professor of Ecology and Evolutionary 
Biology

Eqap, Eliaf, 2017. Assistant Professor of Materials Science and 
NanoEngineering and William Marsh Rice Trustee Chair
BS, MS (2005), Stony Brook University; PhD (2011) University of 
Washington

Eich, Elizabeth, 2006. Lecturer of Biochemistry and Cell Biology 
BS (1998) Texas A&M University; PhD (2005) Rice University

El-Bakry, Amr, 1998. Adjunct Professor of Computational and Applied 
Mathematics

El-Dahdah, Farès, 1996. Director of the Humanities Research Center, 
Professor of Humanities
BFA (1986), BArch (1987) Rhode Island School of Design; MAUD (1989), 
DDES (1992) Harvard University

El-Gamal, Mahmoud A., 1998. Chair of Islamic Economics, Finance, and 
Management; Professor of Economics; Professor of Statistics 
BA (1983), 1999. Adjunct Assistant Professor of Psychology 
BA (1979) Rutgers University; MD (1987) University of Texas Health 
Science Center

Do, Kim-Anh, 1999. Adjunct Professor of Statistics 
BS (1983) Queensland University; MS (1985), PhD (1990) Stanford University

Ellenzweig, Sarah, 2000. Associate Professor of English

Elliott, James, 2014. Professor of Sociology in the School of Social Sciences

Ellison, Paul V. H., 1975. Lynette S. Autrey Professor of Double Bass, Chair of Strings
BME (1965) Eastern New Mexico University; MM (1966) Northwestern University

Emami, Maryam, 2010. Lecturer of French

Emden, Christian, 2003. Professor of German Studies

Engel, Paul S., 1970. Professor of Chemistry
BS (1964) University of California at Los Angeles; PhD (1968) Harvard University

Engelhardt Jr., Hugo Tristram, 1982. Professor of Philosophy
BA (1963), PhD (1969) University of Texas–Austin; MD (1972) Tulane University School of Medicine

Englebretson, Robert, 2000. Associate Professor of Linguistics, Interim Department Chair of Linguistics

Ensor, Katherine Bennett, 1987. Professor of Statistics

Eraslan, Hülya, 2014. Ralph S. O’Connor Chair in Economics, Professor of Economics

Ernst, Philip A., 2014. Associate Professor of Statistics

Esarey, Justin, 2012. Associate Professor of Political Science

Etropolski, Anastassia, 2016. RTG Lovett Instructor of Mathematics
BA (2011) Bard College; PhD (2016) Emory University

Fagundes, Christopher P., 2015. Assistant Professor of Psychology
BA (2005) University of California, Davis; MS (2008), PhD (2010) University of Utah

Fang, Songying, 2009. Associate Professor of Political Science

Fanger, Claire, 2009. Associate Professor of Religion
BA (1979) Reed College; MA (1983) Boston University; MA (1987), PhD (1994) University of Toronto

Farach-Carson, Mary C., 2009. Adjunct Professor of BioSciences
BS (1978) University of South Carolina; PhD (1982) Medical College of Virginia/Virginia Commonwealth University

Farajzadeh, Rouhollah, 2015. Adjunct Associate Professor of Chemical and Biomolecular Engineering

Faubion, James D., 1993. Professor of Anthropology, Radoslav A. Tsanoff Chair of Public Affairs in the Department of Anthropology, Associate of Jones College

Fernández, Esther, 2015. Assistant Professor of Spanish, Portuguese and Latin American Studies
Dottore in Matematica (1985) Università di Padova, Italy; MS (1987), PhD (1989) University of California–Berkeley

Farnsworth, Heber, 2016. Visiting Assistant Professor of Finance & Economics
BA (1992) Brigham Young University; PhD (1997) University of Washington

Ferris, David, 1998. Associate Professor of Musicology

Festa, Elizabeth A., 2007. Lecturer of the Program in Writing and Communication

Fette, Julie, 2005. Associate Professor of French Studies

Finley, Dawn, 2001. Associate Professor of Architecture

Fischer, JeAnne K., 1992. Artist Teacher of Piano and Collaborative Skills

Fischer, Norman, 1992. Herbert S. Autrey Professor of Cello
BMus (1971) Oberlin College

Fischer-Baum, Simon J., 2012. Assistant Professor of Psychology

Fisher, Ronald E., 2002. Adjunct Assistant Professor of Psychology
BA (1982) Brandeis University; PhD (1990), MD (1991) Baylor College of Medicine

Fleck, Jonathan, 2016. Lecturer of Spanish and Portuguese
BA (2008) University of Chicago; PhD (2016) University of Texas–Austin

Fleishacker, Alan, 2003. Senior Lecturer of Architecture
BA (1973) Oklahoma State University; JD (1976) University of Oklahoma

Fleisher, Jeffrey B., 2007. Associate Professor of Anthropology
BA (1992), MA (1997), PhD (2003) University of Virginia

Fleming, Jefferson D., 1993. Fayez Sarofim Vanguard Professor of Finance, Deputy Dean of Academic Affairs in the Jesse H. Jones Graduate School of Business


Foose, Jill, 2003. Senior Lecturer of Finance


Foster, Aaron, 2011. Adjunct Assistant Professor of Bioengineering

BA (1994) University of Puget Sound; PhD (2003) University of Sydney, Australia

Foster, Matthew S., 2012. Assistant Professor of Physics and Astronomy

BS (2000) The Cooper Union for the Advancement of Science and Art; MS (2006) University of California, Santa Barbara

Fox, David Stephen, 1990. Lecturer of Architecture

BA (1973), BArch (1975) Rice University

Fox, Jeremy, 2015. Associate Professor of Economics


Fox, Robert O., 2003. Adjunct Professor of Biochemistry and Cell Biology

BS (1976) University of Pittsburgh; MPhil (1978), PhD (1981) Yale University

Franklin, Amy, 2009. Adjunct Assistant Professor of Cognitive Sciences


Frantz, Gene, 2012. Professor in the Practice of Electrical and Computer Engineering


Fregly, Benjamin J., 2017. Professor of Mechanical Engineering


French, Christopher, 1999. Artist Teacher of Cello Orchestral Repertoire

BMus (1982) North Park University

French, Melodie, 2016. Assistant Professor of Earth, Environmental and Planetary Sciences


Fu, Liang, 2010. Lecturer of Chinese


Fukuyama, Tohru, 1995. Adjunct Professor of Chemistry

BS (1971), MS (1973) Nagoya University; PhD (1977) Harvard University


MS (2010), PhD (2014) University of Glasgow

Furr, James, 2003. Senior Lecturer of Architecture

BArch (1969) Louisiana State University

Gao, Xue, 2017. Ted N. Law Assistant Professor of Chemical and Biomolecular Engineering

BS (2005), MS (2007) Tianjin University; PhD (2013) University of California–Los Angeles

Gao, Zhiyong, 1986. Associate Professor of Mathematics

BA (1979) Fudan University; PhD (1984) State University of New York–Stony Brook

Geiser, Reto, 2011. Wortham Assistant Professor of Architecture

MArch (2002), PhD (2010) ETH Zurich

George, Jennifer M., 1999. Mary Gibbs Jones Professor of Management, Professor of Psychology


Georges, Eugenia, 1986. Professor of Anthropology, Department Chair of Anthropology


Geurts, Franciscus Johannes Maria, 2008. Associate Professor of Physics and Astronomy


Geyer, Charles, 2013. Professor of Trumpet, Chair of Brass

B.Music Education, Northwestern University, MM (1969) University of Maryland-College Park

Ghorbel, Fathi, 1994. Professor of Mechanical Engineering and Bioengineering


Ghosh, Bilal, 2014. Lecturer of Bioengineering

BS (2002) Louisiana State University; MS (2004) Louisiana State University; PhD (2009) University of Texas–Austin

Gibson, Brian, 1996. Clinical Professor of Kinesiology

BA (1990), MA (1993), PhD (1996) University of Texas–Austin

Gilbertson, Michelle, 2009. Lecturer of Chemistry

BS (1990) Valparaiso University; MS (1992), PhD (1994) Northwestern University

Gilberti, M. Cristina, 2014. Lecturer of Italian

MA, PhD (2000) Universita’ degli Studi di Bari, Italy

Gillenwater, Ann M., 2006. Adjunct Professor of Bioengineering

BA (1983) Brown University; MD (1987) University of Virginia–Charlottesville

Gillman, Adrianna, 2014. Assistant Professor of Computational and Applied Mathematics


Glassberg, Jeffrey, 2007. Adjunct Professor of Ecology and Evolutionary Biology

BS (1969) Tufts University; PhD (1976) Rice University; JD (1993) Columbia University School of Law


AB (1975) University of Michigan; PhD (1981) University of California–Berkeley
Glowinski, Roland, 1986. Adjunct Professor of Computational and Applied Mathematics
Ecole Polytechnique (1958); Ecole Nationale Superieure des Telecommunications; PhD (1970) University of Paris

Goldman, Ronald N., 1990. Professor of Computer Science
BS (1968) Massachusetts Institute of Technology; MA, PhD (1973) Johns Hopkins University

Goldsmith, Kenneth, 1991. Professor of Violin
BM (1966) George Peabody College for Teachers; MA (1968) Leland Stanford University

Gonnermann, Helge, 2009. Associate Professor of Earth, Environmental and Planetary Sciences

Gonzalez, Ramon, 2005. Professor of Chemical and Biomolecular Engineering, Professor of Bioengineering
BS (1993) Central University of Las Villas, Cuba; MS (1999) Catholic University of Valparaiso, Chile; PhD (2001) University of Chile

González-Stephan, Beatriz, 2001. Lee Hage Jamail Chair of Latin American Literature, Spanish, Portuguese and Latin American Studies

Goodman, Wayne, 2017. Adjunct Professor of Electrical and Computer Engineering

BA (1975) University of California–Santa Cruz; MS (1977), PhD (1979) Stanford University

Gorman, Bridget K., 2002. Professor of Sociology, Department Chair of Sociology, Magister of Will Rice College

Gottschalk, Arthur W., 1977. Professor of Composition and Theory

Grande-Allen, Kathryn Jane, 2003. Professor of Bioengineering, Department Chair of Bioengineering
BA (1991) Transylvania University; PhD (1998) University of Washington

Grandy, Richard E., 1980. Carolyn and Fred McManis Professor of Philosophy, Professor of Philosophy
BA (1963) University of Pittsburgh; MA (1965), PhD (1968) Princeton University

Greig, Nancy, 1991. Adjunct Assistant Professor of Ecology and Evolutionary Biology
BA (1980), PhD (1991) University of Texas–Austin

Greiner, John, 1997. Lecturer of Computer Science

Greitzer, Mary, 2013. Lecturer of Music


Grenader, Nonya S., 1995. Professor in the Practice of Architecture
BArch (1976) University of Texas; MArch (1994) Rice University

Griffin, Robert, J., 2008. Professor of Civil and Environmental Engineering, Department Chair of Civil and Environmental Engineering

Grullon, Gustavo, 1998. Jesse H. Jones Professor of Finance

Guerra, Rudy, 2001. Professor of Statistics

Guindani, Michele, 2011. Adjunct Professor of Statistics
BS (2001), MS (2001), PhD (2005) Universita Commerciale Luigi Bocconi

Gürcanlı, Özge, 2012. Lecturer of Psychology

Gurewitz, Omer, 2012. Adjunct Lecturer of Electrical and Computer Engineering
BA (1990) Ben Gurion University of the Negev Sheva; MS (2000), PhD (2005) Technion-Israel Institute of Technology–Haifa

Gustín, Michael C., 1988. Professor of Biochemistry and Cell Biology
AB (1974) Johns Hopkins University; PhD (1981) Yale University

Guthrie Shimizu, Sayuri, 2014. Dunlevie Family Chair in History and Professor of History

Gutiérrez, Manuel, 2010. Assistant Professor of Spanish, Portuguese and Latin American Studies

Hafner, Jason H., 2001. Professor of Physics and Astronomy and of Chemistry, Magister of Jones College

Halas, Naomi J., 1989. Stanley C. Moore Professor of Electrical and Computer Engineering, Professor of Chemistry, of Bioengineering, of Physics and Astronomy, and of Materials Science and NanoEngineering

Halen, Eric, 2008. Artist Teacher of Violin Orchestral Repertoire
BM (1977) Central Missouri State University; MM (1979) University of Illinois

Hall, Randal L., 2008. Associate Professor of History

Hamm, Keith Edward, 1988. Thomas Cook and Mary Elizabeth Edwards Memorial Chair in American Government, Professor of Political Science
AB (1969) Franklin and Marshall College; MA (1972) Florida Atlantic University; PhD (1977) University of Wisconsin–Milwaukee

Hand, Paul, 2014. Assistant Professor of Computational and Applied Mathematics
Hanten, Gerri R., 2011. Adjunct Associate Professor of Psychology

Haptonstall, Clark D., 2003. Professor in the Practice of Sport Management, Director of the Sport Management Program, Department Chair of Sport Management

Hardt, Robert M., 1988. W. L. Moody Professor of Mathematics
BS (1967) Massachusetts Institute of Technology; PhD (1971) Brown University

Harris, Paul M. “Mitch,” 2000. Adjunct Professor of Earth, Environmental and Planetary Sciences
BS (1971), MS (1973) West Virginia University; PhD (1977) University of Miami

Harter, Deborah A., 1990. Associate Professor of French

Hartgerink, Jeffrey D., 2002. Professor of Chemistry and of Bioengineering, Associate Department Chair for Graduate Studies

Hartigan, Patrick M., 1994. Professor of Physics and Astronomy
BS (1981) University of Minnesota; PhD (1987) University of Arizona

Hartley, Maria K., 2011. Adjunct Assistant Professor of Ecology and Evolutionary Biology

Hartley, Peter Reginald, 1986. George and Cynthia Mitchell Chair in Sustainable Development
BA (1974), MSc (1977) Australian National University; PhD (1980) University of Chicago

Harvey, Shelly L., 2005. Professor of Mathematics
BS (1997) California Polytechnic State University; PhD (2002) Rice University

Hassanzadeh, Pedram, 2016. Assistant Professor of Mechanical Engineering
BSc (2005) University of Tehran; MSc (2007) University of Waterloo; PhD (2013) University of California–Berkeley

Hawley, Richard, 2011. Professor of Clarinet
BM (1992) Curtis Institute of Music

Hayes, Matthew, 2017. Assistant Professor of Political Science

Hazzard, Kaden, 2014. Assistant Professor of Physics and Astronomy

He, Yinghua, 2016. Assistant Professor of Economics

Hebl, Michelle “Mikki” R., 1998. Martha and Henry Malcolm Lovett Chair of Psychology, Professor of Psychology, Professor of Management

Heffes, Gisela, 2009. Associate Professor of Spanish, Portuguese and Latin American Studies, Associate of Duncan College
UBA (1997) Universidad de Buenos Aires; PhD (2007) Yale University

Heinokenschloss, Matthias, 1996. Professor of Computational and Applied Mathematics
BS (1988), PhD (1991) Universität Trier, Germany

Hemmer, Thomas, 2009. Houston Endowment Professor of Accounting
BA (1984), MBA (1986), PhD (1990) Odense University, Denmark

Hennessy, Rosemary, 2006. L. V. Favrot Chair in Humanities, Professor of English Literature, Department Chair of English Director of the Center for the Study of Women, Gender, and Sexuality
BA (1972) University of Pennsylvania; MA (1976) Temple University; PhD (1990) Syracuse University

Henze, Matthias, 1997. Isla Carroll and Percy E. Turner Professor of Biblical Studies and Professor of Religion
MDiv (1992) University of Heidelberg; PhD (1997) Harvard University

Hester, Paul, 2003. Lecturer of Visual and Dramatic Arts
BA (1971) Rice University; MFA (1976) Rhode Island School of Design

Hewitt, Janice, 1999. Senior Lecturer of Professional Communications in the School of Engineering
BA, University of Michigan; MA (1986) PhD (1997) Rice University

Hicks, Illya V., 2007. Professor of Computational and Applied Mathematics

Higgs, Ill, C. Fred, 2016. Interim Vice Provost for Academic Affairs, John and Ann Doerr Professor in Mechanical Engineering, Professor of Mechanical Engineering, Faculty Director of RCEL

Hight, Christopher, 2003. Associate Professor of Architecture

Hill, N. Ross, 2010. Adjunct Professor of Earth, Environmental and Planetary Sciences
BS (1971) Louisiana State University; MS (1973) University of New Orleans; PhD (1978) University of Virginia

Hilton, Isaac, 2017. Assistant Professor of Mechanical Engineering
BS (2004) University of Missouri–Columbia; PhD (2013) University of North Carolina–Chapel Hill

Hirschi, Kendal, 2003. Adjunct Professor of Biochemistry and Cell Biology

Ho, Vivian, 2004. James A. Baker III Institute Chair in Health Economics, Professor of Economica

Hobby, William P., 1989. Radoslav A. Tsonoff Professor of Public Affairs
BA (1953) Rice Institute

Hochberg, Scott, 2013. Lecturer of Education
BA (1975), MEE (1976) Rice University

Hochberg, Yael, 2013. Ralph S. O’Connor Professor in Finance and Entrepreneurship

Hoebig, Desmond, 2008. Professor of Cello
BM (1982), MM (1983) The Juilliard School of Music

Hohlf, Detlef, 2016. Adjunct Professor of Computational and Applied Mathematics
MS (1985) Technical University Munich, Germany; PhD (1989); Habilitation (1997) Technical University Aachen, Germany

Hopkins, John, 2013. Assistant Professor of Art History and Classical and European Studies
BS (2001) Northwestern University, MA (2004), PhD (2010) University of Texas–Austin

Hotez, Peter Jay, 2011. Adjunct Professor of Bioengineering

Hou, Jerry, 2014. Associate Conductor

Houchens, Brent C., 2005. Adjunct Assistant Professor of Materials Science and NanoEngineering

Houlik-Ritchey, Emily, 2015. Assistant Professor of English

House, Waylon V., 1986. Adjunct Associate Professor of Chemical and Biomolecular Engineering

Howe, A. Cymene, 2009. Associate Professor of Anthropology

Huang, Huey W., 1973. Sam and Helen Worden Chair of Physics and Astronomy
BS (1962) National Taiwan University; PhD (1967) Cornell University

Huang, Shih-Shan, Susan, 2006. Associate Professor of Art History
BA (1991) National Taiwan University; MA (1995) National University of Taiwan; PhD (2002) Yale University

Huang, Wen, 2016. Pfeiffer Postdoctoral Instructor of Computational and Applied Mathematics
BS (2007) University of Science and Technology of China; MS (2011), PhD (2014) Florida State University

Huang, Xuelin, 2008. Adjunct Associate Professor of Statistics
BS (1994) Peking University, China; MS (1997) Texas A&M University; PhD (2002) University of Michigan

Huberman, Brian Michael, 1975. Associate Professor of Visual Arts
MFA Equivalent (1974) National Film School of Great Britain

Hudspeth, C. M., 1947. Lecturer of Political Science
BA (1940) Rice Institute; JD (1946) University of Texas–Austin

Hughes, Gordon, 2008. Mellon Associate Professor of Art History

Hughes, Thomas J. R., 2002. Adjunct Professor of Mechanical Engineering

Hulet, Randall G., 1987. Fayez Sarofim Professor of Physics and Astronomy
BS (1978) Stanford University; PhD (1984) Massachusetts Institute of Technology

Hunter, Allison, 2012. Artist in Residence in Visual and Dramatic Arts

Hutchinson, John S., 2013. Dean of Undergraduates, Professor of Chemistry
BS (1977), PhD (1981) University of Texas–Austin

Iammarino, Nicholas K., 1978. Professor of Kinesiology, Department Chair of Kinesiology
BS (1973) University of Dayton; MEd (1975) University of Toledo; PhD (1978) Ohio State University

Igoshin, Oleg A., 2006. Associate Professor of Bioengineering

Irish, Maya Soifer, 2010. Assistant Professor of History

Isella, Andrea, 2014. Assistant Professor of Physics and Astronomy
MS (2003), PhD (2006) Università degli Studi di Milano

Jaber, Thomas I., 1988. Professor of Music, Director of Choral Ensembles

Jalbert, Pierre D., 1996. Professor of Composition and Theory

Jeanneret, P. Richard “Dick,” 2003. Adjunct Professor of Psychology
BA (1962) University of Virginia; MA (1963) University of Florida; PhD (1969) Purdue University

Jermaine, Christopher M., 2009. Professor of Computer Science

Jimenez, Carlos, 1997. Professor of Architecture
BArch (1981) University of Houston

**John, Randy**, 2015. Lecturer of Materials Science and NanoEngineering
BS (1976), MS (1977), PhD (1979) Ohio State University

**Johns-Krull, Christopher M.**, 2001. Professor of Physics and Astronomy
BA, BS (1989) University of Texas–Austin; MA (1991), PhD (1994) University of California–Berkeley

**Johnson, Bruce R.**, 1994. Research Professor in Chemistry, Executive Director of the Rice Quantum Institute
BA (1975) University of Minnesota; PhD (1981) University of Wisconsin–Madison

**Johnson, David B.**, 2000. Professor of Computer Science and of Electrical and Computer Engineering
BA (1982), MS (1985), PhD (1990) Rice University

**Johnson, Lacy**, 2016. Assistant Professor of Creative Writing

BS (1992) Rice University; MS (1997) University of Virginia

BA (1958) Rice Institute; PhD (1961) Rice University

**Jones, Mark P.**, 2004. Joseph D. Jamail Chair in Latin American Studies, Professor of Political Science
BA (1989) Tulane University; PhD (1994) University of Michigan

**Jones, Matthew**, 2017. Norman and Gene Hackerman Assistant Professor in Chemistry

**Jones, Steven L.**, 2015. Lecturer of Kinesiology
BS (1977) Baylor University; MA (2002) Bryn Mawr College; PhD (2008) University of Texas–Austin

**Jones, Thomas A.**, 2003. Adjunct Professor of Earth, Environmental and Planetary Sciences
BS (1964), MS (1967) Colorado State University; MS (1968), PhD (1969) Northwestern University

**Joseph, Betty**, 1995. Associate Professor of English

**Joshua, Shanicca**, 2011. Lecturer of Education

**Joyner, Mack**, 2016. Lecturer of Computer Science & Director of the Professional Master’s Program
BS (2002), MS (2005), PhD (2008) Rice University

**Junitti, Markku**, 2007. Adjunct Professor of Electrical and Computer Engineering
MS (1993), PhD (1997) University of Oulu, Finland

**Kale, Prashant**, 2007. Associate Professor of Strategic Management

**Kalra, Ajay**, 2008. Herbert S. Autry Chair in Business, Professor of Marketing

**Kamakura, Wagner**, 2013. Jesse H. Jones Professor of Marketing
BS (1974) Aeronautical Institute of Technology, MS (1979) University of Sao Paolo, PhD (1983) University of Texas–Austin

**Kaminski, Vincent**, 2001. Professor in the Practice of Management
PhD (1975) Main School of Planning and Statistics, Warsaw, Poland; MBA (1978) Fordham University


**Kaplan, S.C.**, 2017. Lecturer of French

**Keefe, Christina**, 2008. Professor in the Practice in Theatre, Director of the Theatre Program
BFA (1979) New York University; MFA (1994) University of South Carolina

**Kelly, Kevin**, 2002. Associate Professor of Electrical and Computer Engineering, Applied Physics Graduate Program Chair

**Kemere, Caleb**, 2012. Assistant Professor of Electrical and Computer Engineering

**Kemmer, Suzanne E.**, 1993. Associate Professor of Linguistics and Cognitive Sciences, Associate of Sid Richardson College

**Kiang, Ching-Hwa**, 2002. Associate Professor of Physics and Astronomy
BS (1987) National Taiwan University; PhD (1995) California Institute of Technology

**Kieffer, Alexandra**, 2015. Assistant Professor of Musicology
BA Grinnell College; MA (2009), MPhil (2011), PhD (2014) Yale University

**Killian, Thomas C.**, 2000. Professor of Physics and Astronomy

**Kim, Daniel**, 2008. Adjunct Professor of Electrical and Computer Engineering
BS (1985) University of Oklahoma; MD (1989) Tulane University School of Medicine

**Kimbro, Rachel Tolbert**, 2007. Professor of Sociology
Kimmel, Marek, 1990. Professor of Statistics
MS (1977), PhD (1980) Silesian Technical University

King, Eden, 2017. Associate Professor of Psychology

King, Stephen, 2003. Lynette S. Autrey Professor of Voice and Chair of Voice

Kincaid, Kristi, 2016. Lecturer of Chemistry
BS (1998) University of California–Berkeley; PhD University of Colorado—Boulder

Kirchner, Stefan, 2009. Adjunct Assistant Professor of Physics and Astronomy

Kirienko, Natasha, 2015. Assistant Professor of BioSciences

Kirk, David E., 1982. Associate Professor of Tuba
BM (1982) Juilliard School of Music

Kiselev, Alexander, 2014. Professor of Mathematics
BS (1992) St. Petersburg State University; PhD (1996) California Institute of Technology

Klein, Andrew A., 2014. Lecturer of the Program in Writing and Communication

Klein, Anne C., 1989. Professor of Religion

Kley, Katharina, 2015. Lecturer of German

Klineberg, Stephen L, 2008. Associate Professor of Sociology
BA (2002), MFA (2012) University of Houston

Klineberg, Stephen L., 1972. Professor of Sociology, Associate of Lovett College

Knepley, Matthew, 2015. Assistant Professor of Computational and Applied Mathematics
BS (1994) Case Western Reserve; MS (1996) University of Minnesota; PhD (2000) Purdue University

Knightsly, Edward W., 1996. Professor of Electrical and Computer Engineering and Computer Science, Department Chair of Electrical and Computer Engineering

Kohn, Michael H., 2004. Associate Professor of Ecology and Evolutionary Biology
MSc (1994) University of Munich; PhD (2000) University of California–Los Angeles

Koka, Balaji, 2008. Associate Professor of Strategic Management

Kolomeisky, Anatoly B., 2000. Professor of Chemistry and of Chemical and Biomolecular Engineering

Kong, Yunmi, 2016. Assistant Professor of Economics

Kono, Junichiro, 2017. Assistant Professor of Electrical and Computer Engineering, of Physics and Astronomy, and of Materials Science and Engineering, of Physics and Astronomy, and of Materials Science and NanoEngineering
BS (1990), MS (1992) University of Tokyo; PhD (1995) State University of New York—Buffalo

Kortum, Philip T., 2005. Associate Professor of Psychology
BS (1985) University of Nebraska; MS (1990) Northeastern University; PhD (1994) University of Texas—Austin

Kowal, Daniel R., 2017. Assistant Professor of Statistics

Kripal, Jeffrey J., 2002. J. Newton Rayzor Professor of Religion, Associate of Brown College

Krouskop, Mark, 2013. Lecturer of Theater and Theater Production Manager
BA (2002), MFA (2012) University of Houston

Kürti, Lázló, 2015. Associate Professor of Chemistry

LaBove, Shannon, 2013. Lecturer of Forensics

Lairson, David R., 1977. Adjunct Professor of Economics
BA (1970), MA (1971), PhD (1975) University of Kentucky

Lamos, Colleen R., 1989. Associate Professor of English
BA (1978) State University of New York–Binghamton; PhD (1988) University of Pennsylvania

Landes, Christy F., 2009. Professor of Chemistry and of Electrical and Computer Engineering
BS (1998) George Mason University; PhD (2003) Georgia Institute of Technology

Lane, David M., 1977. Associate Professor of Psychology, Statistics, and Management
BA (1971) Clark University; MA (1973) Tufts University; PhD (1977) Tulane University

Lansford, Benjamin, 2014. Professor in the Practice of Accounting

Lapinski, Lisa, 2014. Assistant Professor of Visual and Dramatic Arts
Larson, Abby, 2015. Lecturer of Management

Lavenda, Richard A., 1987. Professor of Composition and Theory
BA (1977) Dartmouth College; MMus (1979) Rice University; DMA (1983) University of Michigan

Lee, Cin-Ty, 2002. Professor of Earth, Environmental and Planetary Sciences, Department Chair of Earth, Environmental and Planetary Sciences

Leebron, David W., 2004. President and Professor of Political Science
BA (1976) Harvard University; JD (1979) Harvard Law School

Leeds, Brett Ashley, 2001. Professor of Political Science, Department Chair of Political Science
BA (1991), University of North Carolina at Chapel Hill; PhD (1998) Emory University

LeGrand, Thomas, 2003. Associate Professor of Clarinet
BMus (1980) Curtis Institute of Music

Lenardic, Adrian, 1999. Professor of Earth, Environmental and Planetary Sciences

BArch (1968) University of California at Berkeley; MArch (1970) Harvard University

Levander, Alan R., 1984. Carey Croneis Professor of Earth, Environmental and Planetary Sciences
BS (1976) University of South Carolina; MS (1978), PhD (1984) Stanford University

Levander, Caroline F., 2000. Carlson Chair in the School of Humanities, Professor of English, Vice President for Digital Education and Strategic Initiatives

Levin, Harvey S., 2004. Adjunct Professor of Psychology
BA (1967) City University of New York; MA (1971), PhD (1972) University of Iowa

Levine, Herbert, 2012. Karl F. Hasselmann Professor of Bioengineering, Professor of Physics and Astronomy and of Biochemistry and Cell Biology

Levy, Eugene H., 2000. Andrew Hays Buchanan Professor of Physics and Astronomy
AB (1966) Rutgers University; PhD (1971) University of Chicago

Lewis, Steven W., 1996. Professor in the Practice, Research Fellow at the James A. Baker III Institute for Public Policy, Associate Director at the Chao Center for Asian Studies

Li, Haiyang, 2005. Professor of Strategic Management
BA (1990), MA (1994) University of China; PhD (1998) City University of Hong Kong

Li, Hui, 2002. Adjunct Associate Professor of Physics and Astronomy
BS (1990) Beijing University; PhD (1995) Rice University

Li, Meng, 2017. Noah Harding Assistant Professor in Statistics
BS (2010) Sun Yat-sen University, China; PhD (2015) North Carolina State University–Raleigh

Li, Qilin, 2006. Professor of Civil and Environmental Engineering and of Materials Science and NanoEngineering
BE (1995) Tsinghua University, Beijing, China; MS (1999), PhD (2002) University of Illinois–Urbana-Champaign

Li, Siran, 2017. G.C. Evans Instructor of Mathematics

Li, Wei, 2012. Assistant Professor of Physics and Astronomy
BS (2004) University of Science and Technology of China; PhD (2009) Massachusetts Institute of Technology

Liang, Edison P., 1991. Andrew Hays Buchanan Professor of Astrophysics
BA (1967), PhD (1971) University of California–Berkeley

Liberman-Aiden, Erez, 2013. Adjunct Assistant Professor of Computer Science and Computational and Applied Mathematics

Lichtarge, Olivier, 2008. Adjunct Professor of Biochemistry and Cell Biology

Lin, Cho-Liang, 2006. Professor of Violin
BMus (1981) The Juilliard School of Music

Link, Stephan, 2006. Professor of Chemistry, Professor of Electrical and Computer Engineering
MA (1996) Technical University of Braunschweig, Germany; PhD (2000) Georgia Institute of Technology

Little, Stephen H., 2010. Adjunct Associate Professor of Bioengineering
BS (1993) York University, Canada; MD (1997) McMaster University, Canada

Loch-Temzelides, Ted, 2008. Professor of Economics
BA (1988) University of Piraeus, Greece; PhD (1999) University of Minnesota

Loewen, Peter V., 2006. Associate Professor of Musicology
BMus (1987) University of Manitoba; MMus (1990), PhD (2000) University of Southern California

Logan, Jill “Thad,” 1982. Lecturer of English
BA (1973) University of California–Santa Barbara; PhD (1981) Rice University

Loos, Peter, 2014. Professor in the Practice of Materials Science and NanoEngineering
BA (1977); MS (1982), PhD (1986) Rice University

López-Durán, Fabiola, 2011. Assistant Professor of Art History
BA (1987) Universidad de los Andes School of Architecture; PhD (2009) Massachusetts Institute of Technology

Lopez Alonso, Moramay, 2009. Associate Professor of History

Lord, Tom F., 1992. Lecturer of Architecture
BA (1960) Southern Methodist University; MA (1965) Yale University

Lou, Jun, 2005. Professor of Materials Science and NanoEngineering, Associate Department Chair of Materials Science and NanoEngineering

Loveland, Katherine A., 1991. Adjunct Professor of Psychology
BA (1975) University of Virginia; PhD (1980) Cornell University

Ludwig, Joseph A., IV, 2007. Adjunct Assistant Professor of Bioengineering
BBA (1994) University of Iowa College of Business; MD (1998) University of Iowa College of Medicine

Lukic, Milivoje, 2016. Assistant Professor of Mathematics

Lundin, Robert, 2013. Lecturer of Education

Lurie, Susan, 1987. Associate Professor of English

Lwigale, Peter Y., 2008. Associate Professor of Biochemistry and Cell Biology
BS (1994), MS (1997) University of Northern Iowa; PhD (2001) Kansas State University

Ma, Jianpeng, 2000. Professor of Bioengineering, Professor of Biochemistry and Cell Biology
BS (1985) Fudan University P.R. China; PhD (1996) Boston University

Maas, Michael R., 1984. William Gaines Twyman Professor of History, Professor of History and of Classical and European Studies
BA (1973) Cornell University; MA (1975), PhD (1982) University of California–Berkeley

Mackie, Hilary S., 1993. Associate Professor of Classics

Mackintosh, Frederick C., 2016. Abercrombie Professor of Chemical and Biomolecular Engineering, Professor of Physics & Astronomy, and Professor of Chemistry

Mackwell, Stephen J., 2005. Adjunct Professor of Earth, Environmental and Planetary Sciences
BS (1978), MS (1979) University of Canterbury, Christchurch, NZ; PhD (1985) Australian National University

Maher, Lynn M., 2007. Adjunct Professor of Psychology

Makdisi, Ussama, 1997. Arab-American Educational Foundation Professor of Arab Studies in History, Professor of History

Manca, Joseph, 1989. Nina J. Cullinan Professor of Art History, Professor of Art History, Associate of Baker College

Marschall, Melissa J., 2003. Professor of Political Science
BA (1990) Florida State University; MA (1993) Bogazici University; PhD (1998) State University of New York—Stony Brook

Martí-Arbona, Angel A., 2008. Associate Professor of Chemistry, of Bioengineering, and of Materials Science and NanoEngineering

Martin, Lanny W., 2004. Professor of Political Science
BA (1990), MA (1997), PhD (2000) University of Rochester

Martin, Randy C., 1982. Elma Schneider Professor of Psychology
BA (1971) University of Oregon; MS (1977), PhD (1979) Johns Hopkins University

Martinez Calderon, Luz Maria, 2011. Adjunct Associate Professor of Chemistry
BS (1991) Tecnologico de Monterrey; PhD (2000) Arizona State University

Masiello, Caroline A., 2004. Professor of Earth, Environmental and Planetary Sciences

Matsuda, Seiichi P. T., 1995. Dean of Graduate and Postdoctoral Studies, E. Dell Butcher Professor of Chemistry, Professor of Biochemistry and Cell Biology

Matthews, Kathleen Shive, 1972. Stewart Memorial Professor of Biochemistry and Cell Biology
BS (1966) University of Texas–Austin; PhD (1970) University of California–Berkeley

Matzakos, Andreas N., 2003. Adjunct Assistant Professor of Chemical and Biomolecular Engineering
Diploma of Chemical Engineering (1987) National Technical University; PhD (1992) Rice University

Mawlawi, Osama R., 2002. Lecturer of Electrical and Computer Engineering

McDaniel, W. Caleb, 2008. Associate Professor of History, Magister of Duncan College

McDavid, Carol, 2008. Adjunct Assistant Professor of Anthropology

McDevitt, John T., 2008. Brown-Wiess Professor of Bioengineering and Chemistry and of Materials Science and NanoEngineering
McGill, Scott, 2001. Professor of Classics, Department Chair of Classical and European Studies BA (1990) Salve Regina College; PhD (2001) Yale University


McIntosh, Susan Keech, 1980. Herbert S. Autrey Professor in Anthropology BA (1973) University of Pennsylvania; MA (1975) Girton College, Cambridge University; MA (1976), PhD (1979) University of California–Santa Barbara


McPhail, S. Morton, 2003. Adjunct Associate Professor of Psychology BA (1972) Trinity University; MS (1975), PhD (1978) Colorado State University


Mérenyi, Erzsébet, 2000. Research Professor of Statistics MSc (1975) Attila Jozsef University, Hungary; PhD (1980) Attila Jozsef University and Central Research Institute for Physics, Hungarian Academy of Sciences


Mittal, Vikas, 2016. Lecturer of Communication BSFS (1984) Georgetown University; JD (1987) University of Texas School of Law


Morones, Jessica, 2017. Lecturer of Spanish BA (2011) Universidad Autónoma de Tamaulipas; MA University of Massachusetts

Morosan, Emilia, 2007. Professor of Physics and Astronomy, of Chemistry, and of Materials Science and NanoEngineering
BS (1999) A. I. Cuza University; PhD (2005) Iowa State University

Morris, Jeffrey. 2011. Adjunct Professor of Statistics

Morris, Wesley Abram. 1968. Professor of English
BA (1961), MA (1963) University of Kentucky; PhD (1968) University of Iowa

Morrison, Donald Ray. 1988. Professor of Philosophy, Department Chair of Philosophy

Morton, Scott A. 2004. Adjunct Associate Professor of Computational and Applied Mathematics

Morton, Timothy. 2012. Rita Shea Guffey Chair in English, Professor of English
BA (1989) Oxford University; PhD (1992) Oxford University

Motowidlo, Stephan J. 2005. Herbert S. Autrey Professor of Psychology
BA (1969) Yale University; PhD (1976) University of Minnesota

Muharemovic, Tarik. 2011. Adjunct Professor in Electrical and Computer Engineering

Mukamel, Ronin. 2015. Assistant Professor of Mathematics

Mulligan, John. 2015. Lecturer of the Humanities

Murdock, Steve H. 2007. Allyn and Gladys Cline Professor of Sociology
BA (1970) North Dakota State University; MA (1975), PhD (1975) University of Kentucky

Musher, Lydia. 2016. Lecturer of Communication

Nagarajaiah, Satish. 1999. Professor of Civil and Environmental Engineering and of Materials Science and NanoEngineering
BS (1980) Bangalore University, India; MS (1982) Indian Institute of Science, India; PhD (1990) State University of New York—Buffalo

Naik, Gururaj. 2016. Assistant Professor of Electrical and Computer Engineering

Najafi, Bijan. 2017. Adjunct Associate Professor of Electrical and Computer Engineering

Nakhle, Luay K. 2004. Professor of Computer Science, Assistant Professor of Biochemistry and Cell Biology, Department Chair of Computer Science

Naranjo, Patricia. 2014. Assistant Professor of Accounting
BE (2003) Pontificia Universidad Católica de Chile; PhD (2014) Massachusetts Institute of Technology

Natelson, Douglas. 2000. Professor of Physics and Astronomy, of Electrical and Computer Engineering, and of Materials Science and NanoEngineering, Department Chair of Physics and Astronomy

Neagley, Linda E. 1993. Associate Professor of Art History

Nelson-Campbell, Deborah. 1974. Professor of French
BA (1960) Wittenberg University; Certificat d'études Françaises, ler Degré (1961) University of Grenoble, France; MA (1964), PhD (1970) Ohio State University

Nevidomskyy, Andriy. 2010. Associate Professor of Physics and Astronomy
MSC (2001) Ivan Franko National State University of Lviv; PhD (2005) University of Cambridge

Newell, Charles J. 1993. Adjunct Professor of Civil and Environmental Engineering

Newsome, Mary R. 2001. Adjunct Assistant Professor of Psychology

Ng, T. S. Eugene. 2003. Professor of Computer Science and Electrical and Computer Engineering

Nichol, Carolyn, A. 2009. Assistant Research Professor of Chemistry
BS (1985) University of Massachusetts–Amherst; MS (1990), PhD (1992) University of Texas–Austin

Nicolau, D. Colette. 2012. Lecturer of Psychology

Nicolau, K.C. 2013. Harry C. and Olga K. Wiess Professor of Chemistry
B.Sc. (1969) Bedford College, University of London; PhD (1972) University College, University of London

Niedzielski, Nancy A. 1999. Associate Professor of Linguistics, Department Chair of Linguistics, Associate of Lovett College

Nikonowicz, Edward P. 1993. Professor of Biochemistry and Cell Biology
BS (1985) St. Louis University; PhD (1990) Purdue University

Nittroer, Jeffrey. 2012. Assistant Professor of Earth, Environmental and Planetary Sciences

Niu, Fenglin. 2002. Professor of Earth, Environmental and Planetary Sciences
BS (1988) University of Science and Technology of China; MS (1994), PhD (1997) University of Tokyo

Nixon, Burke. 2014. Lecturer of the Program in Writing and Communication
BA (2003) University of Texas–Austin; MFA (2011) University of Mississippi

**Nordlander, Peter**, 1989. Professor of Physics and Astronomy, of Electrical and Computer Engineering, and of Materials Science and NanoEngineering
BA (1977) Swedish Cavalry Officers’ School; MS (1980), PhD (1985) Chalmers University of Technology, Gothenburg, Sweden

**Novotny, Alma M.**, 2000. Lecturer of Biochemistry and Cell Biology
BS (1968) Duke University; PhD (1972) Purdue University

**Obodaru, Otilia**, 2012. Assistant Professor of Management

**Oden, Z. Maria**, 2004. Full Teaching Professor of Engineering Education in Bioengineering, Director of the Oshman Engineering Design Kitchen

**Oesmann, Astrid**, 2013. Associate Professor of German

**Ogden, Brian**, 2012. Assistant Professor of Religion, Associate of Hanszen College

**Olgaard, David L.**, 2007. Adjunct Associate Professor of Earth, Environmental and Planetary Sciences
BS (1978) Cornell University; PhD (1985) Massachusetts Institute of Technology

**Oliver, Douglas E.**, 1997. Professor in the Practice of Architecture

**Olson, John Steven**, 1973. Ralph and Dorothy Looney Professor of Biochemistry and Cell Biology
BS (1968) University of Illinois; PhD (1972) Cornell University

**O’Malley, Marcia K.**, 2001. Professor of Mechanical Engineering and Computer Science
BS (1996) Purdue University, MS (1999), PhD (2001) Vanderbilt University

**Onuchic, Jose Nelson**, 2011. Harry C. and Olga K. Wiess Chair of Physics and Professor of Physics and Astronomy, of Chemistry and of Biochemistry and Cell Biology, Magister of Lovett College

BS (2003), MS (2005) Bosphorus University; PhD (2010) University of Texas–Austin

**Orchard, Michael T.**, 2001. Professor of Electrical and Computer Engineering

**Ortiz, Alexis**, 2013. Lecturer of Kinesiology
BS (2000) University of Puerto Rico; MS (2003), PhD (2006) Texas Woman’s University

**Ostdiek, Barbara**, 1994. Associate Professor of Finance and Statistics, Senior Associate Dean of Degree Programs
BA (1986) University of Nebraska; PhD (1994) Duke University

**Osterr, Kirsten**, 2002. Gladys Louise Fox Professor of English

**O'Sullivan, Elizabeth**, 2001. Senior Lecturer of Communications, Director of Communications Program

**Ostdiek, Donald**, 1995. Policy Studies Director, Associate Dean of Undergraduates

**Oswald, Frederick L.**, 2008. Professor of Psychology
BA (1992) University of Texas–Austin; MA (1998), PhD (1999) University of Minnesota

**Otremba, Paul**, 2014. Assistant Professor of English

**Oubre, Carroll**, 1999. Adjunct Professor of Civil and Environmental Engineering
BS (1955) University of Southwestern Louisiana; MS (1956) Ohio State University; PhD (1966) Rice University

**Oukaderova, Lida**, 2008. Assistant Professor of Art History
BA (1997) Martin-Luther University; MA (1999), PhD (2005) University of Texas–Austin

**Overall, John E.**, 1983. Adjunct Professor of Psychology
BS (1954) Trinity University; MA (1956), PhD (1958) University of Texas–Austin

**Ozaki, Naoko**, 2008. Assistant Professor of Japanese
BA (1997) University of Arizona; MS (2005), PhD (2011) Indiana University

**Ozoguz, Arzu**, 2015. Clinical Assistant Professor of Finance

**Padgett, Jamie Ellen**, 2007. Associate Professor of Civil and Environmental Engineering

**Padley, B. Paul**, 1996. Professor of Physics and Astronomy
BS (1981) York University; MS (1984), PhD (1987) University of Toronto

**Page, Paula**, 1985. Associate Professor of Harp
BMus (1969) Cleveland Institute of Music

**Pai, Mallesh**, 2016. Assistant Professor of Economics

**Palem, Krishna**, 2007. Ken and Audrey Kennedy Professor of Computer Science and Electrical and Computer Engineering, Professor of Statistics
MS (1981), PhD (1986) University of Texas

**Palzkill, Timothy**, 2008. Adjunct Professor of Biochemistry and Cell Biology
BS (1983) Creighton University; PhD (1988) University of Iowa

Panahi, Hesam, 2016. Lecturer of Management
BBA (2005) University of Houston; PhD (2010) University of Houston

Papadakis, Zacharias, 2015. Lecturer of Kinesiology
BSc (1998) University of Thessaloniki, Greece; MS (2005) Sheffield Hallam University

Papadopoulos, Pamela Constantinoiu, 2010. Assistant Research Professor in Biosciences

Papageorgiou, Theodora Dorina, 2016. Adjunct Assistant Professor of Electrical and Computer Engineering
BA (1995) University of Georgia; MHSc (1997) Johns Hopkins University; PhD (2006) University of Texas, MD Anderson Cancer Center

Park, Sohyoung, 2005. Artist Teacher of Piano and Piano Pedagogy

Parker, Jon Kimura, 2000. Professor of Piano
BMus, MMus (1981), DMA (1989) Juilliard School of Music

Parsons, Sandra V., 2011. Lecturer of Psychology

Parsons, William B., 1993. Professor of Religion, Associate of Brown College
BA (1979) Brandeis University; MDiv (1982) Yale University; PhD (1993) University of Chicago

Pasquali, Matteo, 1999. Professor of Chemical and Biomolecular Engineering, of Materials Science and NanoEngineering, and of Chemistry, Department Chair of Chemistry
MS (1992) University of Bologna; PhD (1999) University of Minnesota

Pati, Debananda, Adjunct Assistant Professor of Biochemistry and Cell Biology
BSc (1986) Orissa University; MS (1988) University of Buckingham; PhD (1995) University of Calgary

Patel, Ankit, 2017. Assistant Professor of Electrical and Computer Engineering

Pazgal, Amit, 2006. Friedkin Chair in Management, Professor of Marketing
BS (1987), MS (1992) Tel Aviv University; PhD (1997) Northwestern University

Pearson, Deborah A., 1991. Adjunct Professor of Psychology
BA (1979) Wesleyan University; MA (1982), PhD (1986) Rice University

Pellis, Neil R., 1997. Adjunct Professor of Biochemistry and Cell Biology

Peres, S. Camille, 2007. Adjunct Associate Professor of Psychology

Perez, John T., 2013. Adjunct Lecturer of Chemical and Biomolecular Engineering
BS (1996), MBA (2012) Rice University

Perkins, Heidi, 2008. Lecturer of Kinesiology

BS (1985) Missouri State University; ME (1992), PhD (2006) University of Houston

Perkins Ball, Amanda, 2017. Lecturer of Kinesiology

Perrigne, Isabelle, 2012. Professor of Economics

Petitt, B. Montgomery, 2010. Adjunct Professor of Chemistry
BS (1975), PhD (1980) University of Houston

Peyravan, Leila, 2016. Assistant Professor of Accounting
BA (2004), MBA (2007), PhD (2016) University of Toronto


Phillips, George, 2012. Ralph and Dorothy Looney Professor of Biochemistry and Cell Biology
BA (1974) Rice University; PhD (1976) Rice University

Pimpinelli, Alberto, 2014. Faculty Fellow in Materials Science and NanoEngineering
MS (Laurea, 1986) University of Milan, Italy; PhD (1989) University of Parma, Italy

Pinn, Anthony B., 2004. Agnes Cullen Arnold Professor of Humanities, Professor of Religion, Associate of Wiess College

Pitkow, Xaq, 2012. Assistant Professor of Electrical and Computer Engineering

Pitts, Timothy, 1992. Professor of Double Bass

Pollnitz, Aysha, 2016. Assistant Professor of History

Polo, Sara, 2015. Assistant Professor of Political Science
BA (2009) University of Sassari; MSc (2010), PhD (2015) University of Essex

Pomerantz, James R., 1988. Professor of Psychology
BA (1968) University of Michigan; PhD (1974) Yale University

Pope, Albert H., 1986. Gus Sessions Wortham Professor of Architecture

Porter, Constance Elise, 2011. Visiting Assistant Professor of Marketing

Protasov, Anastasiya, 2017. Lecturer of Computational and Applied Mathematics
BS (2005), MS (2007) Novosibirsk State University; PhD (2016) Rensselaer Polytechnic Institute

Pu, Han, 2003. Professor of Physics and Astronomy
BS (1992) University of Science and Technology of China; MS (1994), PhD (1999) University of Rochester

Purugganan, Mary M., 2000. Senior Lecturer of Professional Communications
BS (1990) Texas A&M University; PhD (1998) Rice University

Qian, Nanxiu, 1993. Professor of Chinese Literature
MA (1982) Nanjing University; PhD (1994) Yale University

Quiocho, Florante A., 1972. Adjunct Professor of Biochemistry and Cell Biology
BS (1959) Central Philippine University; MS (1961) Howard University; PhD (1966) Yale University

Rahm, Larry, 1991. Walter Kris Hubert Professor of Orchestra Conducting
BS (1977) University of Connecticut; MM (1979) University of Michigan

Radigan, Judy, 2002. Lecturer of Education
MFA (1985) University of Houston; MED (1997) University of St. Thomas; PhD (2001) University of Houston

Ragsdale, Lyn, 2006. Radoslav A. Tsanoff Chair of Public Affairs, Professor of Political Science

Ramesh, Kris, 2010. Herbert S. Autrey Professor of Accounting

Ramos, Renata, 2010. Lecturer of Bioengineering
BS (2002) Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico; PhD (2008) University of Arizona

Rao, Arvind, 2014. Adjunct Assistant Professor of Electrical and Computer Engineering

Raphael, Robert M., 2001. Associate Professor of Bioengineering
BS (1989) University of Notre Dame; MS (1992), PhD (1996) University of Rochester

Rarick, Janet, 1992. Associate Professor of Music Career Development
BM (1973) University of Southern California

BS (1986) University of Texas; MS (1989), PhD (1998) Rice University

Reiff, Patricia H., 1992. Professor of Physics and Astronomy
BS (1971) Oklahoma State University; MS (1974), PhD (1975) Rice University

Reynolds, Michael A., 2013. Adjunct Professor of Chemical and Biomolecular Engineering

Richards-Kortum, Rebecca, 2005. The Malcolm Gillis University Professor, Professor of Bioengineering, Professor of Electrical and Computer Engineering
BS (1985) University of Nebraska; MS (1987), PhD (1990) Massachusetts Institute of Technology

Richardson, Eric, 2013. Lecturer of Bioengineering
BS (2005) Brigham Young University; PhD (2009) University of Minnesota

Rhodes, Anna, 2017. Assistant Professor of Sociology

Riedel, Brian, 2012 Professor in the Practice of Humanities
BA (1994) University of North Carolina-Chapel Hill; PhD (2005) Rice University


Rixner, Scott, 2000. Professor of Computer Science and in Electrical and Computer Engineering

Robert, Marc A., 1984. Professor of Chemical and Biomolecular Engineering
Diploma (1975) Swiss Federal Institute of Technology, Zurich; PhD (1980) Swiss Federal Institute of Technology, Lausanne

Roberts, Jabus B., Jr., 1975. Professor of Physics and Astronomy
BA (1965) Columbia University; PhD (1969) University of Pennsylvania

Robinson, Jacob, 2012. Assistant Professor of Electrical and Computer Engineering

Rodriguez, Augusto X., 2010. Lecturer of Kinesiology

Rodriguez, Peter, 2016. Dean of the Jesse H. Jones School of Business

Roof, Judith, 2010. William Shakespeare Chair in English, Professor of English
BA (1972) Ohio State University; MA (1973) University of Toronto; JD (1979), MA (1980), PhD (1984) Ohio State University

Rosenberg, Susan M., 2009. Adjunct Professor of Biochemistry and Cell Biology

Roxby, Peter, 2014. Harry C. and Olga K. Chair of Chemistry, Dean of Natural Sciences
BA (1971) Cornell University; MA (1972), PhD (1978) Harvard University

Rountree, Brian R,

Rosenberg, Susan M

BA (1971) Cornell University; MA (1972), PhD (1978) Harvard University


Roux, Robert, 1990. Professor of Piano, Chair of Keyboard
BMus (1970) Loyola University; MMus (1978), DMA (1980) University of Texas–Austin


Rudolf, Volker H. W., 2007. Associate Professor of Ecology and Evolutionary Biology

Rusin, Craig, 2013. Adjunct Assistant Professor of Computational and Applied Mathematics
BSE (2001) Princeton University; PhD (2009) University of Virginia

Rusk, Jerrold G., 2006. Professor of Political Science
BS (1963) Brigham Young University; PhD (1968) University of Michigan

Ryan, Sonia, 2014. T.T. and W.F. Chao Center Professor of Asian Studies, Director of the Chao Center for Asian Studies

Saharwal, Ashutosh, 2001. Professor of Electrical and Computer Engineering

Salaberry, M. Rafael, 2013. Mary Gibbs Jones Professor of Humanities, Professor of Spanish, Director of the Center for Languages and Intercultural Communication

Sala, Eduardo, 2015. Allyn R. and Gladys M. Cline Chair of Psychology, Professor of Psychology, and Department Chair of Psychology
BA (1978) Florida International University; MS (1980) University of Central Florida; PhD (1984) Old Dominion University

Saltz, Julia, 2014. Assistant Professor of Ecology and Evolutionary Biology
AB (2005) Princeton University; PhD (2011) University of California–Davis

Sams, Clarence F., 1997. Adjunct Assistant Professor of Biochemistry and Cell Biology
BA (1975), PhD (1983) Rice University

Samuels, Danny M., 1981. Professor in the Practice of Architecture
BA (1971) Rice University

San, Ka-Yiu, 1984. E.D. Butcher Professor of Bioengineering, Professor of Chemical and Biomolecular Engineering

Sanders, Paula A., 1987. Professor of History, Interim Director of the Boniuk Institute

Sanders-Goldsberry, Betty M., 1988. Adjunct Assistant Professor of Psychology

Santos, Hélade, 2014. Lecturer of Spanish and Portuguese

Sarkar, Vivek, 2007. Professor of Computer Science, E.D. Butcher Chair in Engineering

Satterbak, Ann, 2002. Professor in the Practice of Bioengineering
BA (1990) Rice University; PhD (1995) University of Illinois

Sawyer, Dale S., 1988. Professor of Earth, Environmental and Planetary Sciences
BS (1976) Purdue University; PhD (1982) Massachusetts Institute of Technology

Sazykin, Stanislav, 2005. Associate Research Professor of Physics and Astronomy
BS (1994) Utah State University; MS (1996) Moscow Institute of Physics and Technology; PhD (2000) Utah State University

Schaefer, Andrew J., 2015. Noah Harding Chair and Professor of Computational and Applied Mathematics, Magister of Wiess College

Schaefer, Laura, 2015. Burton J. and Ann M. McMurtry Chair in Engineering, Professor of Mechanical Engineering, Department Chair of Mechanical Engineering, Magister of Wiess College
BA, BS (1995) Rice University; MA (1997), PhD (2000) Georgia Institute of Technology

Schandling, G. Thomas, 2013. Lecturer of Education

Schaum, R. Troy, 2011. Assistant Professor in Architecture
Schell, Rick, 2006. Senior Lecturer of Management
BA (1971) Eastern Michigan University; MA (1975), PhD (1976) Rice University

Schell, Wendy, 2008. Lecturer of Kinesiology
BS (1994) Auburn University; BS (1996) Georgia State University; MS (2007) Texas Women's University

Schimel, Ian, 2011. Lecturer of English
BA (2005) Tufts University; MFA (2010) University of Houston

Schroeder, Timothy, 2001. Professor of Philosophy

Schuler, Douglas A., 1992. Associate Professor of Business and Public Policy
BS (1985) University of California–Berkeley; PhD (1992) University of Minnesota

Schwanauer, Stephen, 2011. Adjunct Professor in Electrical and Computer Engineering
BS (1981), PhD (1986) Yale University

Schweinberger, Michael, 2013. Assistant Professor of Statistics
MS (2002), PhD (2007) University of Groningen, the Netherlands

Schwindt-Bayer, Leslie A., 2013. Professor of Political Science

Scott, David W., 1979. Noah Harding Professor of Statistics
BA (1972), MA, PhD (1976) Rice University

Scuseria, Gustavo E., 1989. Robert A. Welch Professor of Chemistry, of Physics and Astronomy, and of Materials Science and NanoEngineering
BS (1979), PhD (1983) University of Buenos Aires

Segatori, Laura, 2007. Associate Professor of Chemical and Biomolecular Engineering, of Bioengineering, and of Biochemistry and Cell Biology
BS (2000), MS (2000) University of Bologna, Italy; PhD (2005) University of Texas–Austin

Segner III, Edmund, 1996. Professor of the Practice in Civil Engineering Management
BS Rice University; MA University of Houston

Self, Bethany, 2014. Artist Teacher of Opera Studies


Senftle, Thomas, 2017. Assistant Professor of Chemical and Biomolecular Engineering

Sereno, Anne Bibiana, 2002. Adjunct Professor of Psychology

Shahsavari, Rouzbeh, 2011. Assistant Professor of Civil and Environmental Engineering and of Materials Science and NanoEngineering
BS (2002) Sharif University of Technology, Iran; MS (2005) McGill University, Canada; PhD (2010) Massachusetts Institute of Technology

Shamoo, Yousif, 1998. Vice Provost for Research, Professor of Biochemistry and Cell Biology

Shaw, Chad A., 2004. Adjunct Assistant Professor of Statistics

Sheafor, Stephen J., 2002. Adjunct Professor of Electrical and Computer Engineering
BS (1972), MEE (1972), Rice University; PhD (1974) University of Illinois; MBA (1979) Santa Clara University

Shehabuddin, Elora, 2001. Associate Professor of Humanities and Political Science

Shen, Yu, 2002. Adjunct Professor of Statistics

Sher, George, 1991. Herbert S. Autrey Professor of Philosophy, Professor of Philosophy
BA (1964) Brandeis University; PhD (1972) Columbia University

Shibatani, Masayoshi, 2002. Dee dee McMurtry Professor of Humanities, Professor of Linguistics
BA (1970), PhD (1973) University of California–Berkeley

Sinclair, James B., 1978. Lecturer of Electrical and Computer Engineering, Associate Dean of Engineering
BSEE (1973), MEE (1974), PhD (1979) Rice University

Shipp, Stephanie S., 2000. Adjunct Assistant Professor of Earth, Environmental and Planetary Sciences
BS (1988) University of Maine; PhD (1999) Rice University

Shouval, Harel, 2004. Adjunct Associate Professor of Computational and Applied Mathematics
BSc (1987) Tel Aviv University; MSc (1990) Weizmann Institute; PhD (1994) Brown University

Shrivastava, Anshumali, 2015. Assistant Professor of Computer Science

Shumway, Nicolas, 2010. Frances Moody Newman Professor of Humanities, Professor of Spanish, Portuguese and Latin American Studies

Si, Qimiao, 1994. Harry C. and Olga K. Wiess Professor of Physics and Astronomy
BS (1986) University of Science and Technology of China; PhD (1991) University of Chicago

Sickles, Robin, 1985. Reginald Henry Hargrove Chair in Economics and Professor of Statistics
BS (1972) Georgia Institute of Technology; PhD (1976) University of North Carolina

Sidbury, James, 2011. Andrew W. Mellon Distinguished Professor of Humanities, Professor of History
Siefert, Janet, 2002. Associate Research Professor in Statistics
BS (1975) University of Central Arkansas; PhD (1997) University of Houston

Siemann, Evan, 1998. Harry C. and Olga K. Wiess Professor of Ecology and Evolutionary Biology
AB (1989) Cornell University; PhD (1997) University of Minnesota

Siewert, Charles, 2010. Robert Alan and Kathryn Dunlevie Hayes Chair of Humanities, Professor of Philosophy
BA (1983) Reed College; PhD (1994) University of California– Berkeley

Silberg, Jonathan J., 2004. Associate Professor of Biochemistry and Cell Biology

Simar, Ray, Jr., 2009. Professor in the Practice of Computer Architecture and Electrical and Computer Engineering
BS (1981) Texas A&M University; MS (1983) Rice University

Simoes Correa, Adrienne, 2012. Assistant Professor of BioSciences

Simpson, Robert, 2002. AdjunctLecturer of Church Music
AB (1970) Brown University; SMM (1972) Union Theological Seminary

Simson, Julie, 2013. Professor of Voice

Sivaramakrishnan, K., 2012. Henry Gardner Symonds Professor of Accounting

Sizova, Natalia M., 2009. Assistant Professor of Economics

Skura, Meredith, 1978. Libby Shearn Moody Professor of English, Professor of English
BA (1965) Swarthmore College; PhD (1971) Yale University

Smith, Brinton Averil, 2005. Associate Professor of Cello

Smith, D. Brent, 2000. Associate Professor of Management, Associate Professor of Psychology, Senior Associate Dean of Executive Education
BA (1992) University of Tulsa; MA (1996), PhD (1999) University of Maryland–College Park

Smith, Ian, 2000. Associate Research Professor in Physics and Astronomy

Snow, Edward A., 1981. Mary Gibbs Jones Chair for the Humanities, Professor of English
BA (1964) Rice University; MA (1966) University of California–Riverside; PhD (1969) State University of New York– Buffalo

Socaciu, Gheorghe-Ciprian, 2009. Lecturer of French

Solomon, Scott, 2009. Lecturer and Lab Coordinator
BS (2000) University of Illinois– Urbana-Champaign; PhD (2007) University of Texas–Austin

Somerville, Ted, 2008. Lecturer of Classical and European Studies
BA (1999) University of Texas–Austin; PhD (2007) Harvard University

Sonenshein, Scott, 2007. Henry Gardner Symonds Professor of Management

Song, Jayoung, 2016. Lecturer of Korean
BA (2005) Kyung Hee University; MA (2010), PhD (2014) University of Texas–Austin

Song, Yongchong, 2009. Adjunct Assistant Professor of Chemistry
BS (1993) Nanjing University; PhD (2001) National University of Singapore/Institute of Molecular and Cell Biology


Sparagana, John, 1989. Grace Christian Vietti Chair in Visual Arts, Professor of Visual and Dramatic Arts, Department Chair of Visual and Dramatic Arts

Sperandio, Christopher, 2008. Associate Professor of Visual and Dramatic Arts

Spieler, Christof, 2000. Senior Lecturer of Architecture
BS (1997), MS (1999) Rice University

Stadler, Lauren, 2015. Assistant Professor of Civil and Environmental Engineering

Stallings, Tom, 2007. Professor in the Practice of Sport Management
BA (1991) University of Texas; MED (2008) University of Houston

Stallmann, Kurt, 2002. Associate Professor of Composition and Theory

Stanciulescu, Ilinca, 2009. Associate Professor of Civil and Environmental Engineering and of Mechanical Engineering

Stanley, Melinda A., 2010. Adjunct Professor of Psychology

Stasevicius, Maria Luján, 2016. Lecturer of Spanish
Stasney, C. Richard, 1999. Adjunct Professor of Performing Arts Medicine
BA (1968) Yale University; MD (1969) Baylor College of Medicine

Stein, Robert M., 1979. Lena Gohlmans Fox Professor of Political Science
BA (1972) Ohio Wesleyan University; MA (1974), PhD (1977) University of Wisconsin–Milwaukee

Steiner, Uwe, 2001. Professor of German Studies, Associate of Wiess College

Stringer, Tish

Stevens, Sara
BA (1978) Stanford University; PhD (1985) University of California–San Francisco

Stevenson, Randolph T., 1997. Professor of Political Science

Stewart, Charles R., 1969. Professor of Biochemistry and Cell Biology
BA (1962) University of Wisconsin–Madison; PhD (1967) Stanford University

Stoll, Richard J., 1979. Albert Thomas Chair in Political Science, Professor of Political Science
AB (1974) University of Rochester; PhD (1979) University of Michigan

Stotts, Angela L., 2007. Adjunct Professor of Psychology

Strait, Richard B., 2007. Adjunct Professor of Chemical and Biomolecular Engineering
BS (1970) Ohio State University; MBA (1978) University of Tulsa

Strassmann, Diana, 2004. Carolyn & Fred McManis Distinguished Professor in the Practice of Humanities

Strauss, Matthew, 2015. Associate Professor of Percussion

Stringer, Tish, 2012. Lecturer of Film, Film Program Manager
BA (1997) University of Minnesota; PhD (2006) Rice University

Stroup, John M., 1988. Harry and Hazel Chavanne Professor of Religion, Professor of Religion
AB (1968) Washington University; MDiv (1972) Concordia Seminary; MPHil (1975), PhD (1980) Yale University

Studer, Christoph, 2013. Adjunct Assistant Professor of Electrical and Computer Engineering
MSc (2005), DrSc (2009) ETZ Zurich

St-Cyr, Amik, 2012. Adjunct Associate Professor of Computational and Applied Mathematics

St-Pierre, François, 2016. Assistant Professor of Electrical and Computer Engineering

Subramanian, Devika, 1995. Professor of Computer Science and of Electrical and Computer Engineering

