

Behavioral Neuroscience and Design, BS

Overview

The behavioral neuroscience and design combined major engages students in an interdisciplinary study across the biology, psychology, and Art + Design departments to integrate fundamental design courses with a strong foundation in the physiological brain mechanisms that give rise to behavioral functions. The latest research in neuroscience and psychology enables designers to maximize the impact of their designs and, conversely, complex neuroscientific concepts can be made intelligible to a wider public through creative visual works. Students in this major have the opportunity to learn about the inner workings of the brain and how its various structures interact to enhance their approach to design methodologies. Students can then apply these principles to biomimetic medical devices as well as data and network visualization.

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 Requirements

Code	Title	Hours
Behavioral Neuroscience Overview		
BNSC 1000	Behavioral Neuroscience at Northeastern ¹	1
EESC 2000	Professional Development for Co-op ²	1
COS Foundations		
PSYC 1101	Foundations of Psychology	4
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
CHEM 1161 and CHEM 1162 and CHEM 1163	General Chemistry for Science Majors and Lab for CHEM 1161 and Recitation for CHEM 1161	5
CHEM 2311 and CHEM 2312	Organic Chemistry 1 and Lab for CHEM 2311	5
Mathematics Foundation		
MATH 1251 or MATH 1341	Calculus and Differential Equations for Biology 1 Calculus 1 for Science and Engineering	4
Statistics Foundation		
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 Foundations		
PSYC 3200	Clinical Neuroanatomy	4
PSYC 3452	Sensation and Perception	4
PSYC 3458	Biological Psychology	4
Behavioral Neuroscience Core Courses		
Complete two of the following:		8
BIOL 3415	Current Topics in Behavioral Neuroscience	
BIOL 3601	Neural Systems and Behavior	

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BIOL 3605	Developmental Neurobiology
BIOL 4705	Neurobiology of Cognitive Decline
BIOL 4709	Neurobiology of Learning and Memory
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 4570	Behavioral Genetics

¹ Students entering through CAMD may take Art and Design at Northeastern (ARTF 1000).

² Students entering through CAMD may take Professional Development for Co-op (EEAM 2000).

Design Requirements

Code	Title	Hours
Art + Design Fundamentals		
ARTF 1122	Color and Composition (with optional ARTF 1123)	4
Art and Design Fundamentals Elective		
Complete one of the following:		5
ARTF 1124 and ARTF 1125	Form and Structure and Form and Structure Tools	
ARTF 2220 and ARTF 2221	Movement and Time and Movement and Time Tools	
ARTF 2223 and ARTF 2224	Experience and Interaction and Experience and Interaction Tools	
Design Required		
ARTG 1001 and ARTG 1002	Design Perspectives: An Introduction to Design in the World and Seminar for Design Perspectives	4
ARTG 1270 and ARTG 1271	Design: Process + Practices and Studio for Design: Process + Practices	4
ARTG 1290 and ARTG 1291	Typographic Systems and Studio for Typographic Systems	4
Art + Design History Elective		
Complete any one ARTH course.		4
Art + Design Elective		
Complete any one ARTD, ARTE, ARTF, ARTG, ARTH, ARTS, or GAME course as long as prerequisites have been met.		4
Degree Capstone Project		
ARTG 4550	Design Degree Project	4

Design Option

Code	Title	Hours
Complete one of the following options:		8
Experience Design Option		
ARTG 3462	Experience Design Principles	
ARTG 3463	Experience Design 2	
Graphic Design Option		
ARTG 2252	Graphic Design Principles	
ARTG 3450	Graphic Design 2	
Information Design Option		
ARTG 2242	Information Design Principles	
ARTG 3444	Topics in Information Design Inquiry	
Interaction Design Option		

ARTG 2400	Interaction Design Principles (with optional ARTG 2401)
ARTG 3700	Interaction Design 2: Mobile

