BACHELOR OF ARTS (BA) DEGREE WITH A MAJOR IN ASTRONOMY

Program Learning Outcomes for the BA Degree with a Major in Astronomy

Upon completing the BA degree with a major in Astronomy, students will be able to:

1. Demonstrate an understanding of fundamental concepts in Mechanics.
2. Demonstrate an understanding of fundamental concepts in Electromagnetism.
3. Demonstrate an understanding of fundamental concepts in Quantum Mechanics.
4. Be knowledgeable in fundamental topics in Astronomy.

Requirements for the BA Degree with a Major in Astronomy

For general university requirements, see Graduation Requirements (ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements). Students pursuing the BA degree with a major in Astronomy must complete:

- A minimum of 52 credit hours to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 19 credit hours taken at the 300-level or above.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the department's undergraduate committee. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier [https://registrar.rice.edu/facstaff/dregeworks/officialcertifier].) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Astronomy</td>
<td>52</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Astronomy</td>
<td>120</td>
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Degree Requirements

<table>
<thead>
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<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>Core Requirements</td>
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<td>Select 1 from the following:</td>
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<tr>
<td>PHYS 101 &amp; PHYS 103</td>
<td>MECHANICS (WITH LAB) and MECHANICS DISCUSSION</td>
<td></td>
</tr>
<tr>
<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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</table>

Select 1 from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>PHYS 102 &amp; PHYS 104</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION</td>
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<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
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<tr>
<td>PHYS 201</td>
<td>WAVES, LIGHT, AND HEAT</td>
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<tr>
<td>PHYS 202</td>
<td>MODERN PHYSICS</td>
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<td>PHYS 231</td>
<td>ELEMENTARY PHYSICS LAB</td>
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<td>PHYS 301</td>
<td>INTERMEDIATE MECHANICS</td>
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<tr>
<td>PHYS 302</td>
<td>INTERMEDIATE ELECTRODYNAMICS</td>
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<td>ASTR 230</td>
<td>ASTRONOMY LAB</td>
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<td>ASTR 350</td>
<td>INTRODUCTION TO ASTROPHYSICS-STARS</td>
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<tr>
<td>ASTR 360</td>
<td>INTRODUCTION TO ASTROPHYSICS-GALAXY AND COSMO</td>
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<td>ASTR 400</td>
<td>UNDERGRADUATE RESEARCH SEMINAR (2 semesters required, 1st semester)</td>
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<td>UNDERGRADUATE RESEARCH SEMINAR (2 semesters required, 2nd semester)</td>
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<td>ASTR 451</td>
<td>ASTROPHYSICS I: SUN AND STARS</td>
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<td>ASTR 452</td>
<td>ASTROPHYSICS II: GALAXIES AND COSMO</td>
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<td>ASTR 470</td>
<td>SOLAR SYSTEM PHYSICS</td>
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<td>PHYS 480</td>
<td>INTRODUCTION TO PLASMA PHYSICS</td>
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<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I or MATH 105 AP/OTH CREDIT IN CALCULUS I</td>
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<tr>
<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II or MATH 106 AP/OTH CREDIT IN CALCULUS II</td>
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<tr>
<td>MATH 211</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA or MATH 220 HONORS ORDINARY DIFFERENTIAL EQUATIONS or MATH 221 HONORS CALCULUS III</td>
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<td>MATH 212</td>
<td>MULTIVARIABLE CALCULUS or MATH 222 HONORS CALCULUS IV</td>
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<tr>
<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
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Total Credit Hours Required for the Major in Astronomy | 52
Additional Credit Hours to Complete BA Degree Requirements | 8
University Graduation Requirements (ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements) | 60

Total Credit Hours | 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.
Policies for the BA Degree with a Major in Astronomy

Program Restrictions and Exclusions
Students pursuing the major in Astronomy should be aware of the following program restriction:

• Students pursuing the major in Astronomy may not additionally declare the minor in Physics.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (ga.rice.edu/undergraduate-students/academic-policies-procedures/transfer-credit). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Astronomy should be aware of the following departmental transfer credit guidelines:

• Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/.

Opportunities for the BA Degree with a Major in Astronomy

Academic Honors
The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors (ga.rice.edu/undergraduate-students/honors-distinctions/university) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (ga.rice.edu/undergraduate-students/honors-distinctions/university). Some departments have department-specific Honors awards or designations.

Research in the Department of Physics and Astronomy
The Physics and Astronomy Department encourages undergraduate participation in research, both within the department and through extramural programs. For current opportunities, please visit the Department’s website and click on the Undergraduate Study link, at: https://www.physics.rice.edu/.

Additional Information
For additional information, please see the Physics and Astronomy website: https://physics.rice.edu/.