

Artificial Intelligence and Behavioral Neuroscience, BS (Boston)

The artificial intelligence and psychology combined major offers an integrative curriculum in the study of mind, brain, and behavior and in the collection, manipulation, storage, retrieval, and computational analysis of data in its various forms including numeric, textual, image, and video data from small to large volumes. The study of psychology draws upon empirical research with both humans and animals to investigate and seek explanations for the behavior and mental life of individuals and to develop assessment tools and treatment options for addressing clinical problems. In this program, students have an opportunity to augment such knowledge with skills in machine learning and data analytics.

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/general-education-requirements/#nupathtext>).

Artificial Intelligence Requirements

Code	Title	Hours
Computer Science Overview		
Must be taken in alignment with your home college:		
CS 1200 or BNSC 1000 or INPR 1000 or INSC 1000	First Year Seminar Behavioral Neuroscience at Northeastern First-Year Interdisciplinary Seminar Science at Northeastern	1
CS 1210 or EESC 2000	Professional Development for Khoury Co-op Professional Development for Co-op	1
Fundamental Courses		
All students can take a self-assessment to attempt to place out of CS 2000 and CS 2001. Students who place out of CS 2000 and CS 2001 will instead substitute with 4-5 semester hours of CS, CY, or DS coursework at the 3000 level or higher not otherwise required in the degree.		
CS 2000 and CS 2001	Introduction to Program Design and Implementation and Lab for CS 2000	5
CS 2100 and CS 2101	Program Design and Implementation 1 and Lab for CS 2101	5
CS 3200	Introduction to Databases	4
DS 3500	Advanced Programming with Data	4
MATH 1365 or MATH 1465	Introduction to Mathematical Reasoning Intensive Mathematical Reasoning	4
Artificial Intelligence Foundations		
DS 3000	Mathematical Foundations of Artificial Intelligence	4
DS 4200	Information Presentation and Visualization	4
DS 4300	Large-Scale Information Storage and Retrieval	4
DS 4400	Machine Learning	4
Statistics Foundation		
Complete one of the following:		4-5
ENVR 2500 and ENVR 2501	Biostatistics and Lab for ENVR 2500	
PSYC 2320	Statistics in Psychological Research	

Writing Requirements

Code	Title	Hours
College Writing		
ENGW 1111	First-Year Writing	4
or ENGW 1102	First-Year Writing for Multilingual Writers	
Advanced Writing in the Disciplines		
Complete one of the following:		4
ENGW 3302	Advanced Writing in the Technical Professions	
ENGW 3307	Advanced Writing in the Sciences	
ENGW 3315	Interdisciplinary Advanced Writing in the Disciplines	

Behavioral Neuroscience Requirements

Code	Title	Hours
College of Science Foundations		
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
Mathematics Foundation		
MATH 1341	Calculus 1 for Science and Engineering	4
Behavioral Neuroscience Foundations		
BIOL 3405 or BIOL 5595	Neurobiology Cell and Molecular Neuroscience	4
PT 5410 and PT 5411 or PSYC 3200	Functional Human Neuroanatomy and Lab for PT 5410 Clinical Neuroanatomy	4-5
Psychology Elective		
Complete one of the following:		4
PSYC 3404	Developmental Psychology	
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	
Behavioral Neuroscience Advanced Courses		
Complete two of the following, not taken to fulfill previous requirements:		8
BIOL 3415	Current Topics in Behavioral Neuroscience	
BIOL 3425	Developmental Neuroplasticity and Technology	
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

Integrative Requirements

Code	Title	Hours
Integrative Courses		
CS 4100	Principles of Artificial Intelligence	4
PSYC 4540 or BINF 6200	Quantitative Topics in Psychology and Behavioral Neuroscience Bioinformatics Programming	4
Upper-Division Elective		
Complete 4 semester hours from within the following options:		4
BINF 6310	Introduction to Bioinformatics	
BIOL 3400 or higher		
BNSC 4991 or higher		
CS 2300 or higher, except CS 5010		
CY 2000 or higher, except CY 4930		
DS 2500 or higher, except DS 4900		
EECE 2160	Embedded Design: Enabling Robotics	
EECE 2322	Fundamentals of Digital Design and Computer Organization	
MKTG 4606	Digital, Analytics, Technology, and Automation Research Practicum	
PSYC 3200 or higher		

Required General Electives

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

Science GPA Requirement (Behavioral Neuroscience)

A minimum 2.000 GPA in the following course codes is required: BIOL, BNSC, CHEM, ENVR, MATH, PHYS, PSYC

NUpath Requirements Satisfied

- Advanced Writing in the Disciplines
- Analyzing and Using Data
- Conducting Formal and Quantitative Reasoning
- Demonstrating Thought and Action in a Capstone
- