NEUROSCIENCE MINOR

Neuroscience embodies the liberal arts experience because it draws on techniques and findings from several academic disciplines including biology, chemistry, computer science, exercise and sports science, mathematics, physics, and psychology. The neuroscience minor provides undergraduate students the opportunity to obtain fundamental knowledge and exposure needed to pursue careers and post-graduate studies in fields related to psychology, human development and aging, health and disease, rehabilitation, biomedical research, human-machine interactions, and other emerging disciplines.

The minor is open to all students, including psychology majors. However, students should note that they are limited to no more than 45 credit hours within a specific department. Students must earn a grade of C or better in at least four of the five courses.

Requirements

In addition to the program requirements listed below, students must:

- take at least nine hours of their minor "core" requirements at UNC–Chapel Hill
- earn a minimum cumulative GPA of 2.000 in the minor core requirements. Some programs may require higher standards for minor or specific courses.

For more information, please consult the degree requirements section of the catalog (http://catalog.unc.edu/undergraduate/degree-requirements/).

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSCI 175</td>
<td>✔️ Introduction to Neuroscience (with a grade of C or better)</td>
<td>3</td>
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</tbody>
</table>

Four courses distributed over at least three academic departments, selected from the following lists:

**Psychology and Neuroscience:**

- NSCI 221 Neuropsychopharmacology
- NSCI 222 Learning H
- NSCI 225 Sensation and Perception H
- Any NSCI course numbered between 300-699 1
- PSYC 245 Psychopathology H
- PSYC 404 Clinical Psychopharmacology
- PSYC 469 Evolution and Development of Biobehavioral Systems
- PSYC 517 Addiction
- PSYC 533 The General Linear Model in Psychology H
- PSYC 559 Applied Machine Learning in Psychology
- PSYC 602 Evolutionary Psychology

**Applied Physical Sciences:**

- APPL 101 Exploring Engineering
- APPL 240 Developing Your Sixth Sense: Designing Sensors and Electrical Circuits to Make Measurements
- APPL 350 Data Science for Applied Science and Engineering
- APPL 430 Optical Instrumentation for Scientists and Engineers
- APPL 435 Nanophotonics

**Biology:**

- BIOC 205 Cellular and Developmental Biology H
- BIOC 224H & BIOC 224L The Mathematics of Life and The Mathematics of Life Laboratory
- BIOC 425 Human Genetics
- BIOC 431 Biological Physics
- BIOC 450 Neurobiology
- BIOC 451 Comparative Physiology
- BIOC 453 Molecular Control of Metabolism and Metabolic Disease
- BIOC 455 Behavioral Neuroscience
- BIOC 458 Sensory Neurobiology and Behavior
- BIOC 523 Sex Differences in Human Disease
- BIOC 544L Laboratory in Diseases of the Cytoskeleton
- BIOC 545 Exploring Brain, Gut, and Immunity H
- BIOC 547 Synaptic Plasticity: Analysis of Primary Literature
- BIOC 552 Behavioral Endocrinology
- BIOC 553 Mathematical and Computational Models in Biology
- BIOC 554 Introduction to Computational Neuroscience
- BIOC 542 Light Microscopy for the Biological Sciences

**Biomedical Engineering:**

- BMME 207 Biomedical Electronics
- BMME 301 Human Physiology: Electrical Analysis
- BMME 445 Systems Neuroscience
- BMME 550 Medical Imaging I: Ultrasonic, Optical, and Magnetic Resonance Systems

**Chemistry:**

- CHEM 430 Introduction to Biological Chemistry H

**Computer Science:**

- COMP 110 ✔️ Introduction to Programming and Data Science H or COMP 111 Introduction to Scientific Programming
- COMP 210 Data Structures and Analysis
- COMP 211 Systems Fundamentals
- COMP 301 Foundations of Programming
- COMP 311 Computer Organization
- COMP 283 ✔️ Discrete Structures H
- COMP 555 Bioalgorithms
- COMP 560 Artificial Intelligence
- COMP 562 Introduction to Machine Learning
- COMP 576 Mathematics for Image Computing
- COMP 581 Introduction to Robotics H
- COMP 631 Computer Networks
- COMP 633 Parallel and Distributed Computing
- COMP 651 Computational Geometry
- COMP 665 Images, Graphics, and Vision