Integrative Requirements

Code	Title	Hours
Integrative Courses		
ARTG 5310	Visual Cognition	4
BIOL 5587	Comparative Neurobiology	4
The following course is already required in major:		
ARTG 4550	Design Degree Project	
Upper-Division Elective		
Complete one course that is not already taken as long as prerequisites have been met:		4
Any ARTG course not already required or ARTG 5000 Topics in Design, as long as prerequisites have been met.		
BIOL 3403 or higher		
BNSC 4970 or higher		
PSYC 3404 or higher		

Writing Requirements

Code	Title	Hours
College Writing		
ENGW 1111 or ENGW 1102	First-Year Writing First-Year Writing for Multilingual Writers	4
Advanced Writing in the Disciplines		
ENGW 3307 or ENGW 3314 or ENGW 3315	Advanced Writing in the Sciences Advanced Writing in the Arts, Media, and Design Interdisciplinary Advanced Writing in the Disciplines	4

Required General Electives

Code	Title	Hours
Complete 16 semester hours of general electives.		16

Major Credit Hour Requirement

104 semester hours in the major.

Program Requirements

133 total semester hours required

Plan of Study

Sample Plans of Study

FOUR YEARS, TWO CO-OPS

Year 1								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	Hours
ARTG 1001 and ARTG 1002		4 ARTF 1122 (with optional ARTF 1123)		4 ARTG 1270 and ARTG 1271		4 ARTG 1290 and ARTG 1291		4
BIOL 1107 and BIOL 1108		5 BIOL 2299		4 PSYC 2320		4 PSYC 3452		4
BNSC 1000 or ARTF 1000		1 ENGW 1111		4				
CHEM 1161 and CHEM 1162 and CHEM 1163		5 MATH 1251		4				
PSYC 1101		4						
		19		16		8		8
Year 2								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	Hours
BIOL 2301 and BIOL 2302		5 Co-op		Co-op		Art + Design Fundamentals Elective		4

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CHEM 2311 and CHEM 2312	5					General elective	4
EESC 2000 or EEAM 2000	1						
PSYC 3458	4						
Design Option course 1	4						
	19			0		0	8
Year 3							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
ARTG 5310	4	Co-op		Co-op		ENGW 3315	4
PSYC 3200	4					General elective	4
Design option course 2	4						
Elective	4						
	16			0		0	8
Year 4							
Fall	Hours	Spring	Hours				
BIOL 5587	4	ARTG 4550	4				
Art + Design Elective	4	BNS core course	4				
Art and Design History elective	4	Upper-division elective	4				
BNS core course	4	General elective	4				
	16		16				

Total Hours: 134

FIVE YEARS, THREE CO-OPS

Year 1							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
ARTG 1001 and ARTG 1002	4	ARTF 1122 (with optional ARTF 1123)	4	Vacation		Vacation	
BIOL 1107 and BIOL 1108	5	BIOL 2299	4				
BNSC 1000 or ARTF 1000	1	ENGW 1111	4				
CHEM 1161 and CHEM 1162 and CHEM 1163	5	MATH 1251	4				
PSYC 1101	4						
	19		16			0	0
Year 2							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
ARTG 1270 and ARTG 1271	4	Co-op		Co-op		PSYC 2320	4
ARTG 1290 and ARTG 1291	4					General Elective	4
CHEM 2311 and CHEM 2312	5						
EESC 2000 or EEAM 2000	1						
PSYC 3452	4						
	18		0			0	8
Year 3							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
BIOL 2301 and BIOL 2302	5	Co-op		Co-op		Vacation	
PSYC 3200	4						
PSYC 3458	4						

Design Option course 1	4							
	17			0			0	0
Year 4								
Fall	Hours	Spring		Hours	Summer 1		Hours	Summer 2
								Hours
Art and Design History elective	4	Co-op			Co-op			ENGW 3315
Art + Design Elective	4							General elective
BNS core course	4							
Elective	4							
	16			0			0	8
Year 5								
Fall	Hours	Spring		Hours				
ARTG 5310	4	ARTG 4550		4				
BIOL 5587	4	Art+Design Elective		4				
Art+Design History Elective	4	BNS core course		4				
Design Option level 2	4	Upper-division elective		4				
	16			16				

Total Hours: 134