Suh, Junghae, (2007). Associate Professor of Bioengineering

Summers, Carolyn, 1999. Adjunct Professor of Physics and Astronomy
BA (1970) Vanderbilt University; MEd (1977), EdD (1979) University of Houston

Swint, John Michael, 1977. Adjunct Professor of Economics
BA (1968) California State University–Humboldt; MA, PhD (1972) Rice University

Tabor, Jeffrey J., 2010. Associate Professor of Bioengineering
BA (2001), PhD (2006) University of Texas–Austin

Taghikhani, Vahid, 2015. Adjunct Professor of Chemical and Biomolecular Engineering

Takizawa, Kenji, 2011. Adjunct Associate Professor in Mechanical Engineering

Tandon, Nitin, 2012. Adjunct Professor of Electrical and Computer Engineering
MBBS (1992) Armed Forces Medical College

Tang, Ming, 2014. Assistant Professor of Materials Science and NanoEngineering

Tang, Xun, 2014. Professor of Economics

Tao, Yizhi Jane, 2002. Associate Professor of Biochemistry and Cell Biology
BS (1992) Peking University; PhD (1999) Shanghai Jiao Tong University

Tapia, Richard A., 1970. University Professor, Maxfield-Oshman Professor of Computational and Applied Mathematics
BA (1961), MA (1966), PhD (1967) University of California–Los Angeles


Tezduyar, Tayfun E., 1998. James F. Barbour Professor of Mechanical Engineering
MS (1978), PhD (1982) California Institute of Technology
Thall, Peter, 2017. Adjunct Professor of Statistics
BS (1971) Michigan State University; MS (1973) Florida State University; PhD (1975) Florida State University

Thomann, Isabell, 2012. Assistant Professor of Electrical and Computer Engineering and of Materials Science and NanoEngineering
MS (2001) Swiss Federal Institute of Technology; PhD (2009) University of Colorado at Boulder

Thomas, Edwin L., 2011. Professor of Materials Science and NanoEngineering and of Chemical and Biomolecular Engineering
BS (1969) University of Massachusetts; PhD (1974) Cornell University

Thompson, Ewa M., 1970. Research Professor of Slavic Studies
BA (1963) University of Warsaw; MFA (1963) Sopot Conservatory of Music, Poland; PhD (1967) Vanderbilt University

Tittel, Frank K., 1967. J. S. Abercrombie Professor of Electrical and Computer Engineering
BA (1955), MA, PhD (1959) Oxford University

Tkaczyk, Tomasz, 2007. Associate Professor of Bioengineering

Tobin, David H., 2007. Senior Lecturer of Communications

Tofolatto, Frank R., 1996. Professor of Physics and Astronomy, Magister of Martel College
BS (1981) La Trobe University; PhD (1987) Rice University

Tolias, Andreas S., 2006. Adjunct Assistant Professor of Computational and Applied Mathematics and of Electrical and Computer Engineering

Tomson, Mason B., 1977. Professor of Civil and Environmental Engineering
BS (1967) Southwestern State College; PhD (1972) Oklahoma State University

Torres, Mark, 2017. Assistant Professor of Earth, Environmental and Planetary Sciences
BA (2010) Pitzer College; PhD (2015) University of Southern California

Tour, James M., 1999. T. T. and W. F. Chao Professor of Chemistry, Computer Science, and of Materials Science and NanoEngineering
BS (1981) Syracuse University; PhD (1986) Purdue University

Tran Lu, Lesa, 2012. Wiess Instructor of Chemistry
BS (2007), MA (2009), PhD (2012) Rice University

Tsai, Ah-Lim, 2007. Adjunct Professor of Biochemistry and Cell Biology
BS (1974) National Taiwan University; PhD (1983) Rice University

Turi, Luziris Pineda, 2010. Lecturer of Spanish
BA (2003), MA (2005), PhD (2012) University of Houston

Turley, Ruth N. Lopez, 2010. Professor of Sociology

Umar, Tarik, 2017. Assistant Professor of Finance
BA (2010) Harvard University; MBA, PhD (2017) University of Chicago

Uribe, Rosa, 2017. Assistant Professor of BioSciences
BS (2006) San Francisco State University; PhD (2012) University of Texas–Austin

Vajtai, Robert, 2008. Associate Research Professor in Materials Science and NanoEngineering
MSc (1986) Jate University; PhD (1997) Szeged University, Hungary

Van der Werff, Ivo-Jan, 2007. Professor of Viola
Associate Hons (1980) Royal College of Music

VanHorn, David, 2007. Associate Professor in the Practice of Operations Management
BS (1989); MEng (1990) Iowa State University; MBA (2000) Rice University

Vannucci, Marina, 2006. Noah Harding Professor of Statistics, Professor of Statistics, Department Chair of Statistics
BS (1982), PhD (1996) University of Florence, Italy

Vardi, Moshe, 1993. Karen Ostrum George Distinguished Service Professor of Computational Engineering, Professor of Computer Science
BS (1975) Bar–Ilan University; MS (1980) Feinberg Graduate School of the Weizmann Institute of Science; PhD (1982) Hebrew University

Vargas Arreola, Francisco M., 2013. Assistant Professor of Chemical and Biomolecular Engineering
BS (1999), MS (2002) Tecnologico de Monterrey, Mexico; PhD (2009) Rice University

Varilly-Alvarado, Anthony, 2009. Associate Professor of Mathematics

Varman, Peter J., 1983. Professor of Electrical and Computer Engineering
BTech (1978) Indian Institute of Technology, Kanpur; MSEE (1980), PhD (1983) University of Texas–Austin

Vassallo Fernando, Jesus, 2013. Assistant Professor of Architecture

Vasudevan, Venu, 2009. Adjunct Assistant Professor of Electrical and Computer Engineering
BS (1984) Indian Institute of Technology, New Delhi; PhD (1990) Ohio State University

Veeraraghavan, Ashok, 2010. Associate Professor of Electrical and Computer Engineering

Veiseh, Omid, 2017. Assistant Professor of Bioengineering

Verduzco, Rafael, 2009. Associate Professor of Chemical and Biomolecular Engineering, and of Materials Science and NanoEngineering

Verm, Karen Roethlisberger, 2016. Artist Teacher of Opera Studies
VerMeulen, William, 1990. Professor of French Horn

Videa, Marcelo Vargas, 2011. Adjunct Associate Professor of Chemistry
BSc (1993) Instituto Tecnologico y de Estudios Superiores de Monterrey; PhD (1999) Arizona State University

Vieux, Baxter, 2003. Adjunct Professor of Civil and Environmental Engineering

Volz, Tracy, 1999. Professor of the Practice in Professional Communication, Director of the Program for Writing and Communication

Wagner, Daniel S., 2003. Associate Professor of Biochemistry and Cell Biology
BA (1990) University of Texas; PhD (1997) University of Texas Health Science Center

Wallach, Dan Seth, 1998. Professor of Computer Science and of Electrical and Computer Engineering

Wallach, Steve, 2010. Adjunct Professor of Computer Science
BSEE (1966) Polytechnic University; MSEE (1967) University of Pennsylvania; MBA (1973) Boston University

Wamble, Mark S., 1991. Professor in the Practice of Architecture

Wang, Sean, 2016. Visiting Assistant Professor of Finance

Wang, Stephen, 2015. Senior Instructor of Mathematics

Ward, Kerry R., 2001. Associate Professor of History, Associate of Lovett College

Warren, Joe D., 1986. Professor of Computer Science

Webster, Michael, 1997. Professor of Music
BM (1966), MM (1967), DMA (1975) Eastman School of Music

Weckstrom Kantor, Virginia, 2012. Artist Teacher of Piano Chamber Music and Accompanying
BA (1969) Western College of Women; MMus (1971) Yale University School of Music

Weininger, Melissa, 2015. Anna Smith Fine Lecturer of Jewish Studies
BA (1996) Harvard University; PhD (2010) University of Chicago

Weisman, R. Bruce, 1979. Professor of Chemistry and of Materials Science and NanoEngineering
BA (1971) Johns Hopkins University; PhD (1977) University of Chicago

Weissenberger, Klaus H. M., 1971. Professor of German Studies
MA (1965) University of Hamburg, Germany; PhD (1967) University of Southern California

Welch, Chapman, 2009. Lecturer of Music

Westbrook, Robert A., 1989. William Alexander Kirkland Professor of Marketing
AB (1969), MBA (1971), PhD (1975) University of Michigan


White, Frank S., 1982. Lecturer of Architecture
BS (1977) Rochester Institute of Technology


Whitford, Sheila, 2013. Lecturer of Education
BA (1970) Texas Woman's University; MBA (1983) University of Houston, Clear Lake

Whiting, Sarah, 2010. Dean of the School of Architecture, William Ward Watkin Professor of Architecture
BA (1986) Yale University; MArch (1990) Princeton University; PhD (2001) Massachusetts Institute of Technology

Whitmore, Mihriban, 1999. Adjunct Assistant Professor of Psychology

Whitson, Peggy, 1997. Adjunct Associate Professor of Biochemistry and Cell Biology
BS (1981) Iowa Wesleyan College; PhD (1986) Rice University

Wickham, Hadley, 2017. Adjunct Professor of Statistics

Wiener, Martin J., 1967. Mary Gibbs Jones Professor of History, Professor of History
BA (1962) Brandeis University; MA (1963), PhD (1967) Harvard University

Wildenthal, Lora, 2003. Associate Dean of Humanities, Professor of History, Associate of Will Rice College, Department Chair of History

Wilkinson, Harry E., 1990. Professor in Professional Sciences Masters Program
BA (1952), MBA (1957) Washington University, St. Louis; DBA (1960) Harvard Business School

Wilson, Jennifer S., 2012. Senior Lecturer, Program in Writing and Communication, Director of the Center for Written, Oral, and Visual Communication
AB (1971) Indiana University; AM (1972) Harvard University; PhD (1976) Harvard University

Wong, Michael S., 2001. Professor of Chemical and Biomolecular Engineering, of Chemistry, and of Materials Science and Nanoscience and Nanotechnology, of Civil and Environmental Engineering, Department Chair of Chemical and Biomolecular Engineering BS (1994) California Institute of Technology; MS (1997), PhD (2000) Massachusetts Institute of Technology


Wool, Zoë, 2015. Assistant Professor of Anthropology BA (2004) York University; MA (2005), PhD (2011) University of Toronto

Wooten, Kevin C., 1994. Adjunct Professor of Psychology BA (1976), MA (1978) University of Houston–Clear Lake; PhD (1991) Tulane University


Xiao, Han, 2017. Norman Hackerman-Welch Young Investigator and Assistant Professor of Chemistry BS (2010) University of Science and Technology of China; PhD (2015) The Scripps Research Institute


Yang, Kaiyuan, 2017. Assistant Professor of Electrical and Computer Engineering BS (2012) Tsinghua University, China; MS (2014), PhD (2017) University of Michigan–Ann Arbor


Wilson, Patrick "Burke", 2015. Lecturer of Kinesiology BA (2003) Texas A&M University; DPT (2012) UT Southwestern Medical Center

Wilson, Rick K., 1983. Herbert S. Autrey Professor of Political Science, Professor of Statistics and of Psychology BA (1975), MA (1977) Creighton University; PhD (1982) Indiana University


Winningham, Geoffrey L., 1969. Lynette S. Autrey Professor of Humanities, Professor of Visual Arts, Honorary Associate of Wiess College BA (1965) Rice University; MS (1968) Illinois Institute of Technology


Wolpin, Kenneth, 2014. Lay Family Chair in Economics and Distinguished Research Professor, Department Chair of Economics BS (1967) City College of New York; PhD (1974) Graduate School of the City University of New York

Wolynes, Peter C., 2011. D.R. Bullard-Welch Foundation Professor of Science, Professor of Chemistry, of Biochemistry and Cell Biology, of Physics and Astronomy and of Materials Science and NanoEngineering


Yang, Kaiyuan, 2017. Assistant Professor of Electrical and Computer Engineering BS (2012) Tsinghua University, China; MS (2014), PhD (2017) University of Michigan–Ann Arbor


2017-2018 General Announcements
Yeh, Meng, 2001. Teaching Professor of Chinese
BA (1986) Tamkang University; MA (1988), PhD (1993) University of Texas–Austin

Yekovich, Robert A., 2003. Dean of the Shepherd School of Music, Elma Schneider Professor of Music

Yepes, Pablo P., 1994. Associate Research Professor of Physics and Astronomy
BS (1982), MS (1983), PhD (1988) University of Santiago de Compostela

Yeung, Laurence, 2015. Assistant Professor of Earth, Environmental and Planetary Sciences

Yost, Julianne M., 2011. Wiess Instructor of Chemistry

Yu, Lam, 2012. Wiess Instructor of Physics and Astronomy

Yuan, Ying, 2010. Adjunct Associate Professor of Statistics
BS (1995) Huazhong University of Science and Technology, China; MA, MS (2000) Brandeis University; PhD (2005) University of Michigan

Yunis, Harvey E., 1987. Andrew W. Mellon Chair in Humanities, Professor of Classics


Zavyalova, Anastasiya, 2012. Assistant Professor of Strategic Management
BS (2006) Methodist University; PhD (2012) University of Maryland, College Park

BS (1955), MS (1957) University of Colorado; MBA (1960), PhD (1962) University of Michigan; Dr. Econ. (Hon.) (1990) Turku School of Economics and Business Administration, Finland; DLitt (Hon.) (2010) University of Waterloo, Canada; Dr. Econ. Mgmt Sci (Hon.) (2011) Universidad de Alcalá, Spain

BS (1984) University of Victoria; PhD (1989) University of British Columbia

Zhang, David, 2013. Assistant Professor of Bioengineering
BS (2005), PhD (2010) California Institute of Technology

Zhang, Yan Anthea, 2001. Fayez Sarofim Vanguard Professor of Management
BA (1992), MA (1995) Nanjing University; MA (1997) City University of Hong Kong; PhD (2001) University of Southern California

Zhang, Yin, 1996. Professor of Computational and Applied Mathematics

Zhong, Lin, 2005. Professor of Electrical and Computer Engineering

Zhong, Weimei, 2008. Assistant Professor of Biochemistry and Cell Biology
BS (1997) University of Science and Technology of China; MS (2003), PhD (2002) University of Georgia

Zhu, Jian-Xin, 2010. Adjunct Associate Professor of Physics and Astronomy
BS (1990), MS (1993) Nanjing University; PhD (1997) University of Hong Kong

Zodrow, George, 1979. Professor of Economics
BA, MME (1973) Rice University; MA (1977), PhD (1980) Princeton University

Zubarev, Eugene, 2005. Associate Professor of Chemistry and of Materials Science and NanoEngineering
MS (1993) Moscow State University; PhD (1996) Russian Academy of Sciences

Zygourakis, Kyriacos, 1980. A.J. Hartsook Professor of Chemical and Biomolecular Engineering, Professor of Bioengineering
Diploma (1975) National Technical University of Athens; PhD (1981) University of Minnesota
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**Akers, William Walter**, 1947–93. Professor Emeritus of Chemical and Biomolecular Engineering  
BS (1943) Texas Technological College; MS (1944) University of Texas at Austin; PhD (1950) University of Michigan

BA (1953) Willamette University; MA (1954) Stanford University; Certificat d'études politiques (1955) University of Bordeaux; PhD (1964) University of California–Berkeley

BSCE (1951), MS (1954) University of Arkansas; PhD (1964) University of California–Berkeley

BA (1963) University of Michigan; MA (1965) Stanford University; PhD (1970) University of Michigan

**Armenia, Constantine D.**, 1969–2006. Professor Emeritus of Chemical and Biomolecular Engineering  
BS (1961) Northeastern University; MS (1967) Case Institute of Technology; PhD (1969) Case Western Reserve University

**Bale, Allen M.**, 1947–78. Athletic Director Emeritus  
BS (1930) Rice Institute; MA (1939) Columbia University

PhD (1953) University of Zurich, Switzerland

**Barker, J. R.**, 1949–86. Professor Emeritus of Health and Physical Education  
BS (1949) Rice Institute; MEd (1954) University of Texas–Austin


BS (1968) University of California at Berkeley; MS (1971), PhD (1972) Cornell University

**Black, Earl**, 1993-2012. Herbert S. Autrey Professor Emeritus of Political Science  
BA (1964) University of Texas–Austin; PhD (1968) Harvard University

BS (1961) Louisiana Polytechnic Institute; MA (1963), PhD (1965) Rice University

BA (1959) Kansas University; MFA (1965) Columbia University

BA (1967), MA, PhD (1970) Rice University

**Bryant, John B.**, 1981-2016. Henry S. Fox, Sr. Professor Emeritus of Economics  

BS (1966) Memphis State University; MA (1970), PhD (1972) Tulane University

Research Professor BA (1957), BSEE (1958), Rice Institute; MS (1960) Rice University; PhD (1965) Stanford University

