

Neuroscience, Neuroscience Honors (BSNeurosci)

Bachelor of Science in Neuroscience

The Bachelor of Science degree in Neuroscience provides a strong foundation in the core sciences and related mathematical disciplines, along with the opportunity for training in biology, chemistry, computer science, mathematics, physics, or psychology. Distinctive features of the program include an emphasis on developing the quantitative, statistical, mathematical, and computational skills required in neuroscience, and meaningful hands-on laboratory experience.

Total Hours Required: 120

Plan of Study

The Plan of Study is a suggested four-year course sequence to support academic planning and serves as a helpful guide. Currently enrolled students should meet with their academic advisor to tailor their course selections and timelines to their individual goals and circumstances.

Course	Title	Hours
Year 1		
Semester 1		
M 408D	Sequences, Series, and Multivariable Calculus	4
BIO 315H	Advanced Introduction to Genetics: Honors	3
CH 301C	Foundations of Chemistry I	3
RHE 306	Rhetoric and Writing	3
First-Year Signature Course (090)		3
Hours		16
Semester 2		
BIO 325H	Genetics: Honors	3
CH 302C	Foundations of Chemistry II	3
CH 204	Introduction to Chemical Practice	2
Visual and Performing Arts (050)		3
Free Elective		3
Hours		14
Year 2		
Semester 1		
Hours chosen from: BIO, CH, PHY, CS, or M sequence		3
BIO 206L	Introductory Laboratory Experiments in Biology	2
SDS 321	Introduction to Probability and Statistics	3
Social and Behavioral Sciences (080)		3
Free Elective		3
Hours		14
Semester 2		
Hours chosen from: BIO, CH, PHY, CS, or M sequence		3
NEU 330	Neural Systems I	3
American and Texas Government (070)		3
Free Elective		2
Humanities (040)		3
Hours		14
Year 3		
Semester 1		
PHY 317K	General Physics I	3
PHY 105M	Laboratory For Physics 302K, 303K, and 317K	1
NEU 335	Neural Systems II	3
NEU 340	Neural Systems III: Quantitative Tools	3
American and Texas Government (070)		3

Hours chosen from: BIO, CH, PHY, CS, or M sequence		3
Hours		16
Semester 2		
PHY 317L	General Physics II	3
PHY 105N	Laboratory For Physics 302L, 303L, and 317L	1
Liberal Arts/Fine Arts course		3
Hours chosen from: Upper-division NEU		3
RHE 309S	Critical Reading and Persuasive Writing	3
Free Elective		3
Hours		16
Year 4		
Semester 1		
NEU 379H	Honors Tutorial Course	3
Hours chosen from: Upper-division NEU		3
Hours chosen from: Upper-division NEU lab		3
U.S. History (060)		3
Free Elective		3
Hours		15
Semester 2		
NEU 379H	Honors Tutorial Course	3
Hours chosen from: Upper-division NEU lab		3
Liberal Arts/Fine Arts course		3
U.S. History (060)		3
Free Elective		3
Hours		15
Total Hours		120

Requirements

All requirements are listed below, starting with the most specialized moving to the most general. Additional requirements may follow the table, so be sure to read the entire page. Some required courses listed below may also satisfy [General Education](#) requirements, including [Core Curriculum](#).

Code	Title	Hours
Concentration		
<i>Breadth Requirement (Credit earned by examination may not be counted toward this requirement)</i>		
Honors mathematics course		3
BIO 315H	Advanced Introduction to Genetics: Honors	3
BIO 325H	Genetics: Honors	3
CH 301C	Foundations of Chemistry I	3
CH 302C	Foundations of Chemistry II	3
Honors-designated course from a department in the College of Natural Sciences		3
<i>Statistics (Other statistics courses may be approved by the departmental honors advisor)</i>		
SDS 321	Introduction to Probability and Statistics	3
or SDS 320E	Elements of Statistics	
CH 204	Introduction to Chemical Practice	2
BIO 206L	Introductory Laboratory Experiments in Biology	2
Hours chosen from one of the following sequences:		9
Biology:		
MBS 320	Cell Biology	
MBS 344	Molecular Biology	
MBS 350	Developmental, Stem Cell, and Regenerative Biology	
INB 370	Evolution	
Chemistry:		

