

# Behavioral Neuroscience and Design, BS (Oakland)

The combined major in behavioral neuroscience and design engages students in an interdisciplinary study across biology, psychology, Art + Design fundamentals, design core, and a strong foundation in the physiological brain mechanisms that give rise to behavioral functions with the practice of understanding humans, their surrounding contexts and systems, and designing alternative futures. Students study the latest research in neuroscience, psychology, design, and the brain's inner workings, enabling them to maximize the impact of design solutions and, conversely, communicate complex neuroscientific concepts to a broader public.

The program offers several options for the study of design: experience design, a holistic and integrative approach that focuses on the quality of the human experience in concrete situations; graphic design, the integration of text and image to communicate critical concepts; information design, the visualization and physicalization of data to enhance human understanding of complex knowledge; or interaction design, the creation of navigable interfaces and systems that allow audiences to take an active role to achieve meaningful goals.

## 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
<b>Behavioral Neuroscience Overview</b>		
BNSC 1000	Behavioral Neuroscience at Northeastern <sup>1</sup>	1
EESC 2000	Professional Development for Co-op <sup>2</sup>	1
<b>COS Foundations</b>		
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
PSYC 1101	Foundations of Psychology	4
<b>Mathematics Foundation</b>		
MATH 1341 or MATH 1241	Calculus 1 for Science and Engineering Calculus 1	4
<b>Statistics Foundation</b>		
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	
<b>Behavioral Neuroscience Foundations</b>		
PSYC 3200	Clinical Neuroanatomy	4
PSYC 3452	Sensation and Perception	4
PSYC 3458	Biological Psychology	4
<b>Behavioral Neuroscience Core Courses</b>		
Complete two of the following:		8

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BIOL 3405	Neurobiology
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 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

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

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

### Design Requirements

Code	Title	Hours
<b>Art + Design Fundamentals Required</b>		
ARTF 1220	Elements of Visual Composition (with optional ARTF 1221)	2
<b>Art + Design Fundamentals Electives</b>		
Complete three of the following:		6
ARTF 1200	Representational Drawing	
ARTF 1210	Abstract Drawing	
ARTF 1230 and ARTF 1231	Making with Form and Materials and Making with Form and Materials Tools	
ARTF 1240 and ARTF 1241	Making with Video, Sound, and Animation and Making with Video, Sound, and Animation Tools	
ARTF 1250 and ARTF 1251	Designing Interactive Experiences and Designing Interactive Experiences Tools	
<b>Design Required</b>		
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
<b>Art + Design History Elective</b>		
Complete any one ARTH course. ARTH 1001 Visual Intelligence and ARTH 1002 Seminar in Visual Intelligence is recommended to fulfill requirement.		4
<b>Art + Design Elective</b>		
Complete any one ARTD, ARTE, ARTF(4SH), ARTG, ARTH, ARTS, EXRE, or GAME course for which prerequisites have been met and not used to fulfill other requirements of the program. If any topics course is completed more than once, the additional completions may be allowed toward the electives.		4
<b>Degree Capstone Project</b>		
ARTG 4550	Design Degree Project	4
<b>Design Option</b>		
Code	Title	Hours
Complete one of the following options:		8
<b>Experience Design Option</b>		
ARTG 3462	Experience Design Principles	

ARTG 3464	Topics In Experience Design Inquiry
<b>Graphic Design Option</b>	
ARTG 2252	Graphic Design Principles
ARTG 3452	Topics In Graphic Design Inquiry
<b>Information Design Option</b>	
ARTG 2242	Information Design Principles
ARTG 3444	Topics in Information Design Inquiry
<b>Interaction Design Option</b>	
ARTG 2400	Interaction Design Principles (with optional ARTG 2401)
ARTG 3400	Topics In Interaction Design Inquiry

