Neuroscience and Computer Science (BSNeuCS)

This program provides a strong technical background and solid foundation in the core sciences and related mathematical disciplines for students planning to begin careers upon graduation and for those interested in graduate study in neuroscience, computer science, or a combination of both. Students who would like to pursue this degree must first be admitted.

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		
C S 312	Introduction to Programming	3
M 408C	Differential and Integral Calculus	4
CH 301	Principles of Chemistry I	3
CH 104M	Introduction to Chemical Practice I	1
BIO 311C	Introductory Biology I	3
First-Year Signature Course (090)		3
	Hours	**17**
Semester 2		
C S 311	Discrete Mathematics for Computer Science	3
C S 314	Data Structures	3
CH 302	Principles of Chemistry II	3
CH 104N	Introduction to Chemical Practice II	1
BIO 311D	Introductory Biology II	3
	Hours	**13**
Year 2		
Semester 1		
C S 429	Computer Organization and Architecture	4
SDS 321	Introduction to Probability and Statistics	3
BIO 325	Genetics	3
BIO 206L	Introductory Laboratory Experiments in Biology	2
Social and Behavioral Sciences (080)		3
	Hours	**15**
Semester 2		
C S 439	Principles of Computer Systems	4
M 340L	Matrices and Matrix Calculations	3
NEU 330	Neural Systems I	3
RHE 306	Rhetoric and Writing	3
Visual and Performing Arts (050)		3
	Hours	**16**
Year 3		
Semester 1		
C S 331	Algorithms and Complexity	3
PHY 317K	General Physics I	3
PHY 105M	Laboratory For Physics 302K, 303K, and 317K	1
NEU 335	Neural Systems II	3
Humanities (040)		3
American and Texas Government (070)		3
	Hours	**16**
Semester 2		
C S 342	Neural Networks	3
Hours chosen from: Upper-division NEU		6
PHY 317L	General Physics II	3
PHY 105N	Laboratory For Physics 302L, 303L, and 317L	1
Communication (010)		3
	Hours	**16**
Year 4		
Semester 1		
Hours chosen from: Upper-division C S		3
Hours chosen from: Upper-division NEU		6
U.S. History (060)		3
Free Elective		3
	Hours	**15**
Semester 2		
Hours chosen from: Upper-division C S		3
C S 379N	Neuroscience and Computer Science Capstone	3
American and Texas Government (070)		3
U.S. History (060)		3
	Hours	**12**
	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
Degree		
Mathematics		
Choose a sequence below:		8
Sequence 1:		
M 408C	Differential and Integral Calculus	
Sequence 2:		
M 408N	Differential Calculus for Science	
M 408S	Integral Calculus for Science	
Hours chosen from:		3
M 340L	Matrices and Matrix Calculations	
or M 341	Linear Algebra and Matrix Theory	
SDS 321	Introduction to Probability and Statistics	3
or M 362K	Probability I	
Primary Science		
Computer Science		
C S 311	Discrete Mathematics for Computer Science	3
or C S 311H	Discrete Mathematics for Computer Science: Honors	
C S 331	Algorithms and Complexity	3
or C S 331H	Algorithms and Complexity: Honors	
C S 312	Introduction to Programming	3
C S 314	Data Structures	3
or C S 314H	Data Structures: Honors	
C S 429	Computer Organization and Architecture	4
or C S 429H	Computer Organization and Architecture: Honors	
C S 439	Principles of Computer Systems	4
or C S 439H	Principles of Computer Systems: Honors	
C S 342	Neural Networks	3
Hours chosen from: Upper-division C S, including at least one of the following courses		6

C S 376	Computer Vision	
C S 354	Computer Graphics	
C S 363M	Principles of Machine Learning I	
C S 364M	Principles of Machine Learning II	
Neuroscience		
BIO 206L	Introductory Laboratory Experiments in Biology	2
Choose a sequence below:		6
Sequence 1:		
BIO 311C	Introductory Biology I	
BIO 311D	Introductory Biology II	
BIO 325	Genetics	
Sequence 2:		
BIO 315H	Advanced Introduction to Genetics: Honors	
BIO 325H	Genetics: Honors	
NEU 330	Neural Systems I	3
NEU 335	Neural Systems II	3
Hours chosen from: Upper-division NEU		12
Secondary Science		
CH 301	Principles of Chemistry I	3
or CH 301C	Foundations of Chemistry I	
CH 302	Principles of Chemistry II	3
or CH 302C	Foundations of Chemistry II	
CH 104M	Introduction to Chemical Practice I	1
CH 104N	Introduction to Chemical Practice II	1
Choose a sequence below:		8
Sequence 1:		
PHY 317K	General 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 2:		
PHY 303K	Engineering Physics I	
PHY 105M	Laboratory For Physics 302K, 303K, and 317K	
PHY 303L	Engineering 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	
Integrated Capstone		
Hours chosen from: (only one course may count for the degree)		3
C S 379N	Neuroscience and Computer Science Capstone	
NEU 379N	Neuroscience and Computer Science Capstone	
Students may substitute one course chosen from: Neuroscience 365L, 366L, 366R, 366W, 367S, 377, 379H, 466G, 466T, Computer Science 370, 370F, 379H, or 374H.		
Subtotal		*88*
Free electives: Additional coursework to reach total hours required.		2
Subtotal		*2*
General Education		
Remaining Core Curriculum (42 hours total)		30
Foreign Language other than English, Beginning Proficiency		
Subtotal		*30*
College Requirements - Natural Sciences		
General University Requirements		
Total Hours		**120**

Additional Requirements and Policies

Students in this program may not also earn a bachelor's degree nor transcript-recognized minor or certificate in neuroscience nor computer science.

Students need at least 42 semester hours of upper-division coursework. At least 18 semester hours in biology and neuroscience must be completed in residence. At least 17 hours of computer science upper-division coursework must be completed in residence.

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. An undergraduate may not enroll in any computer science course more than once without written consent of an undergraduate advisor in computer science. No student may enroll in any computer science course more than twice. No student may take more than three upper-division computer science courses in a semester without written consent of an undergraduate advisor in computer science. All transfer coursework must be approved by faculty before it can count towards the degree, except where equivalency is specified by state regulation.