CH X28M & CH X28K	Organic Chemistry I and Organic Chemistry Laboratory
CH X28N & CH X28L	Organic Chemistry II and Organic Chemistry Laboratory
CH 353 or CH 353M	Physical Chemistry I Physical Chemistry I for Life Sciences
BCH 369	Fundamentals of Biochemistry
Physics:	
PHY 345	Biophysics
PHY 338K	Electronic Techniques
PHY 355	Modern Physics and Thermodynamics
Computer Science:	
C S 312	Introduction to Programming
C S 314	Data Structures
SDS 374E	Visualization and Data Analysis for Science and Engineering
Mathematics:	
M 427J or M 427K	Differential Equations with Linear Algebra Advanced Calculus for Applications I
M 427L	Advanced Calculus for Applications II
M 340L or M 341	Matrices and Matrix Calculations Linear Algebra and Matrix Theory
M 362K	Probability I
M 378K	Introduction to Mathematical Statistics
SDS 321	Introduction to Probability and Statistics
M 362K	Probability I (may not count both SDS 321 and M 362K)
Hours chosen from:	6
NEU 365L	Neurobiology Laboratory
NEU 366L	Neuroimaging Laboratory
NEU 366S	Neuromolecular Genetics and Disease Laboratory
NEU 466G	Functional and Synaptic Neuroanatomy
Hours chosen from:	6
INB 353S	Sleep Science
INB 359K	Principles of Animal Behavior
NEU 170C	Topics in Neuroscience
NEU 270C	Topics in Neuroscience
NEU 337	Selected Topics in Neuroscience
NEU 361T	Comparative Animal Physiology
NEU 365D	Principles of Drug Action
NEU 365E	Epigenetics of Neuroscience
NEU 365M	Advanced Experimental Neurobiology
NEU 365N	Nerve Regeneration in Invertebrates and Vertebrates
NEU 365P	Programming and Data Analysis for Modern Neuroscience
NEU 365T	Neurobiology of Disease
NEU 365W	Neurobiology of Addiction
NEU 366C	Ion Channels and the Molecular Physiology of Neuronal Signaling
NEU 366D	Synaptic Physiology and Plasticity
NEU 366R	Rhythms in the Nervous System
NEU 367C	Cellular and Molecular Bases of Neural Development
NEU 367F	Foundations of Human Neuroimaging
NEU 367S	Analytical Skepticism

NEU 367V	Evolutionary Neurobiology	
NEU 377	Undergraduate Research	
Hours chosen from one of the following sections approved by the departmental honors advisor:		3
UGS 302 or UGS 303	First-Year Signature Course First-Year Signature Course	
RHE 309S	Critical Reading and Persuasive Writing (A section that is restricted to students in the Dean's Scholars Honors Program)	3
NEU 679H	Honors Tutorial Course (two semesters)	6
Additional coursework approved by the departmental honors advisor		15
Coursework from the College of Liberal Arts and/or the College of Fine Arts		6
<i>Subtotal</i>		79
Degree (see details below)		17
Free electives: Additional coursework to reach total hours required.		
<i>Subtotal</i>		17
General Education		
<u>Remaining Core Curriculum (42 hours total)</u>		24
<u>Foreign Language other than English, Beginning Proficiency</u>		
<i>Subtotal</i>		24
<u>College Requirements - Natural Sciences</u>		
<u>General University Requirements</u>		
Total Hours		120

Degree-Bachelor of Science in Neuroscience (BSNeurosci)

Code	Title	Hours
NEU 330	Neural Systems I	3
NEU 335	Neural Systems II	3
NEU 340	Neural Systems III: Quantitative Tools	3
Hours chosen from one of the following sequences:		8
Sequence 1:		
PHY 317K	General Physics I	
PHY 105M	Laboratory For Physics 302K, 303K, and 317K	
PHY 317L	General Physics II	
PHY 317L	General Physics II	
PHY 105N	Laboratory For Physics 302L, 303L, and 317L	
Sequence 2:		
PHY 303K	Engineering Physics I	
PHY 105M	Laboratory For Physics 302K, 303K, and 317K	
PHY 317L	General Physics II	
PHY 105N	Laboratory For Physics 302L, 303L, and 317L	
Sequence 3:		
PHY 301	Mechanics	
PHY 101L	Laboratory for Physics 301	
PHY 316	Electricity and Magnetism	
PHY 116L	Laboratory for Physics 316	
Total Hours		17

At least 36 semester hours of upper-division coursework must be completed.

At least 21 semester hours of upper-division coursework must be completed in residence at the University.

At least 18 semester hours of Biology and Neuroscience coursework must be completed in residence at the University.

Additional Requirements and Policy

Students must fulfill both the University's [General Requirements](#) for graduation and the [college requirements](#). They must also earn a grade of at least C- in each mathematics and science course required for the degree, and a grade point average in these courses of at least 2.00. More information about grades and the grade point average is given in the [General Information Catalog](#).

Additional Requirements and Policy

To graduate under Neuroscience Honors, students must remain in good standing in the Dean's Scholars Honors Program, must submit an honors thesis approved by the departmental honors advisor, and must present their research in an approved public forum, such as the college's annual Undergraduate Research Forum.