MINOR IN NEUROSCIENCE

Program Learning Outcomes for the Minor in Neuroscience

Upon completing the minor in Neuroscience, students will be able to:

1. Demonstrate knowledge of the key issues, questions, and perspectives that define contemporary neuroscience.
2. Understand neuroscience as an interdisciplinary field and demonstrate the ability to draw on, and synthesize, key findings and concepts in the sciences, humanities and/or engineering in both the evaluation of existing theories and in the formulation and solution of new problems in neuroscience.

Requirements for the Minor in Neuroscience

Students pursuing the minor in Neuroscience must complete:

- A minimum of 6 courses (18 credit hours) to satisfy minor requirements.
- A minimum of 3 courses (9 credit hours) taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies (p. 2) tab.
- A minimum of 2 courses (6 credit hours) of the Elective Requirements should be completed for the minor only (not shared or double-counted with another major).
- The requirements for one area of specialization (see below for areas of specialization). The Neuroscience minor offers two areas of specialization:
    - Humanities and Social Science (p. 1): represents cognitive and behavioral approaches to neuroscience, ***or***
    - Natural Sciences and Engineering (p. 1): represents genetics, cellular/molecular, bioengineering, computation, and systems-level investigations.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor, or where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

Code	Title	Credit Hours
Total Credit Hours Required for the Minor in Neuroscience		18

Minor Requirements

Code	Title	Credit Hours
Core Requirement		
NEUR 380 / PSYC 380	FUNDAMENTAL NEUROSCIENCE SYSTEMS	3
Area of Specialization		
Select 1 from the following Areas of Specialization (see Areas of Specialization below):		*15*
Humanities and Social Science		
Natural Sciences and Engineering		
Total Credit Hours		**18**

Areas of Specialization

Area of Specialization: Humanities and Social Science

Students must complete a total of 5 courses (15 credit hours total) as listed below to satisfy the requirements for the Humanities and Social Sciences area of specialization.

Code	Title	Credit Hours
Required Course		
NEUR 362 / PSYC 362	COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN	3
Elective Requirements [1, 2]		
Select a minimum of 3 courses (9 credit hours) from the Humanities and Social Science area of specialization (see below for course lists)		*9*
Select at least 1 course (3 credit hours) from the Natural Science and Engineering area of specialization to provide breadth in the field of Neuroscience (see below for course lists) [3]		*3*
Total Credit Hours		**15**

Footnotes and Additional Information

1. At least 2 of the electives should be completed for the minor only (not shared or double-counted with another major).
2. No more than 3 credit hours for research (NEUR 310) may be used to satisfy elective requirements for this specialization. NEUR 310 may be taken twice (one instance may count toward the Area of Specialization, one instance may count as breadth.)
3. BIOS 385 may be used to fulfill this requirement.

Area of Specialization: Natural Sciences and Engineering

Students must complete 5 courses (15 credit hours) as listed below to satisfy the requirements for the Natural Sciences and Engineering area of specialization.

Code	Title	Credit Hours
Required Course		
BIOS 385	CELLULAR AND MOLECULAR MECHANISMS OF THE NEURON	3
Elective Requirements [1, 2]		
Select a minimum of 3 courses (9 credit hours) from the Natural Science and Engineering area of specialization (see below for course lists)		*9*
Select at least 1 course (3 credit hours) from the Humanities and Social Science area of specialization to provide breadth in the field of Neuroscience (see below for course lists) [3]		*3*
Total Credit Hours		**15**

Footnotes and Additional Information

1. At least 2 of the electives should be completed for the minor only (not shared or double-counted with another major).

[2] No more than 3 credit hours for research (NEUR 310) may be used to satisfy elective requirements for this specialization. NEUR 310 may be taken twice (one instance may count toward the Area of Specialization, one instance may count as breadth.)

[3] NEUR 362/PSYC 362 may be used to fulfill this requirement.

Course Lists to Satisfy Requirements

Humanities and Social Science

All students must complete at least 1 course (such that at least 3 credit hours are completed) from the Humanities and Social Science Electives. Students pursuing the Humanities and Social Sciences area of specialization must take 2 additional courses (6 credit hours) from the following list, for a minimum of 3 courses (9 credit hours must be reached with a combination of all courses).

Code	Title	Credit Hours
Select at least 1 course (minimum of 3 credit hours) from the following:		
BIOS 128	BRAINSTEM - TEACHING STEM THROUGH NEUROSCIENCE [1]	1
HIST 353	HISTORY OF SENSATION	3
NEUR 411 / LING 411	NEUROLINGUISTICS	3
PHIL 130	THE SCIENCES OF THE MIND	3
PHIL 231	ANIMAL MINDS	3
PHIL 330	PHILOSOPHY OF MIND	3
PHIL 345	THEORY OF KNOWLEDGE	3
PHIL 431	ADVANCED TOPICS IN THE SCIENCES OF THE MIND	3
PSYC 308	MEMORY	3
PSYC 310	PSYCHOLOGY OF AGING	3
PSYC 354	INTRODUCTION TO SOCIAL AND AFFECTIVE NEUROSCIENCE	3
PSYC 366	METHODS IN SOCIAL COGNITIVE AND AFFECTIVE NEUROSCIENCE	3
PSYC 375	NEUROPSYCHOLOGY OF LANGUAGE AND MEMORY	3
PSYC 432	BRAIN AND BEHAVIOR	3

Footnotes and Additional Information

[1] Students must complete a minimum of three semesters (3 credit hours total) of BIOS 128 to use this course as an elective requirement.

Natural Sciences and Engineering

All students must complete at least 1 course (such that at least 3 credit hours are completed) from the Natural Sciences and Engineering Electives. Students pursuing the Natural Sciences and Engineering area of specialization must take 2 additional courses (6 credit hours) from the following list, for a minimum of 3 courses (9 credit hours must be reached with a combination of all courses).

Code	Title	Credit Hours
Select at least 1 course (minimum of 3 credit hours) from the following:		
BIOS 315	EXPERIMENTAL PHYSIOLOGY	1
BIOS 321	ANIMAL BEHAVIOR	3
BIOS 417	EXPERIMENTAL CELL AND MOLECULAR NEUROSCIENCE	1
BIOS 443	DEVELOPMENTAL NEUROBIOLOGY	3
BIOE 492	SENSORY NEUROENGINEERING	3
COMP 440 / ELEC 440	ARTIFICIAL INTELLIGENCE	4
ELEC 475	LEARNING FROM SENSOR DATA	3
NEUR 310	INDEPENDENT RESEARCH FOR NEUROSCIENCE UNDERGRADUATES [1]	1-4
NEUR 382 / ELEC 382	INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE	3
NEUR 383 / BIOE 380 / ELEC 380	INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY	3
NEUR 415 / CMOR 415 / ELEC 488	THEORETICAL NEUROSCIENCE: FROM CELLS TO LEARNING SYSTEMS	3
NEUR 416 / CMOR 416 / ELEC 489	NEURAL COMPUTATION	3

Footnotes and Additional Information

[1] No more than 3 credit hours for research (NEUR 310) may be used to satisfy elective requirements for this specialization. NEUR 310 may be taken twice (one instance may count toward the Area of Specialization, one instance may count as breadth.)

Policies for the Minor in Neuroscience

Program Restrictions and Exclusions

Students pursuing minor 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/), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.
- Students pursuing the BA Degree or the BS Degree with a major in Neuroscience may not additionally declare the minor in Neuroscience.

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 minor in Neuroscience should be aware of the following program-specific 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 the minor.

- 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 Minor 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 minor in Neuroscience have a 3 credit hour limit for applying research courses to the NEUR minor requirements.

Additional Information

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