**Burt, George**, 1984–97. Professor Emeritus of Theory and Composition  

AB (1957) Princeton University; MA (1961), PhD (1964) Yale University

**Cason, Carolyn**, 1956–74. Lecturer Emerita of Dietetics  
BS (1934) University of Texas at Austin; MA (1939) Columbia University

BA (1967) Purdue University; MA (1968), PhD (1971) University of Illinois

**Citron, Marcia J.**, 1976-2015. Martha and Henry Malcolm Lovett Distinguished Service Professor Emerita and Professor Emerita of Musicology and Music History  
BA (1966) Brooklyn College; MA (1968), PhD (1971) University of North Carolina

**Clark, Howard Charles**, 1966–88. Professor Emeritus of Geology and Geophysics  
BS (1959) University of Oklahoma; MA (1965), PhD (1967) Stanford University

**Class, Calvin M.**, 1952–85. Professor Emeritus of Physics  
AB (1943), PhD (1951) Johns Hopkins University

BS (1964) University of Southwestern Louisiana; PhD (1967) Rice University

**Colvin, Vicki**, 1996-2015. Professor Emerita of Chemistry  
BS (1988) Stanford University; PhD (1994) University of California–Berkeley

BA (1961) University of Colorado; PhD (1965) Cornell University

**Cox, Edward L.**, 1989-2016. Associate Professor Emeritus of History  
BA (1970) University of the West Indies; MA (1973), PhD (1977) Johns Hopkins University


Ba (1954) Rice Institute; PhD (1957) University of California—Berkeley

Daichman, Graciela S., 1973–99. Lecturer Emerita of Spanish and Portuguese


BA (1961) University of Texas at Austin; MA (1966), PhD (1969) Princeton University

Davis, Philip W., 1969–2003. Agnes Cullen Arnold Professor Emeritus of Linguistics

BA (1961) University of Texas at Austin; PhD (1965) Cornell University

Davis Jr, Sam H., 1957–2000. Professor Emeritus of Chemical Biomolecular Engineering and Computational and Applied Mathematics

BA (1952), BS (1953) Rice Institute; ScD (1957) Massachusetts Institute of Technology


BS (1962), MS (1964) University of Miami; PhD (1966) University of Utah


BS (1952) California Institute of Technology; PhD (1956) Duke University

Dharan, Bala G., 1952–2008. J. Howard Creekmore Professor Emeritus of Accounting


Drew, Katherine Fischer, 1950–96. Lynette S. Autrey Professor Emerita of History

BA (1944), MA (1945) Rice Institute; PhD (1950) Cornell University


BA (1961), MA (1968), PhD (1970) Rice University


BSCE (1968) Engineering University, Pakistan; MS (1975) Asian Institute of Technology, Thailand; PhD (1982) University of Michigan; MBA (1999) University of Houston

Dyson, Derek C., 1966–2000. Professor Emeritus of Chemical and Biomolecular Engineering

BA (1955) University of Cambridge; PhD (1966) University of London


BA (1962), MA (1964), PhD (1969) University of California—Berkeley

Etnyre, Bruce, 1984. Professor Emeritus of Kinesiology

BS (1973) Valparaiso University; MS (1977) Purdue University; PhD (1984) University of Texas–Austin

Farwell, Joyce, 1994–2005. Professor Emerita of Voice

BME (1956), MME (1958) University of Oklahoma; DMA (1976) College Conservatory of Music, University of Cincinnati


BS (1962) Southwestern University; MBS (1965) University of Colorado; PhD (1969) Rice University


BA (1953) Hanover College; MS (1958), PhD (1961) Purdue University


Fultz, Lucille P., 1990–2007. Associate Professor Emeritus of English

AB (1959) Spellman College; MA (1968) University of Iowa; PhD (1990) Emory University


BS (1948) Trinity College, Dublin; MSc (1949) Carnegie Mellon University; PhD (1953) Princeton University


BA (1962), MA (1963) University of Florida; PhD (1968) University of Illinois


BA (1963) Brooklyn College; MS (1964), PhD (1966) Syracuse University


BS (1959) Birmingham University, England; PhD (1963) Cambridge University


BE (1962) Yale University; MS (1963) University of California—Berkeley; PhD (1967) Massachusetts Institute of Technology


2001 Language Consultant for School of Continuing Studies

BA (1952) Universidad de la Republica; MA (1987) Rice University


BS (1967) Michigan State University; PhD (1973) Yale University


BS, MA (1963) Carnegie Institute of Technology; PhD (1966) Stanford University
BA (1956) Rice Institute; MA (1959) Indiana University

Haymes, Robert C., 1968–98. Professor Emeritus of Space Physics and Astronomy
BA (1952), MS (1953), PhD (1959) New York University

Hempel, John, 1964-2013. Milton B. Porter Professor of Mathematics
BS (1957) University of Utah; MS (1959), PhD (1962) University of Wisconsin at Madison

Heymann, Dieter, 1966–98. Professor Emeritus of Geology and Geophysics, Adjunct Professor of Chemistry
MS (1954), PhD (1957) University of Amsterdam, The Netherlands

Hirasaki, George J., 1989–2013. A. J. Hartsook Professor Emeritus of Chemical and Biomolecular Engineering
BS (1963) Lamar University; PhD (1967) Rice University

BS (1930) Harvard University; MA (1934) Rice Institute

SB (1945), SM (1947) Massachusetts Institute of Technology; PhD (1956) Pennsylvania State University

BS (1973), MA (1975) Brigham Young University; PhD (1984) University of California–Irvine

Huddle, Donald L., 1964–92. Professor Emeritus of Economics
BS (1959), MA (1960) University of California–Los Angeles; PhD (1964) Vanderbilt University

BA (1961) Wesleyan University; MA (1964), PhD (1966) Yale University

BA (1948) University of California–Los Angeles; MA (1950), PhD (1952) Columbia University

Jitcoff, Andrew N., 1950–72. Professor Emeritus of Russian
Bachelor (1928), Master (1931) Institute of Technology, Czechoslovakia


BA (1957) Millsaps College; MA (1958), PhD (1960) Eastman School of Music, University of Rochester

BS (1960), MS (1962) University of Cincinnati; MS (1965), PhD (1968) University of Michigan

BS (1966) City College of New York; PhD (1971) University of Kansas; PhD (1978) Johns Hopkins University

Kauffmann, Robert Lane, 1976–2015. Professor Emeritus of Spanish

Kaul, Kathleen, 1998–2013. Lynette S. Autrey Professor Emerita of Voice
BS (1966) Indiana University; MM (1970) University of Texas–Austin

Keeton, Darra, 1994-2012. Professor Emerita of Visual Arts
BFA (1974) Miami University, Ohio; MFA (1979) Queens College, New York


Kiperman, Anita, 1976–98. Lecturer Emerita of Spanish
BA (1957) Universidad Nacional de Buenos Aires; MA (1971) University of Houston

BS (1963), Providence College; PhD (1968) University of Wisconsin

Kulstad, Mark, 1975–2015. Professor Emeritus of Philosophy
BA (1969) Macalester College; PhD (1975) University of Michigan

BA (1951) Yale University; PhD (1958) University of California–Berkeley

BS (1960), MS (1962), PhD (1964) University of Oklahoma

BS (1957), MS (1959), PhD (1961) Carnegie Mellon University

Leal, Maria Teresa, 1965–96. Professor Emerita of Spanish and Portuguese
BA (1946) Pontificia Universidade Catolica, Brazil; PhD (1963) Universidade Federal do Rio de Janeiro, Brazil

Lecuyer, Maurice Antoine, 1962–79. Professor Emeritus of French
Baccalaureat es lettres (1937), Licence es lettres (1943), Diplome d’etudes superieures (1944) Universite de Paris, France; PhD (1954) Yale University

BS (1962) North Texas State University; ME (1967) Sam Houston State University; EdD (1974) Louisiana State University

Leeds Jr, J. Venn, 1964–89. Professor Emeritus of Electrical and Computer Engineering
BA (1955), BSEE (1956) Rice Institute; MSEE (1960), PhD (1963) University of Pittsburgh; JD (1972) University of Houston

Long, Elizabeth, 1978-2014. Professor Emerita of Sociology, Department Chair of Sociology, Associate of Baker College
BA (1966) Stanford University; MA (1974), PhD (1979) Brandeis University

Lützte, Andreas, 1999-2013. Professor Emeritus of Earth, Environmental and Planetary Sciences, Professor Emeritus of Chemistry, Associate of Will Rice College

Marcus, George E., 1975–2006. Professor Emeritus of Anthropology
BA (1968) Yale University; PhD (1976) Harvard University


Matusow, Allen J., 1963–2015. William Gaines Twymon Professor Emeritus of History, Associate Director Emeritus for Academic Programs of the James A. Baker III Institute for Public Policy; Research Professor in History
BA (1958) Ursinus College; MA (1959), PhD (1963) Harvard University

BA (1963) University of Cincinnati; MA (1965) University of Washington; MA (1968) University of Cincinnati

BA (1953) University of Michigan; MArch (1963) Harvard University

BS (1957) Sheffield University; PhD (1962) Leeds University

McLendon, George, 2010-2016. Professor Emeritus of Chemistry
BS (1972) University of Texas–El Paso; PhD (1976) Texas A&M University

BS (1957), MA (1959) McGill University; PhD (1963) Johns Hopkins University


BA, BS (1961) Rice University; PhD (1969) University of Minnesota

BA (1957), MA (1959) North Texas State University; BD (1961), PhD (1965) Yale University

BA (1956) Adelphi University; Certificate (1958) Universita de Perugia; Certificate (1958) Yale University School of Languages; Certificate (1960) Goethe Institute, Blaubeuren, Germany

BA (1966), MBA (1968), PhD (1971) University of Texas–Austin

BA (1942) George Pepperdine University; BD (1946), PhD (1951) Yale University

BS (1957), MS (1958) University of Michigan; PhD (1962) University of California–Berkeley

O'Dell, Charles Robert, 1982–2000. Andrew Hays Buchanan Professor Emeritus of Astrophysics
BSEd (1959) Illinois State University; PhD (1962) University of Wisconsin–Madison

BS (1957), PhD (1962) University of Sheffield

BA (1964) Occidental College; PhD (1968) Brandeis University

Parsons, Spencer W., 1969-2015. Associate Professor Emeritus of Architecture
BA (1953) University of Michigan; MArch (1963) Harvard University

Patten, Robert L., 1969–2012. Lynette S. Autry Professor Emeritus in Humanities, Professor Emeritus of English
BA (1960) Swarthmore College; MA (1962), PhD (1965) Princeton University

BSEE (1958), MSEE (1959) University of Arkansas; PhD (1962) Purdue University

Philpott, Charles William, 1964–96. Professor Emeritus of Ecology and Evolutionary Biology
BA (1957), MS (1958) Texas Technological College; PhD (1962) Tulane University

BA (1951) Harvard University; MA (1952) Columbia University; PhD (1958) University of Wisconsin–Madison

BS (1956) University of Notre Dame; MS (1961), PhD (1966) University of Chicago

BFA (1965) Atlanta School of Art; MFA (1968) Tulane University

BA (1976) University of Illinois; PhD (1982) University of Michigan

Rachford Jr, Henry H., 1964–82. Professor Emeritus of Mathematical Sciences
BS (1945), MA (1947) Rice Institute; ScD (1950) Massachusetts Institute of Technology

Rau, Carl, 1983. Professor Emeritus of Physics and Astronomy
BS (1963), MS (1967), PhD (1970) Technical University, Munich

BA (1954) New York University; MA (1964) University of Houston; PhD (1970) University of Texas–Austin

BA (1966), MA (1968), PhD (1972) University of California–Davis

BA (1954) Augustana College; PhD (1957) University of Southern California

BA (1962) Wabash College; PhD (1966) Stanford University

BA (1958) Rosary College; MMus (1960), PhD (1966) University of Illinois

Seed, Patricia, 1982–2006. Professor Emerita of History
BA (1971) Fordham University; MA (1975) University of Texas–Austin; PhD (1980) University of Wisconsin–Madison

Sellers, James, 1971–1993. Former Professor of Religion
BEE (1947) Georgia Institute of Technology; MS (1952) Florida State University; PhD (1958) Vanderbilt University

BFA (1969) San Francisco Art Institute; MA (1972) Hunter College

BA (1958) University of British Columbia; PhD (1964) Yale University

Sorensen, Danny C., 1989-2016. Noah Harding Professor Emeritus of Computational and Applied Mathematics and Research Professor
BS (1972) University of California–Davis; MA (1975), PhD (1977) University of California–San Diego

Spence, Dale W., 1963. Professor Emeritus of Kinesiology
BS (1956) Rice Institute; MS (1959) North Texas State University; EdD (1966) Louisiana State University

Speziale, Marie, 2002–2013. Professor Emerita of Trumpet
BM (1964) College Conservatory of Music, University of Cincinnati

Spuler, Richard, 1992-2013. Senior Lecturer Emeritus of German

Stebbins, Ronald F., 1968–95. Professor Emeritus of Space Physics and Astronomy
BSc (1952), PhD (1956) University College, London

BA (1976) Cambridge University; PhD (1979) Imperial College

Strassmann, Joan, 1980–2011. Professor Emerita of BioSciences
BS (1974) University of Michigan; Ph.D. (1979) University of Texas–Austin

Stormer Jr, John C., 1983–95. Croneis Professor Emeritus of Geology
AB (1963) Dartmouth College; PhD (1971) University of California–Berkeley

BA (1949) Hobart College; MA (1952), PhD (1955) University of Missouri

BA (1971) University of California–Berkeley; PhD (1975) Harvard University

BScHons (1951), MSc (1953) Delhi University; PhD (1959) Columbia University; PhD (Honoris Causa) (1981) Oslo University

BA (1966) Harvard University; Diploma (1969), PhD (1973) Oxford University

BA (1960) Westminster College; MA (1964) University of Nebraska; PhD (1970) University of Minnesota

Thompson, Ewa M., 1970–2012. Professor Emerita of Slavic Studies
BA (1963) University of Warsaw; MFA (1963) Sopot Conservatory of Music, Poland; PhD (1967) Vanderbilt University

BEng (1960) Vanderbilt University; MA (1963), PhD (1965) Princeton University

BA (1943), MFA (1949) Princeton University

Trepel, Shirley, 1975–94. Professor Emerita of Violoncello
BMus (1945) Curtis Institute of Music

BA (1957) Simpson College; MA (1962), PhD (1964) Stanford University

BA (1968), MBA (1970), PhD (1973) University of Texas–Austin

Profesorado (1956) La Plata National University, Argentina; PhD (1968) Stanford University

AB (1952) Dartmouth College; MS (1953), PhD (1959) Northwestern University

BS (1948) Robert College, Turkey; MS (1950), PhD (1953) University of Illinois

BA (1948) University of the Pacific; MA (1950) Claremont Graduate School; PhD (1957) University of California– Berkeley

Wadsworth, Philip A., 1964–73. Professor Emeritus of French
AB (1935), PhD (1939) Yale University

Wall, Frederick T., 1972–79. Professor Emeritus of Chemistry
BC (1933), PhD (1937) University of Minnesota

BA (1963) Bryn Mawr; MA (1965), PhD (1967) Stanford University

Wang, Chao-Cheng, 1968–2000. Noah Harding Professor Emeritus of Computational and Applied Mathematics, Associate Professor of Mechanical Engineering and Materials Science
BS (1959) National Taiwan University; PhD (1965) Johns Hopkins University

BS (1955) New Mexico State University; MS (1958), PhD (1960) Cornell University; MPH (1978) University of Texas School of Public Health

BA (1962) Rice University; MS (1964), PhD (1965) New York University

BA (1951) Yale University; MA (1956) Columbia University; PhD (1975) New York University

BS (1966) University of Pennsylvania; PhD (1968) University of Texas– Austin

Wilson, Joseph B., 1954–98. Professor Emeritus of German Studies
BA (1950), MA (1953) Rice Institute; PhD (1960) Stanford University

Winkler, Michael, 1967–2000. Professor Emeritus of German Studies
BA (1961) St. Benedict’s College; MA (1963), PhD (1966) University of Colorado

BEngPhys (1962) Cornell University; PhD (1966) California Institute of Technology

BA (1968) East Texas State University; MA (1970) University of Texas– Arlington

IMPORTANT NOTICES

• Accreditation (p. 1575)
• Complaints Process (p. 1576)
• Contact Information (p. 1577)
• Disclaimer (p. 1578)
• Equal Opportunity Notice (p. 1580)
• Ethical Concerns (p. 1579)
• Family Educational Rights and Privacy Act (FERPA) (p. 1581)
• Message from the President (p. 1583)
ACCREDITATION

Rice University is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award baccalaureate, masters, and doctorate degrees.