**Exercise and Sport Science:**

- EXSS 175 ✔️ Human Anatomy F
Neuroscience Minor

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>EXSS 276</td>
<td>Human Physiology</td>
</tr>
<tr>
<td>EXSS 380</td>
<td>Neuromuscular Control and Learning</td>
</tr>
<tr>
<td>EXSS 580</td>
<td>Neuromechanics of Human Movement</td>
</tr>
<tr>
<td>Mathematics:</td>
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<tr>
<td>MATH 210</td>
<td>Mathematical Tools for Data Science</td>
</tr>
<tr>
<td>MATH 233</td>
<td>Calculus of Functions of Several Variables^H,F</td>
</tr>
<tr>
<td>MATH 347</td>
<td>Linear Algebra for Applications</td>
</tr>
<tr>
<td>MATH 383</td>
<td>First Course in Differential Equations^H</td>
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<tr>
<td>MATH 523</td>
<td>Functions of a Complex Variable with Applications</td>
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<tr>
<td>MATH 528</td>
<td>Mathematical Methods for the Physical Sciences I</td>
</tr>
<tr>
<td>MATH 529</td>
<td>Mathematical Methods for the Physical Sciences II</td>
</tr>
<tr>
<td>MATH 535</td>
<td>Introduction to Probability</td>
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<tr>
<td>MATH 553</td>
<td>Mathematical and Computational Models in Biology</td>
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<tr>
<td>MATH 555</td>
<td>Introduction to Dynamics</td>
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<tr>
<td>MATH 564</td>
<td>Mathematical Modeling in the Life Sciences</td>
</tr>
<tr>
<td>MATH 566</td>
<td>Introduction to Numerical Analysis</td>
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<tr>
<td>MATH 577</td>
<td>Linear Algebra</td>
</tr>
<tr>
<td>MATH 661</td>
<td>Scientific Computation I</td>
</tr>
<tr>
<td>MATH 662</td>
<td>Scientific Computation II</td>
</tr>
<tr>
<td>MATH 668</td>
<td>Methods of Applied Mathematics I</td>
</tr>
<tr>
<td>MATH 669</td>
<td>Methods of Applied Mathematics II</td>
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<tr>
<td>Physics:</td>
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<td>PHYS 133</td>
<td>How Bio Works</td>
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<td>PHYS 405</td>
<td>Biological Physics</td>
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<tr>
<td>Statistics and Operations Research:</td>
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<tr>
<td>STOR 215</td>
<td>Foundations of Decision Sciences</td>
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<tr>
<td>STOR 415</td>
<td>Introduction to Optimization</td>
</tr>
<tr>
<td>STOR 435</td>
<td>Introduction to Probability</td>
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<tr>
<td>STOR 445</td>
<td>Stochastic Modeling</td>
</tr>
<tr>
<td>STOR 455</td>
<td>Methods of Data Analysis</td>
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<tr>
<td>STOR 535</td>
<td>Probability for Data Science</td>
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<tr>
<td>STOR 555</td>
<td>Mathematical Statistics</td>
</tr>
<tr>
<td>STOR 556</td>
<td>Time Series Data Analysis</td>
</tr>
<tr>
<td>STOR 565</td>
<td>Machine Learning</td>
</tr>
</tbody>
</table>

Total Hours 15

^H Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

^F FY-Launch class sections may be available. A FY-Launch section fulfills the same requirements as a standard section of that course, but also fulfills the FY-SEMINAR/FY-LAUNCH First-Year Foundations requirement. Students can search for FY-Launch sections in ConnectCarolina using the FY-LAUNCH attribute.

1 Except NSCI 395, NSCI 493, NSCI 693H, and NSCI 694H

Graduate Programs

- M.A. in Psychology (http://catalog.unc.edu/graduate/schools-departments/psychology-neuroscience/)
- Ph.D. in Psychology (http://catalog.unc.edu/graduate/schools-departments/psychology-neuroscience/)

Contact Information

Department of Psychology and Neuroscience
Visit Program Website (http://psychology.unc.edu)
Davie Hall, CB# 3270
(919) 843-0174

Chair
Regina M. Carelli
rcarelli@email.unc.edu

Associate Chair
Karen Gil
kgil@email.unc.edu

Director of Undergraduate Studies
Jeannie Loeb
loeb@unc.edu

Director of Undergraduate Psychology Advising
Desiree Griffin
dgriffin@unc.edu

Director of Neuroscience Curricula
Kelly Giovanello
kgio@email.unc.edu

Director of Undergraduate Neuroscience Advising
Rachel Penton
pentonre@email.unc.edu

Associate Director of Cognitive Science Program
Vicki Chanon
vchanon@unc.edu

Student Services Manager
Rachel Mintel
remintel@email.unc.edu

Undergraduate Instructional Program Coordinator
Christopher Coffey
tcoffeey@email.unc.edu

Department Programs

Majors

- Neuroscience Major, B.S. (http://catalog.unc.edu/undergraduate/programs-study/neuroscience-major-bs/)
- Psychology Major, B.A. (http://catalog.unc.edu/undergraduate/programs-study/psychology-major-ba/)
- Psychology Major, B.S. (http://catalog.unc.edu/undergraduate/programs-study/psychology-major-bs/)

Minors

- Cognitive Science Minor (http://catalog.unc.edu/undergraduate/programs-study/cognitive-science-minor/)
- Neuroscience Minor (p. 1)