## Integrative Requirements

Code	Title	Hours
<b>Integrative Courses</b>		
ARTG 5310	Visual Cognition	4
BIOL 5587	Comparative Neurobiology	4
or PSYC 4622	Laboratory in Sensation and Perception	
or PSYC 4656	Seminar in Biological Psychology	
or PSYC 4668	Seminar in Sensation and Perception	
The following course is already required in the major:		
ARTG 4550	Design Degree Project	
<b>Upper-Division Elective</b>		
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		
BIOL 3403 or higher		
BNSC 4991 or higher		
PSYC 3404 or higher		

## Writing Requirements

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

## Required General Electives

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

## Major Credit Hour Requirement

110 semester hours in the major

## Program Requirements

133 total semester hours required

## Plan of Study

### Sample Plans of Study

#### FOUR YEARS, TWO CO-OPS IN SPRING/SUMMER FIRST HALF

Year 1							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
ARTG 1001 and ARTG 1002		4 ARTF 1220 (with optional ARTF 1221)		2 ARTG 1270 and ARTG 1271		4 ARTG 1290 and ARTG 1291	4

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BIOL 1107 and BIOL 1108	5 ARTF elective	2 PSYC 2320	4 PSYC 3452	4
BNSC 1000 or ARTF 1000	1 BIOL 2299	4		
CHEM 1161 and CHEM 1162 and CHEM 1163	5 ENGW 1111	4		
PSYC 1101	4 MATH 1341	4		
	19	16	8	8

#### Year 2

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
BIOL 2301 and BIOL 2302		5 Co-op		0 Co-op		0 ARTF elective	2
CHEM 2311 and CHEM 2312		5				ARTF elective	2
EESC 2000 or EEAM 2000		1				General elective	4
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		0 Co-op		0 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	Summer 1	Hours	Summer 2	Hours
BIOL 5587		4 ARTG 4550		4			
A+D elective		4 BNS core course		4			
ARTH elective		4 Upper-division elective		4			
BNS core course		4 General elective		4			
	16			16			

Total Hours: 134

### FIVE YEARS, THREE CO-OPS IN SPRING/SUMMER FIRST HALF

#### Year 1

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
ARTG 1001 and ARTG 1002		4 ARTF 1220 (with optional ARTF 1221)		2 Vacation		Vacation	
BIOL 1107 and BIOL 1108		5 ARTF elective		2			
BNSC 1000 or ARTF 1000		1 BIOL 2299		4			
CHEM 1161 and CHEM 1162 and CHEM 1163		5 ENGW 1111		4			
PSYC 1101		4 MATH 1341		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		0 Co-op		0 PSYC 2320	4
ARTG 1290 and ARTG 1291		4				ARTF elective	2
CHEM 2311 and CHEM 2312		5				ARTF elective	2

EESC 2000 or EEAM 2000	1							
PSYC 3452	4							
	18			0			0	8
<b>Year 3</b>								
<b>Fall</b>	<b>Hours</b>	<b>Spring</b>	<b>Hours</b>	<b>Summer 1</b>	<b>Hours</b>	<b>Summer 2</b>	<b>Hours</b>	
BIOL 2301 and BIOL 2302	5	Co-op		0	Co-op	0	Vacation	
PSYC 3200	4							
PSYC 3458	4							
Design option course 1	4							
	17			0			0	0
<b>Year 4</b>								
<b>Fall</b>	<b>Hours</b>	<b>Spring</b>	<b>Hours</b>	<b>Summer 1</b>	<b>Hours</b>	<b>Summer 2</b>	<b>Hours</b>	
ARTH elective	4	Co-op		0	Co-op	0	ENGW 3315	4
A+D elective	4						General elective	4
BNS core course	4							
Elective	4							
	16			0			0	8
<b>Year 5</b>								
<b>Fall</b>	<b>Hours</b>	<b>Spring</b>	<b>Hours</b>					
ARTG 5310	4	ARTG 4550	4					
BIOL 5587	4	A+D elective	4					
ARTH elective	4	BNS core course	4					
Design option level 2	4	Upper-division elective	4					
	16		16					

Total Hours: 134