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 (https://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 (62-69 credit hours, depending on course selection) to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 10 courses (26-30 credit hours) taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit after matriculation at Rice may be applied towards specific major requirements. For additional departmental guidelines regarding transfer credit, see the Policies (p. 2) tab.

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/degeworks/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>BIOS 201</td>
<td>INTRODUCTORY BIOLOGY I</td>
<td>3</td>
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<tr>
<td>CMOR 220</td>
<td>INTRODUCTION TO ENGINEERING COMPUTATION</td>
<td>3</td>
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<td>CHEM 121/111</td>
<td>GENERAL CHEMISTRY I/ AP/OTH CREDIT IN GENERAL CHEMISTRY I</td>
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<td>CHEM 123/113</td>
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<td>CHEM 122/112</td>
<td>GENERAL CHEMISTRY II/ AP/OTH CREDIT IN GENERAL CHEMISTRY II</td>
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<tr>
<td>CHEM 124/114</td>
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<td>MATH 102/106</td>
<td>SINGLE VARIABLE CALCULUS II/ AP/OTH CREDIT IN CALCULUS II</td>
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<td>PHYS 125/126</td>
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<td>PSYC 203</td>
<td>INTRODUCTION TO COGNITIVE PSYCHOLOGY</td>
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<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 FOR ENGINEERS</td>
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<tr>
<td>STAT 312</td>
<td>PROBABILITY &amp; STATISTICS FOR DATA SCIENCE</td>
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<tr>
<td>BIOS 385</td>
<td>CELLULAR AND MOLECULAR MECHANISMS OF THE Neuron</td>
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<td>NEUR 362/PSYC 362</td>
<td>COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN</td>
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<td>NEUR 380/PSYC 380</td>
<td>FUNDAMENTAL NEUROSCIENCE SYSTEMS</td>
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<tr>
<td>NEUR 383/BIOE 380/Elec 380</td>
<td>INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY</td>
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<td>BIOS 212</td>
<td>INTERMEDIATE EXPERIMENTAL CELLULAR AND MOLECULAR NEUROSCIENCE</td>
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<td>BIOS 315</td>
<td>EXPERIMENTAL PHYSIOLOGY</td>
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<td>BIOS 417</td>
<td>EXPERIMENTAL CELL AND MOLECULAR NEUROSCIENCE</td>
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<td>NEUR 310</td>
<td>INDEPENDENT RESEARCH FOR NEUROSCIENCE UNDERGRADUATES 2</td>
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<td>PSYC 366</td>
<td>METHODS IN SOCIAL COGNITIVE AND AFFECTIVE NEUROSCIENCE</td>
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Total Credit Hours Required for the Major in Neuroscience: 62-69
Total Credit Hours Required for the BA Degree with a Major in Neuroscience: 120

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Elective Requirements

Select a minimum of 4 courses (minimum of 12 credit hours) from the following:

- PSYC 487 FUNCTIONAL HUMAN NEUROANATOMY
- BIOE 492 SENSORY NEUROENGINEERING
- BIOS 128 BRAINSTEM - TEACHING STEM THROUGH NEUROSCIENCE
- BIOS 321 ANIMAL BEHAVIOR
- BIOS 442 MOLECULES, MEMORY AND MODEL ANIMALS: METHODS IN BEHAVIORAL NEUROSCIENCE
- BIOS 443 DEVELOPMENTAL NEUROBIOLOGY
- BIOS 449 ADVANCED CELL AND MOLECULAR NEUROSCIENCE
- COMP 440 / ELEC 440 ARTIFICIAL INTELLIGENCE
- ELEC 475 LEARNING FROM SENSOR DATA
- NEUR 310 INDEPENDENT RESEARCH FOR NEUROSCIENCE UNDERGRADUATES
- NEUR 382 / ELEC 382 INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE
- NEUR 411 / LING 411 NEUROLINGUISTICS
- NEUR 415 / CMOR 415 / ELEC 488 THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS
- NEUR 416 / CMOR 416 / ELEC 489 NEURAL COMPUTATION
- PHIL 130 THE SCIENCES OF THE MIND
- PHIL 231 ANIMAL MINDS
- PHIL 330 PHILOSOPHY OF MIND
- PHIL 345 THEORY OF KNOWLEDGE
- PHIL 431 ADVANCED TOPICS IN THE SCIENCES OF THE MIND
- PSYC 308 MEMORY
- PSYC 310 PSYCHOLOGY OF AGING
- PSYC 354 INTRODUCTION TO SOCIAL AND AFFECTIVE NEUROSCIENCE
- PSYC 375 NEUROPSYCHOLOGY OF LANGUAGE AND MEMORY
- PSYC 432 BRAIN AND BEHAVIOR

Total Credit Hours Required for the Major in Neuroscience: 62-69

Additional Credit Hours to Complete Degree Requirements: 20-27

University Graduation Requirements: 31

Total Credit Hours: 120

Footnotes and Additional Information

* Note: University Graduation Requirements include 31 credit hours, comprised of Distribution Requirements (Groups I, II, and III), FWIS, and LPAP coursework. In some instances, courses satisfying FWIS or distribution requirements may additionally meet other requirements, such as the Analyzing Diversity (AD) requirement, or some of the student's declared major, minor, or certificate requirements. Additional Credit Hours to Complete Degree Requirements include general electives, coursework completed as upper-level, residency (hours taken at Rice), and/or any other additional academic program requirements.

1 Permissible substitutions: MATH 111 and MATH 112 may be substituted for MATH 101 or MATH 105; 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. The Neuroscience program has determined that credit awarded for PHYS 141 CONCEPTS IN PHYSICS I and credit awarded for PHYS 142 CONCEPTS IN PHYSICS II are not eligible for meeting the requirements of the Neuroscience major.

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 (3 credit hours total) of BIOS 128 to use this course as an Elective Requirement.

Policies for the BA Degree with a Major in Neuroscience

Program Restrictions and Exclusions

Students pursuing the BA Degree with a Major in Neuroscience should be aware of the following program restrictions:

- As noted in Majors, Minors, and Certificates (https://ga.rice.edu/undergraduate-students/academic-opportunities/majors-minors-certificates/), under Declaring Majors, Minors and Certificates, students may not obtain both a BA and a BS in the same major. Students pursuing the BA Degree with a Major in Neuroscience may not additionally pursue the BS Degree with a Major in Neuroscience.

- As noted in Majors, Minors, and Certificates (https://ga.rice.edu/undergraduate-students/academic-opportunities/majors-minors-certificates/), students may not major and minor in the same subject.

Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (https://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 (https://oaa.rice.edu/advising-network/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.

Program Transfer Credit Guidelines

Students pursuing the major in Neuroscience should be aware of the following program transfer credit guidelines:
• No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards specific major requirements after matriculation at Rice.
• 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 (https://ga.rice.edu/undergraduate-students/honors-distinctions/university/) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (https://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.

Please Note: Students pursuing the major in Neuroscience may repeat NEUR 310 for credit once as an elective for the major.

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