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

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

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

1. Demonstrate knowledge of the biological basis for brain and neuron function and experimental strategies that led to our current understanding of brain and neuron function.
2. Demonstrate knowledge of the key issues, questions, and perspectives that define systems neuroscience.
3. Demonstrate the ability to analyze and interpret neuro-scientific data.
4. Understand multiple experimental methods to measure and manipulate brain activity.
5. Demonstrate how to apply the modern scientific method, including designing and executing experiments, and collecting, analyzing, and interpreting meaningful data.

Requirements for the BA Degree with a Major in Neuroscience

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 Neuroscience must complete:

- A minimum of 23 courses (62-66 credit hours depending on course selection) to satisfy major requirements.
- A minimum of 122-126 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 10 courses (26-30 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 major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (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>
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<tbody>
<tr>
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<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Neuroscience</td>
<td>62-66</td>
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<td>Total Credit Hours Required for the BA Degree with a Major in Neuroscience</td>
<td>122-126</td>
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### Degree Requirements

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<tr>
<th>Code</th>
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<th>Credit Hours</th>
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<tr>
<td></td>
<td><strong>Foundation Courses</strong></td>
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<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY</td>
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<td>CAAM 210</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
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<tr>
<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
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<td>&amp; CHEM 123</td>
<td>GENERAL CHEMISTRY LABORATORY I</td>
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<td>CHEM 122</td>
<td>GENERAL CHEMISTRY II</td>
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<td>&amp; CHEM 124</td>
<td>GENERAL CHEMISTRY LABORATORY II</td>
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<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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<td>or MATH 105</td>
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<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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<tr>
<td>or MATH 106</td>
<td>AP/OTH CREDIT IN CALCULUS II</td>
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<tr>
<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
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<td>PHYS 126</td>
<td>GENERAL PHYSICS II (WITH LAB)</td>
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<tr>
<td>PSYC 203</td>
<td>INTRODUCTION TO COGNITIVE PSYCHOLOGY</td>
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<td>Select 1 course from the following:</td>
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<tr>
<td>STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
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<tr>
<td>STAT 310 / ECON 307</td>
<td>PROBABILITY AND STATISTICS</td>
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<tr>
<td>STAT 312</td>
<td>PROBABILITY &amp; STATISTICS FOR ENGINEERS</td>
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<td><strong>Core Requirements</strong></td>
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<tr>
<td>NEUR 362 / PSYC 362</td>
<td>COGNITIVE NEUROSCIENCE: EXPLORING</td>
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<td>NEUR 380 / BIOC 380 / PSYC 380</td>
<td>FUNDAMENTAL NEUROSCIENCE SYSTEMS</td>
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<td>NEUR 383 / BIOE 380 / ELEC 380</td>
<td>INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY</td>
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<td>NEUR 385 / BIOC 385</td>
<td>FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE</td>
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<td><strong>Project-Based Laboratory Courses</strong></td>
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<td>BIOC 212</td>
<td>INTERMEDIATE EXPERIMENTAL CELLULAR AND MOLECULAR NEUROSCIENCE</td>
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<td>Select 2 courses from the following:</td>
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<td>BIOC 415</td>
<td>EXPERIMENTAL PHYSIOLOGY</td>
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<td>BIOC 417</td>
<td>EXPERIMENTAL CELL AND MOLECULAR NEUROSCIENCE</td>
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<td>NEUR 310</td>
<td>INDEPENDENT RESEARCH FOR NEUROSCIENCE UNDERGRADUATES</td>
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<td>NEUR 364 / PSYC 364</td>
<td>COGNITIVE NEUROSCIENCE LAB</td>
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<td><strong>Elective Requirements</strong></td>
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<td>Select 4 courses from the following:</td>
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<td>BIOC 129</td>
<td>BRAINSTEM - TEACHING STEM THROUGH NEUROSCIENCE</td>
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<td>Course</td>
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<td>BIOC 442</td>
<td>MOLECULES, MEMORY AND MODEL ANIMALS: METHODS IN BEHAVIORAL NEUROSCIENCE</td>
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<td>BIOC 449</td>
<td>ADVANCED CELL AND MOLECULAR NEUROSCIENCE</td>
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<td>BIOE 492</td>
<td>SENSORY NEUROENGINEERING</td>
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<tr>
<td>COMP 440 / ELEC 440</td>
<td>ARTIFICIAL INTELLIGENCE</td>
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<td>EBIO 321</td>
<td>ANIMAL BEHAVIOR</td>
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<td>ELEC 475</td>
<td>LEARNING FROM SENSOR DATA</td>
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<td>NEUR 301</td>
<td>ADVANCED COGNITIVE NEUROSCIENCE: ATTENTION AND PERCEPTION</td>
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<td>NEUR 302</td>
<td>ADVANCED COGNITIVE NEUROSCIENCE: HIGHER MENTAL FUNCTIONS</td>
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<td>NEUR 310</td>
<td>INDEPENDENT RESEARCH FOR NEUROSCIENCE UNDERGRADUATES[^2]</td>
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<tr>
<td>NEUR 382 / ELEC 382</td>
<td>INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE</td>
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<td>NEUR 411 / ANTH 411 / LING 411</td>
<td>NEUROLINGUISTICS</td>
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<tr>
<td>NEUR 415 / CAAM 415 / ELEC 488</td>
<td>THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS</td>
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<td>NEUR 416 / CAAM 416 / ELEC 489</td>
<td>NEURAL COMPUTATION</td>
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<td>PHIL 103</td>
<td>PHILOSOPHICAL ASPECTS OF COGNITIVE SCIENCE</td>
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<td>PHIL 303</td>
<td>THEORY OF KNOWLEDGE</td>
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<td>PHIL 312</td>
<td>PHILOSOPHY OF MIND</td>
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<td>PHIL 358</td>
<td>PHILOSOPHY OF NEUROSCIENCE</td>
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<td>PHIL 359</td>
<td>ANIMAL MINDS</td>
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<td>PSYC 354</td>
<td>INTRODUCTION TO SOCIAL AND AFFECTIVE NEUROSCIENCE</td>
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<td>PSYC 375</td>
<td>NEUROPSYCHOLOGY OF LANGUAGE AND MEMORY</td>
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<td>PSYC 432</td>
<td>BRAIN AND BEHAVIOR</td>
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Total Credit Hours Required for the Major in Neuroscience: 62-66

