

Behavioral Neuroscience, BS

Overview

The behavioral neuroscience curriculum focuses on the biological bases underlying behavior under healthy and pathological states. The program combines the disciplines of biology and psychology with a strong background in basic physical sciences and mathematics to understand how the behavior of humans and animals is controlled by physiological systems. Students gain a solid foundation in the anatomical and functional specializations of the brain and neural mechanisms from neurons to circuits to networks. Students then choose from a range of advanced electives to delve deeply into diverse specializations and current topics in the field.

Note: Due to overlap in course content, double majoring in behavioral neuroscience with any of the following majors is not permitted: psychology, biology, cell and molecular biology, or biochemistry.

Program Requirements

Complete all courses listed below unless otherwise indicated. Also complete any corequisite labs, recitations, clinicals, or tools courses where specified and complete any additional courses needed beyond specific college and major requirements to satisfy graduation credit requirements.

Universitywide Requirements

All undergraduate students are required to complete the Universitywide Requirements (<https://catalog.northeastern.edu/undergraduate/university-academics/university-wide-requirements/>).

NUpath Requirements

All undergraduate students are required to complete the NUpath Requirements (<https://catalog.northeastern.edu/undergraduate/university-academics/nupath/>).

Behavioral Neuroscience Foundation Courses

Code	Title	Hours
BIOL 1107 and BIOL 1108	Foundations of Biology and Lab for BIOL 1107	5
BIOL 2299	Inquiries in Biological Sciences	4
BIOL 2301 and BIOL 2302	Genetics and Molecular Biology and Lab for BIOL 2301	5
BIOL 3405	Neurobiology	4
BNSC 1000	Behavioral Neuroscience at Northeastern	1
PSYC 1101	Foundations of Psychology	4
PSYC 3200	Clinical Neuroanatomy	4
PSYC 3458	Biological Psychology	4
Complete one of the following. Students who receive transfer credit for the Advanced Placement Statistics exam may complete the 1 SH PSYC 2315 course (requires department permission).		4-5
ENVR 2500 and ENVR 2501	Biostatistics and Lab for ENVR 2500	
PSYC 2320	Statistics in Psychological Research	

Behavioral Neuroscience Advanced Courses

Code	Title	Hours
Complete four of the following (at least two must be numbered in the 4000–5999 range):		16-17
BIOL 3415	Current Topics in Behavioral Neuroscience	
BIOL 3601	Neural Systems and Behavior	
BIOL 3605	Developmental Neurobiology	
BIOL 4705	Neurobiology of Cognitive Decline	
BIOL 4709	Neurobiology of Learning and Memory	
BIOL 5587 or BIOL 3405	Comparative Neurobiology Neurobiology	
BIOL 5595	Cell and Molecular Neuroscience	
BIOL 5601	Multidisciplinary Approaches in Motor Control	
PSYC 3506	Neuropsychology of Fear	
PSYC 3508	Behavioral Endocrinology	

PSYC 3510	Brain, Behavior, and Immunity
PSYC 4510	Psychopharmacology
PSYC 4512	Neuropsychology
PSYC 4514	Clinical Neuroscience
PSYC 4540	Quantitative Topics in Psychology and Behavioral Neuroscience
PSYC 4570	Behavioral Genetics
PT 5410 and PT 5411	Functional Human Neuroanatomy and Lab for PT 5410

One course may be an experiential course:

BIOL 4970	Junior/Senior Honors Project 1
BIOL 4971	Junior/Senior Honors Project 2
BIOL 4991	Research
BNSC 4970	Junior/Senior Honors Project 1
BNSC 4971	Junior/Senior Honors Project 2
BNSC 4991	Research
BNSC 4994	Internship
PSYC 4965	Undergraduate Teaching Experience
PSYC 4970	Junior/Senior Honors Project 1
PSYC 4971	Junior/Senior Honors Project 2
PSYC 4991	Directed Study Research

Behavioral Neuroscience Elective Courses

Code	Title	Hours
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Psychology Elective

An additional behavioral neuroscience core course may be used to fulfill this requirement.

Complete one of the following:

PSYC 3404	Developmental Psychology	4
PSYC 3406	Clinical Psychology and Mental Health	
PSYC 3450	Learning and Motivation	
PSYC 3451	Learning Principles and Behavior Analysis	
PSYC 3452	Sensation and Perception	
PSYC 3464	Psychology of Language	
PSYC 3466	Cognition	
PSYC 3540	Environmental Psychology	
PSYC 4524	Cognitive Development	

Biology Elective

Complete one of the following:

BIOL 3401	Comparative Vertebrate Anatomy	4-5
BIOL 3409	Current Topics in Biology	
BIOL 3411	Current Topics in Cell and Molecular Biology	
BIOL 3421 and BIOL 3422	Microbiology and Lab for BIOL 3421	
BIOL 3603	Mammalian Systems Physiology	
BIOL 3611 and BIOL 3612	Biochemistry and Lab for BIOL 3611	
BIOL 4707	Cell and Molecular Biology	
BIOL 5543	Stem Cells and Regeneration	
BIOL 5573	Medical Microbiology	
BIOL 5581	Biological Imaging	
BIOL 5591	Advanced Genomics	
BIOL 5593	Cell and Molecular Biology of Aging	