Please contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097 (http://www.sacscoc.org) or call 404-679-4500 for questions about the accreditation of Rice University or allegations of significant non-compliance with a requirement or standard. All other inquiries should be addressed directly to the appropriate office at Rice University.
COMPLAINTS PROCESS

Rice University’s Student Complaint Process (compliant with DOE “Program Integrity” Regulations)

The Texas Higher Education Coordinating Board (THECB) and the Texas Administrative Code (19 TAC § 1.110-1.120) require Rice University – and all other Texas universities – to provide a student complaint procedure that complies with the U.S. Department of Education’s “Program Integrity” regulations as part of the university’s eligibility for Title IV federal funds.

The requisite complaint process must inform current, former or prospective students who have exhausted Rice’s grievance, complaint or appeal processes how to initiate a complaint outside of Rice with THECB. The THECB’s procedures for such complaints are found here (http://www.thecb.state.tx.us/index.cfm?objectid=AC6FA0BC-F5DB-16DE-6B667C083DFB5B9B). Students wishing to use this outside process should ensure they have first addressed their complaint to the appropriate Rice University complaint process. If Rice is unable to resolve the matter after the student has exhausted internal complaint and appeal processes, the student may then file a complaint with THECB according to the following:

1. The THECB’s complaint process can be found here (http://www.thecb.state.tx.us/index.cfm?objectid=AC6FA0BC-F5DB-16DE-6B667C083DFB5B9B). Students start THECB complaint process by sending the first three forms linked below either by electronic mail to StudentComplaints@thecb.state.tx.us or by regular mail to the Texas Higher Education Coordinating Board, Office of General Counsel, P.O. Box 12788, Austin, TX 78711-2788 (fax forms are not accepted). The fourth form must also be included for complaints regarding a student with a disability.
   a. THECB Student Complaint Form (http://www.thecb.state.tx.us/download.cfm?downloadfile=053424CA-C5EC-3B1B-7F1B237DD49A4FF&typename=dmFile&fieldname=filename)
   b. FERPA Consent and Release Form (http://www.thecb.state.tx.us/download.cfm?downloadfile=053630E5-F098-7B70-BDFD98FAE5A06072&typename=dmFile&fieldname=filename)
   c. THECB Consent and Agreement Form (http://www.thecb.state.tx.us/download.cfm?downloadfile=053630E5-F098-7B70-BDFD98FAE5A06072&typename=dmFile&fieldname=filename)

2. Complainants should understand that the THECB does not handle, investigate, or attempt to resolve complaints concerning actions that occurred more than two years prior to the filing of a student complaint form with the THECB (unless the delay in filing the THECB complaint was caused by the complainant exhausting Rice's grievance procedures). The THECB also does not handle the various types of complaints listed in 19 TAC § 1.113.

3. Former students must file a complaint with the THECB no later than one year after the student’s last date of attendance at Rice, or within 6 months of discovering the grounds for complaint, unless the delay in filing the THECB complaint was caused by the complainant exhausting Rice’s grievance procedures.

4. The THECB will refer complaints alleging that Rice has violated state consumer protection laws to the Consumer Protection Division of the Office of the Attorney General of Texas for investigation and resolution. If THECB determines that a complaint is appropriate for investigation and resolution by Rice's accrediting agency (SACSCOC – the Southern Associations of Colleges and Schools Commission on Colleges) or an educational association such as ICUT (Independent Colleges & Universities of Texas), the THECB may refer the complaint to the appropriate entity and may terminate the referral of the complaint to those entities at any time and proceed to investigate and adjudicate the complaint.

5. If a person wishes to file a complaint against Rice through the university’s accrediting agency, SACSCOC, that agency’s complaint process can be found here (http://www.sacscoc.org/FAQTOC.asp). A complainant should complete SACSCOC’s Complaint Form and send two print copies to the President, Southern Association of Colleges and Schools Commission on Colleges, 1866 Southern Lane, Decatur, GA 30033-4097. The details of the agency’s complaint process explain that it is intended to address significant, documented, alleged non-compliance with SACSCOC accreditation standards, policies or procedures. Complainants are expected to have attempted to resolve the issue through Rice’s complaint processes before filing a complaint with SACSCOC.

6. If the complaint concerns compliance with statutes or regulations administered by the THECB and the complaint has not been referred to another entity, the THECB Office of General Counsel staff, often assisted by other staff of THECB, will initiate an investigation. The student must provide documentation that all Rice grievance, complaint, or appeal procedures have been exhausted.

7. The THECB, as part of its investigation, may request a Rice response, and may also contact other persons or entities named in the complaint or in Rice's response, in order to ascertain relevant facts. The THECB will also, where appropriate, attempt to facilitate an informal resolution acceptable to both the student and Rice. When this is not feasible, the THECB will evaluate investigation results and recommend action by the Commissioner of the THECB, who after considering any recommendations will render a written determination dismissing the complaint or requiring Rice to take specific actions to remedy the complaint. The Commissioner may also request the THECB to review and decide issues regarding institutional integrity.
CONTACT INFORMATION

William Marsh Rice University
Physical Address: 6100 Main Street, Houston, Texas 77005
Mailing Address: P.O. Box 1892, Houston, Texas 77251-1892
Telephone: Campus Operator 713-348-0000
Homepage Address: http://www.rice.edu/

Please address all correspondence to the appropriate office or department followed by the university mailing address given above.

Admissions
Office of Admission-MS 17
109 Lovett Hall, 713-348-7423

Business Matters
Office of the Cashier-MS 55
110 Allen Center, 713-348-4946

Career Services
Center for Career Development-MS 521
Huff House, 713-348-4055

Credits, Transcripts
Office of the Registrar-MS 57
116 Allen Center, 713-348-4999

Financial Aid, Scholarships, Part-time Employment on Campus
Office of Financial Aid-MS 12
250 Allen Center, 713-348-4958

Graduate Studies
Chair of the appropriate department (see Graduate Degree Chart (p. 50)) or Office of Graduate and Postdoctoral Studies-MS 13
323 Allen Center, 713-348-4002

Undergraduates and Undergraduate Curricula
Office of the Dean of Undergraduates-MS 6
101 Lovett Hall, 713-348-4996

For questions about the organization or technical editing of the General Announcements, please email vpaa@rice.edu.
DISCLAIMER

This publication represents the most accurate information available at the time of its posting. The university reserves the right, in its discretion, to correct or otherwise change any information without notice. The information contained in this publication is not intended to, and does not, confer any contractual rights on any individual. Regarding course offerings, the departments have attempted to anticipate which courses will be offered and by whom and when. However, course offerings may be affected by various factors, including changes in faculty, student demand, and funding. Although efforts have been made to indicate these uncertainties, course offerings are subject to change without notice.
ETHICAL CONCERNS

Rice University pursues excellence at all levels and strives to practice the highest standards of ethical conduct. Rice students are encouraged, as are all community members, to communicate ethical concerns or questions to officials in their schools or departments, to the dean of undergraduates, or to the dean of graduate and postdoctoral studies. They may also contact the offices of Human Resources, Internal Audit, General Counsel, Equal Employment Opportunity Programs/Affirmative Action, or Risk Management, all of which are listed in the university directory and on its website.

The University also provides an ethics reporting mechanism through the EthicsPoint website (a third-party agent) that allows students and other community members a simple, risk-free way to report activities that may involve potential criminal conduct, ethical breaches, or violations of university policies. (Follow the EthicsPoint link at http://internalaudit.rice.edu/) Persons making reports through EthicsPoint may elect not to provide their names in making a complaint or raising a concern. Rice treats the investigation of any report as a confidential matter. Reports submitted to EthicsPoint are forwarded to the proper university officials for appropriate action. No person will be subjected to retaliation or reprisal for making a report or inquiry in good faith or for seeking guidance on dealing with potential or suspected improper behavior.
EQUAL OPPORTUNITY NOTICE

Rice University is committed to equal opportunity in education and employment. It is the policy of Rice University to attract qualified individuals of diverse backgrounds to its faculty, staff, and student body. Rice University does not discriminate against any individual on the basis of race, color, religion, sex, sexual orientation, gender identity, national or ethnic origin, ancestry, age, disability, or veteran status in its admissions, educational programs, or employment. In employment, the university seeks to recruit, hire, and advance qualified candidates, including women, members of underrepresented minority groups, individuals with disabilities, and certain protected classes of military veterans specified by law.
FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT (FERPA)

Notification of Rights under the Family Educational Rights and Privacy Act (FERPA)

The Family Educational Rights and Privacy Act (FERPA) is a federal law designed to protect the privacy of, and limit access to, student education records. The law affords students the following rights with respect to their education records:

1. the right to inspect and review the student’s education records within 45 days after the date Rice University ("Rice") receives a request for access;
2. the right to seek amendment of the student’s education records that the student believes are inaccurate, misleading, or otherwise in violation of the student’s privacy rights under FERPA;
3. the right to provide written consent to disclosures of personally identifiable information ("PII," as defined by law) contained in the student’s education records, except to the extent FERPA authorizes disclosure without consent;
4. the right to file a complaint with the U.S. Department of Education concerning alleged failures by Rice to comply with the requirements of FERPA. The name and address of the federal office that administers FERPA is:

   Family Policy Compliance Office
   U.S. Department of Education
   400 Maryland Ave. S.W.
   Washington, DC 20202

Inspect and Review Records

A student should make written request to any offices that maintain student education records, identifying the record(s) the student wishes to inspect. Though not exhaustive, as a guide for students, this is a list of the primary offices that maintain student education records: Office of the Registrar, Office of the Dean of Undergraduates, Office of Graduate and Postdoctoral Studies, Office of Student Judicial Programs, Office of Admission, Office of Financial Aid, Center for Career Development, Office of Student Activities, Office of Academic Advising, Office of International Students and Scholars, Cashier’s Office, and departmental offices. The appropriate Rice official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the Rice official to whom the request is submitted, that Rice official will advise the student of the correct official to whom the request should be addressed.

Amendment of Records

Any questions, problems, or written requests for amendment of records should be submitted to the Office of the Registrar. A student requesting to amend a record should clearly identify the part of the record the student wants changed and specify why it should be changed. If Rice decides not to amend the record as requested, Rice will notify the student in writing of the decision and of the student’s right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when the student is notified of the right to a hearing.

Disclosure of Information

As permitted by FERPA, Rice reserves the right to publish or release the following directory information without prior consent:

1. Name, permanent, local, mailing, and campus address, residential college affiliation, telephone and mobile number(s), campus email address(es), and Net ID
2. Date and place of birth
3. Classification and major and minor fields of study
4. Participation in officially recognized activities and sports
5. Weight and height of members of athletic teams
6. Dates of attendance, degrees, honors, and awards received
7. The most recent previous educational agency or institution attended by the student
8. Photograph

Students who would like Rice to withhold this directory information may do so by logging in to ESTHER, clicking Personal Information, clicking Release or Withhold Directory Information, and indicating that the information should be withheld. Thereafter, Rice will withhold access to, or release of, the student’s directory information until further written instruction is received. For more information regarding FERPA, please visit the U.S. Department of Education’s website (https://www2.ed.gov/policy/gen/guid/fpco/ferpa).

FERPA permits the disclosure of PII from students’ education records, without consent of the student, if the disclosure meets certain conditions found in 34 C.F.R. §99.31 of the FERPA regulations. Except for disclosures to school officials, disclosures related to some judicial orders or lawfully issued subpoenas, disclosures of directory information, and disclosures to the student, Section 99.32 of the FERPA regulations requires the institution to record the disclosure. Eligible students have a right to inspect and review the record of disclosures. A postsecondary institution may disclose PII from the education records without obtaining prior written consent of the student –

- To other school officials, within Rice whom Rice has determined have legitimate educational interests and require this information in order to perform instructional, supervisory, advisory, administrative, or other duties for Rice. These school officials include faculty, research personnel, staff (including law enforcement unit personnel and health staff), trustees, or students serving on official committees (such as disciplinary or grievance committees) or assisting another school official. A school official has a legitimate educational interest if the official needs to review an educational record in order to fulfill his or her professional responsibility to Rice. This includes contractors, consultants, auditors, attorneys, collection agents, volunteers, or other parties to whom Rice has outsourced institutional services or functions, provided that the conditions listed in §99.31(a)(1)(i)(B)(1) - (a)(1)(i)(B)(2) are met. (§99.31(a)(1))
- To officials of another school where the student seeks or intends to enroll, or where the student is already enrolled if the disclosure is for purposes related to the student’s enrollment or transfer, subject to the requirements of §99.34. (§99.31(a)(2))
- To authorized representatives of the U.S. Comptroller General, the U.S. Attorney General, the U.S. Secretary of Education, or State and local educational authorities, such as a State postsecondary authority that is responsible for supervising the university’s State-supported education programs. Disclosures under this provision may be made, subject to the requirements of §99.35, in connection with an audit or evaluation of Federal- or State-supported education
programs, or for the enforcement of, or compliance with, Federal legal requirements that relate to those programs. These entities may make further disclosures of PII to outside entities that are designated by them as their authorized representatives to conduct any audit, evaluation, or enforcement or compliance activity on their behalf. (§§99.31(a)(3) and 99.35)

- In connection with financial aid for which the student has applied or which the student has received, if the information is necessary to determine eligibility for the aid, determine the amount of the aid, determine the conditions of the aid, or enforce the terms and conditions of the aid. (§99.31(a)(4))

- To organizations conducting studies for, or on behalf of, the school, in order to: (a) develop, validate, or administer predictive tests; (b) administer student aid programs; or (c) improve instruction. (§99.31(a)(6))

- To accrediting organizations to carry out their accrediting functions. (§99.31(a)(7))

- To parents of an eligible student if the student is a dependent for IRS tax purposes, though Rice limits such information to financial details of the student's enrollment. (§99.31(a)(8))

- To comply with a judicial order or lawfully issued subpoena. (§99.31(a)(9))

- To appropriate officials in connection with a health or safety emergency, subject to §99.36. (§99.31(a)(10))

- Information the school has designated as "directory information" above and pursuant to §99.37. (§99.31(a)(11))

- To a victim of an alleged perpetrator of a crime of violence or a non-forcible sex offense, subject to the requirements of §99.39. The disclosure may only include the final results of the disciplinary proceeding with respect to that alleged crime or offense, regardless of the finding. (§99.31(a)(13))

- To the general public, the final results of a disciplinary proceeding, subject to the requirements of §99.39, if the school determines the student is an alleged perpetrator of a crime of violence or non-forcible sex offense and the student has committed a violation of the school's rules or policies with respect to the allegation made against him or her. (§99.31(a)(14))

- To parents of a student regarding the student's violation of any Federal, State, or local law, or of any rule or policy of the school, governing the use or possession of alcohol or a controlled substance if the school determines the student committed a disciplinary violation and the student is under the age of 21. (§99.31(a)(15))

For further information regarding Rice’s policy on student education records, please contact the Office of the Registrar.

Rice University
Office of the Registrar–MS 57
6100 Main Street
Houston, TX 77005-1892
Email: registrar@rice.edu
MESSAGE FROM THE PRESIDENT

Now barely into our second century, Rice University has changed a tremendous amount since 59 students and 12 faculty members participated in the first matriculation in the early fall of 1912. We have remained true to our founding ideals and ambitions, building over the course of a century one of the great universities of America. Rice’s mission and aspirations are captured in our mission statement:

As a leading research university with a distinctive commitment to undergraduate education, Rice University aspires to pathbreaking research, unsurpassed teaching and contributions to the betterment of our world. It seeks to fulfill this mission by cultivating a diverse community of learning and discovery that produces leaders across the spectrum of human endeavor.

We are indeed an unusual university. While we are among the renowned research universities of the world, we also are among the smallest. And although comparatively small, we are committed to a wide spectrum of endeavors ranging across our eight schools and many inter-disciplinary institutes and centers. Our success is built on the contributions of every part of our community: graduate and undergraduate students, faculty and staff, alumni and other supporters across our city and around the world.

Our ambition and our standards are not constrained by our size. We strive to be bold in our aspirations and entrepreneurial in our approach. We seek to make a distinctive contribution to our home city of Houston while achieving a global impact through education, research, and service. We are committed to enriching understanding, creating opportunity, discovering knowledge, and improving our world.

The General Announcements of the University sets forth the immense array of opportunities for our students, as well as the rules and policies which govern their participation as students in the university. But we demand more of each other than just adherence to rules and policies. We expect that all members of our community will be guided in all their endeavors by the core Rice values: Responsibility, Integrity, Community and Excellence. These values are just as important as the academic offerings and rules included in these announcements. If you have questions about how rules and policies may apply to you, we urge you to seek advice from one of the many sources available to you.

We take great pride in the diversity of our community. Our success requires thoughtfulness and respect in every interaction on our campus, whether with members of the Rice community or the visitors we welcome. Our "culture of care" demands not only that we not cause harm to others, but also that we look out for each other and provide or seek help when needed.

We are pleased that you have chosen to become a part of this dynamic university as it embarks on its second century of excellence and achievement. On behalf of our faculty and staff, I wish you every success as you pursue your educational endeavors. We take pride in the special community of Rice, and look forward to working with you as you seize the opportunities of Rice to achieve your aspirations and dreams.

David W. Leebron
President
Rice University
POLICIES

- Undergraduate Academic Policies and Procedures (p. 18)
- Graduate Academic Policies and Procedures (p. 55)
- Student Handbook (https://dou.rice.edu/student-resources)
- Faculty Handbook (http://fachandbook.rice.edu)
- Faculty Senate Approved Proposals (http://professor.rice.edu/professor/Actions_of_the_Senate.asp)
- University Policies (http://professor.rice.edu/professor/Policies.asp)
These archived General Announcements (also known as Catalogs) represent the most accurate information available at the time of publication. The university reserves the right to correct or otherwise change any such information without notice at its sole discretion. With respect to course offerings, the departments have attempted to anticipate which courses will be offered, and by whom and when such courses will be taught. However, course offerings may be affected by changes in faculty, student demand, and funding. Although efforts have been made to indicate these uncertainties, course offerings are subject to change without notice.

- 2016-2017 (ga.rice.edu/archive/2016-2017_GA.pdf)
- 2015-2016 (ga.rice.edu/archive/2015-2016_GA.pdf)
- 2013-2014 (ga.rice.edu/archive/2013-2014_GA.pdf)
- 2012-2013 (ga.rice.edu/archive/2012-2013_GA.pdf)
- 2011-2012 (ga.rice.edu/archive/2011-2012_GA.pdf)
- 2010-2011 (ga.rice.edu/archive/2010-2011_GA.pdf)
- 2009-2010 (ga.rice.edu/archive/2009-2010_GA.pdf)
- 2008-2009 (ga.rice.edu/archive/2008-2009_GA.pdf)

INDEX

A

Academic and Judicial Discipline .................................................. 21
Academic Honor Societies .............................................................. 46
Academic Opportunities ................................................................. 12
Academic Opportunities .................................................................. 49
Academic Policies and Procedures .................................................. 18
Academic Policies and Procedures .................................................. 55
Access to Student Records ............................................................. 43
Access to Student Records ............................................................. 80
Accounting ..................................................................................... 109
Accreditation .................................................................................. 1575
Administration ................................................................................. 1536
Administration and Faculty ............................................................ 1534
Admission ....................................................................................... 18
Admission ....................................................................................... 55
African Studies ................................................................................. 113
Air Force Science ............................................................................. 115
Air Force Science (AFSC) ................................................................. 750
All Graduate Students ..................................................................... 55
Americas Research Center (ARCR) .................................................. 751
Ancient Mediterranean Civil (AMCI) ............................................... 752
Ancient Mediterranean Civilizations ............................................... 116
Anthropology .................................................................................. 120
Anthropology (ANTH) .................................................................... 752
Applied Physics ................................................................................ 126
Applied Physics (APPL) ................................................................... 782
Arabic (ARAB) ................................................................................ 782
Architecture ...................................................................................... 129
Architecture (ARCH) ........................................................................ 783
Archive ............................................................................................. 1585
Art History ....................................................................................... 139
Art History (HART) ......................................................................... 808
Artist Diploma (AD) in the field of Bassoon Performance ............... 498
Artist Diploma (AD) in the field of Cello Performance .................... 499
Artist Diploma (AD) in the field of Clarinet Performance ............... 500
Artist Diploma (AD) in the field of Double Bass Performance ........ 502
Artist Diploma (AD) in the field of Flute Performance .................... 503
Artist Diploma (AD) in the field of Harp Performance .................... 504
Artist Diploma (AD) in the field of Horn Performance .................... 506
Artist Diploma (AD) in the field of Oboe Performance .................... 507

B

Bachelor of Architecture (BArch) Degree ......................................... 130
Bachelor of Arts (BA) Degree / Master of Arts (MA) Degree / Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology .... 164
Bachelor of Arts (BA) Degree with a Major in Ancient Mediterranean Civilizations ................................................................. 117
Bachelor of Arts (BA) Degree with a Major in Anthropology ............ 121
Bachelor of Arts (BA) Degree with a Major in Architectural Studies .... 132
Bachelor of Arts (BA) Degree with a Major in Architecture ............ 133
Bachelor of Arts (BA) Degree with a Major in Art History ................ 140
Bachelor of Arts (BA) Degree with a Major in Asian Studies ............ 150
Bachelor of Arts (BA) Degree with a Major in Astronomy ................ 657
Bachelor of Arts (BA) Degree with a Major in Biochemistry and Cell Biology ................................................................. 166
Bachelor of Arts (BA) Degree with a Major in Biological Sciences ..... 168
Bachelor of Arts (BA) Degree with a Major in Chemical Engineering .... 259
Bachelor of Arts (BA) Degree with a Major in Chemistry ................. 281
Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Civil Engineering .......... 294
Bachelor of Arts (BA) Degree with a Major in Civil and Environmental Engineering and a Major Concentration in Environmental Engineering ... 297
Bachelor of Arts (BA) Degree with a Major in Classical Studies .......... 314
Bachelor of Arts (BA) Degree with a Major in Cognitive Sciences ....... 320
Bachelor of Arts (BA) Degree with a Major in Computational and Applied Mathematics ................................................................. 326
Bachelor of Arts (BA) Degree with a Major in Computer Science ....... 336
Bachelor of Arts (BA) Degree with a Major in Earth Science ............ 348
Bachelor of Arts (BA) Degree with a Major in Ecology and Evolutionary Biology ................................................................. 171
Bachelor of Arts (BA) Degree with a Major in Economics ..................... 358
Bachelor of Arts (BA) Degree with a Major in Electrical Engineering .... 367
Bachelor of Arts (BA) Degree with a Major in English ........................ 386
Bachelor of Arts (BA) Degree with a Major in English and a Major Concentration in Creative Writing ................................. 389
Bachelor of Arts (BA) Degree with a Major in Environmental Science and a Major Concentration in Earth Science ...................... 398
Bachelor of Arts (BA) Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology .................. 401
Bachelor of Arts (BA) Degree with a Major in French Studies ............. 316
Bachelor of Arts (BA) Degree with a Major in German Studies .......... 317
Bachelor of Arts (BA) Degree with a Major in History ........................ 423
Bachelor of Arts (BA) Degree with a Major in History: International Concentration ............................................................ 428
Bachelor of Arts (BA) Degree with a Major in Kinesiology and a Major Concentration in Health Sciences .................................... 440
Bachelor of Arts (BA) Degree with a Major in Kinesiology and a Major Concentration in Sports Medicine ................................. 442
Bachelor of Arts (BA) Degree with a Major in Latin American Studies ... 447
Bachelor of Arts (BA) Degree with a Major in Linguistics .................... 455
Bachelor of Arts (BA) Degree with a Major in Managerial Studies ........ 458
Bachelor of Arts (BA) Degree with a Major in Materials Science and NanoEngineering ....................................................... 462
Bachelor of Arts (BA) Degree with a Major in Mathematical Economic Analysis ................................................................. 360
Bachelor of Arts (BA) Degree with a Major in Mathematics .................. 472
Bachelor of Arts (BA) Degree with a Major in Mechanical Engineering ... 478
Bachelor of Arts (BA) Degree with a Major in Medieval and Early Modern Studies ................................................................. 488
Bachelor of Arts (BA) Degree with a Major in Music ........................... 521
Bachelor of Arts (BA) Degree with a Major in Philosophy .................... 652
Bachelor of Arts (BA) Degree with a Major in Physics .......................... 658
Bachelor of Arts (BA) Degree with a Major in Political Science .......... 669
Bachelor of Arts (BA) Degree with a Major in Psychology ...................... 684
Bachelor of Arts (BA) Degree with a Major in Religion ........................ 687
Bachelor of Arts (BA) Degree with a Major in Social Policy Analysis .... 695
Bachelor of Arts (BA) Degree with a Major in Sociology ........................ 698
Bachelor of Arts (BA) Degree with a Major in Spanish and Portuguese .. 706
Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Analytics ............................... 709
Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Law ........................................ 710
Bachelor of Arts (BA) Degree with a Major in Sport Management and a Major Concentration in Sport Leadership ................................. 712
Bachelor of Arts (BA) Degree with a Major in Statistics ........................ 715
Bachelor of Arts (BA) Degree with a Major in Study Of Women, Gender and Sexuality ............................................................ 721
Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Film and Photography .................. 740
Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Studio Art ................................. 743
Bachelor of Arts (BA) Degree with a Major in Visual And Dramatic Arts and a Major Concentration in Theatre ........................................ 746
Bachelor of Music (BMus) Degree with a Major in Bassoon Performance ................................................................................. 523
Bachelor of Music (BMus) Degree with a Major in Cello Performance ... 525
Bachelor of Music (BMus) Degree with a Major in Clarinet Performance 527
Bachelor of Music (BMus) Degree with a Major in Composition .......... 529
Bachelor of Music (BMus) Degree with a Major in Double Bass Performance ............................................................................ 531
Bachelor of Music (BMus) Degree with a Major in Flute Performance ... 533
Bachelor of Music (BMus) Degree with a Major in Harp Performance ... 535
Bachelor of Music (BMus) Degree with a Major in Horn Performance ... 537
Bachelor of Music (BMus) Degree with a Major in Music History .......... 539
Bachelor of Music (BMus) Degree with a Major in Music Theory ........ 542
Bachelor of Music (BMus) Degree with a Major in Oboe Performance ... 545
Bachelor of Music (BMus) Degree with a Major in Organ Performance .. 547
Bachelor of Music (BMus) Degree with a Major in Percussion Performance ............................................................................. 549
Bachelor of Music (BMus) Degree with a Major in Piano Performance ... 551
Bachelor of Music (BMus) Degree with a Major in Trombone Performance ........................................................................... 553
Bachelor of Music (BMus) Degree with a Major in Trumpet Performance 555
Bachelor of Music (BMus) Degree with a Major in Tuba Performance ... 557
Bachelor of Music (BMus) Degree with a Major in Viola Performance ... 559
Bachelor of Music (BMus) Degree with a Major in Violin Performance ... 561
Bachelor of Music (BMus) Degree with a Major in Vocal Performance ... 563
Bachelor of Science (BS) Degree with a Major in Astrophysics .......... 565
Bachelor of Science (BS) Degree with a Major in Biochemistry and Cell Biology ......................................................................... 174
Bachelor of Science (BS) Degree with a Major in Chemical Physics .... 278
Bachelor of Science (BS) Degree with a Major in Chemistry ................. 283
Bachelor of Science (BS) Degree with a Major in Earth Science .......... 351
Bachelor of Science (BS) Degree with a Major in Ecology and Evolutionary Biology ......................................................................... 176
Bachelor of Science (BS) Degree with a Major in Environmental Science and a Major Concentration in Earth Science ......................... 404
Bachelor of Science (BS) Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology ........................................................................... 407
Bachelor of Science (BS) Degree with a Major in Mathematics ............ 473
Bachelor of Science (BS) Degree with a Major in Physics and a Major Concentration in Applied Physics ................................. 660
Doctor of Musical Arts (DMA) Degree in the field of Oboe Performance  . 576
Doctor of Musical Arts (DMA) Degree in the field of Organ Performance . 578
Doctor of Musical Arts (DMA) Degree in the field of Percussion Performance ......................................................... 580
Doctor of Musical Arts (DMA) Degree in the field of Piano Performance . 582
Doctor of Musical Arts (DMA) Degree in the field of Violin Performance . 584
Doctor of Musical Arts (DMA) Degree in the field of Voice Performance . 586
Doctor of Philosophy (PhD) Degree in the field of Anthropology ...... 123
Doctor of Philosophy (PhD) Degree in the field of Applied Physics ...... 126
Doctor of Philosophy (PhD) Degree in the field of Art History ....... 147
Doctor of Philosophy (PhD) Degree in the field of Biochemistry and Cell Biology ...................................................... 179
Doctor of Philosophy (PhD) Degree in the field of Bioengineering ...... 157
Doctor of Philosophy (PhD) Degree in the field of Bioengineering / Doctor of Medicine (MD) Degree with Baylor College of Medicine .......................................................... 158
Doctor of Philosophy (PhD) Degree in the field of Business .......... 194
Doctor of Philosophy (PhD) Degree in the field of Business and a Major Concentration in Economics and Finance ........ 194
Doctor of Philosophy (PhD) Degree in the field of Chemical Engineering .... 275
Doctor of Philosophy (PhD) Degree in the field of Chemistry ........ 286
Doctor of Philosophy (PhD) Degree in the field of Civil Engineering .... 303
Doctor of Philosophy (PhD) Degree in the field of Computer Science .... 339
Doctor of Philosophy (PhD) Degree in the field of Computer Science .... 339
Doctor of Philosophy (PhD) Degree in the field of Earth Science .... 355
Doctor of Philosophy (PhD) Degree in the field of Ecology and Evolutionary Biology ........................................ 180
Doctor of Philosophy (PhD) Degree in the field of Economics .......... 361
Doctor of Philosophy (PhD) Degree in the field of Economics and a Major Concentration in Economics and Finance .......... 363
Doctor of Philosophy (PhD) Degree in the field of Electrical and Computer Engineering ............................................. 375
Doctor of Philosophy (PhD) Degree in the field of English .......... 392
Doctor of Philosophy (PhD) Degree in the field of Environmental Engineering ......................................................... 305
Doctor of Philosophy (PhD) Degree in the field of History .......... 432
Doctor of Philosophy (PhD) Degree in the field of Linguistics ....... 457
Doctor of Philosophy (PhD) Degree in the field of Materials Science and NanoEngineering ........................................ 466
Doctor of Philosophy (PhD) Degree in the field of Mathematics .... 475
Doctor of Philosophy (PhD) Degree in the field of Mechanical Engineering ......................................................... 481
Doctor of Philosophy (PhD) Degree in the field of Philosophy ....... 545
Doctor of Philosophy (PhD) Degree in the field of Physics .......... 567
Doctor of Philosophy (PhD) Degree in the field of Political Science .... 674
Doctor of Philosophy (PhD) Degree in the field of Psychology ....... 685
Doctor of Philosophy (PhD) Degree in the field of Religion .......... 690
Doctor of Philosophy (PhD) Degree in the field of Sociology ....... 700
Doctor of Philosophy (PhD) Degree in the field of Statistics ...... 716
Doctor of Philosophy (PhD) Degree in the field of Systems, Synthetic and Physical Biology ........................................ 731
Doctoral Degrees .............................................................................. 64
Dual Doctor of Philosophy (PhD) Degree in the field of History, with Instituto Mora, in Mexico ........................................ 433
Dual Doctor of Philosophy (PhD) Degree in the field of History, with Universidade Estadual de Campinas (UNICAMP), in Brazil .............. 434

E

Earth, Environmental, and Planetary Sciences ........................................ 347
Earth Science (ESCI) ........................................................................ 981
Ecology & Evolutionary Biology (EBIO) ........................................... 1002
Economics ......................................................................................... 357
Economics (ECON) ........................................................................ 1011
Education (EDUC) ........................................................................ 1026
Electrical & Comp. Engineering (ELEC) ........................................ 1035
Electrical and Computer Engineering ................................................. 366
Emergency Med Studies/Practice (EMSP) .................................... 1060
Emeritus Faculty .................................................................................. 1568
Energy and Water Sustainability .......................................................... 379
Engineering Design ........................................................................... 381
Engineering (ENGI) ........................................................................ 1061
Engineering Leadership ................................................................. 383
English ......................................................................................... 385
English (ENGL) ............................................................................. 1067
Environmental Analysis and Decision Making ................................... 394
Environmental Science .................................................................... 397
Environmental Studies ................................................................. 410
Environmental Studies (ENST) ....................................................... 1091
Equal Opportunity Notice ............................................................. 1580
Ethical Concerns ................................................................................ 1579
Executive Management (EMBA) ..................................................... 1097

F

Faculty ......................................................................................... 92
Faculty ......................................................................................... 1538
Faculty Grading Guidelines .............................................................. 93
Family Educational Rights and Privacy Act (FERPA) ......................... 1581
Film (FILM) .................................................................................. 1098
Final Examinations ........................................................................... 23