University Graduation Requirements (ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements) 60

Total Credit Hours: 122-126

Footnotes and Additional Information

^1 Permissible substitutions: MATH 105 or MATH 111 and MATH 112 may be substituted for MATH 101; MATH 106 may be substituted for MATH 102; CHEM 151 and CHEM 153 may be substituted for CHEM 121 and CHEM 123; CHEM 152 and CHEM 154 may be substituted for CHEM 122 and CHEM 124; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125; PHYS 102 and PHYS 104 or PHYS 112 may be substituted for PHYS 126.

[^2] NEUR 310 can be repeated and counted as an elective if a student has chosen NEUR 310 to count as a Project-Based Laboratory Course. It can only be repeated as an elective once for credit towards the major. If taken as a Project-Based Laboratory or as an Elective, NEUR 310 must be taken for at least 3 credit hours.

[^3] Students must complete a minimum of three semesters of BIOL 129 (3 credit hours total) to use this course to fulfill an elective requirement.

Policies for the BA Degree with a Major in Neuroscience

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 Neuroscience 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 Neuroscience website: https://neuroscience.rice.edu/.

Opportunities for the BA Degree with a Major in Neuroscience

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 Neuroscience

Research is highly encouraged for all neuroscience programs, and many opportunities are available for independent research at Rice and other institutions of the Texas Medical Center. Students can receive course credit for independent research through the course NEUR 310 with the option to repeat for credit once as an elective for the major.

Additional Information

For additional information, please see the Neuroscience website: https://neuroscience.rice.edu/.