Research Elective

Complete one of the following:

BIOL 2309	Biology Project Lab	4
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PSYC 4600	Laboratory in Research Design
PSYC 4604	Laboratory in Learning and Motivation
PSYC 4606	Laboratory in Biological Psychology
PSYC 4612	Laboratory in Cognition
PSYC 4622	Laboratory in Sensation and Perception
PSYC 4624	Laboratory in Affective Science
PSYC 4626	Laboratory in Life-Span Emotional Development
PSYC 4632	Laboratory in Psychophysiology

Capstone Course

Complete one of the following: 4

BIOL 4701	Biology Capstone
PSYC 4654 to PSYC 4678	

Behavioral Neuroscience Supporting Courses

Code	Title	Hours
CHEM 1161 and CHEM 1162	General Chemistry for Science Majors and Lab for CHEM 1161	5
CHEM 2311 and CHEM 2312	Organic Chemistry 1 and Lab for CHEM 2311	5
CHEM 2313 and CHEM 2314	Organic Chemistry 2 and Lab for CHEM 2313	5
MATH 1341 or MATH 1241	Calculus 1 for Science and Engineering Calculus 1	4

Complete one of the following: 5

DS 2000 and DS 2001	Programming with Data and Data Science Programming Practicum
PHYS 1145 and PHYS 1146	Physics for Life Sciences 1 and Lab for PHYS 1145
PHYS 1151 and PHYS 1152 and PHYS 1153	Physics for Engineering 1 and Lab for PHYS 1151 and Interactive Learning Seminar for PHYS 1151
PHYS 1161 and PHYS 1162 and PHYS 1163	Physics 1 and Lab for PHYS 1161 and Recitation for PHYS 1161
PHYS 1171 and PHYS 1172 and PHYS 1173	Physics 1 for Bioscience and Bioengineering and Lab for PHYS 1171 and Interactive Learning Seminar for PHYS 1171

Behavioral Neuroscience Major Credit/GPA Requirement

Complete 90 semester hours in the major with a minimum 2.000 GPA.

Due to overlap in course content, double majoring in behavioral neuroscience with any of the following majors is not permitted: psychology, biology, cell and molecular biology, or biochemistry.

Program Requirement

132 total semester hours required

Plan of Study**Four Years, Two Co-ops in Summer 2/Fall**

Year 1		Year 2		Year 3		Year 4	
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
BIOL 1107 and BIOL 1108		5 BIOL 2299		4 BIOL 2301 and BIOL 2302		5 Vacation	0
BNSC 1000		1 CHEM 2311 and CHEM 2312		5 Advanced PSYC elective		4	
CHEM 1161 and CHEM 1162 and CHEM 1163		5 ENGW 1111		4			

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MATH 1251	4	PSYC 3458	4					
PSYC 1101	4							
	19		17			9		0
Year 2								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
BIOL 3405	4	BIOL 2309	4	PSYC 2320	4	Co-op		0
CHEM 2313 and CHEM 2314	5	DS 2000 and DS 2001	4	Elective	4			
PSYC 3200	4	EESC 2000	1					
Elective	4	BNS advanced course 1	4					
		Elective	4					
	17		17			8		0
Year 3								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
Co-op	0	Advanced BIOL elective	5	ENGW 3307	4	Co-op		0
		BNS advanced course 2	4	Elective	4			
		BNS advanced course 3	4					
		Elective	4					
	0		17			8		0
Year 4								
Fall	Hours	Spring	Hours					
Co-op	0	BNS advanced course 4	4					
Elective (online)	4	Capstone	4					
		Elective	4					
		Elective	4					
	4		16					

Total Hours: 132

Five Years, Three Co-ops in Spring/Summer 1

Year 1								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
BIOL 1107 and BIOL 1108	5	BIOL 2299	4	Vacation	0	Vacation		0
BNSC 1000	1	ENGW 1111	4					
CHEM 1161 and CHEM 1162 and CHEM 1163	5	PSYC 3458	4					
MATH 1251	4	Elective	4					
PSYC 1101	4							
	19		16			0		0
Year 2								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
BIOL 2301 and BIOL 2302	5	Co-op	0	Co-op	0	CHEM 2313 and CHEM 2314		5
CHEM 2311 and CHEM 2312	5					PSYC 2320		4
EESC 2000	1							
PSYC 3200	4							
Elective	4							
	19		0			0		9
Year 3								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
BIOL 2309	4	Co-op	0	Co-op	0	Vacation		0

BIOL 3405	4							
Advanced PSYC elective	4							
Elective	4							
	16			0			0	0

Year 4									
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	Hours	
DS 2000 and DS 2001	4	Co-op		0	Co-op		0	Elective	4
BNS advanced course 1	4								
BNS advanced course 2	4								
Elective	4								
	16			0			0	4	

Year 5								
Fall	Hours	Spring	Hours					
ENGW 3307	4	BNS advanced course 4	4					
Advanced BIOL elective	5	Capstone course	4					
BNS advanced course 3	4	Elective	4					
Elective	4	Elective	4					
	17		16					

Total Hours: 132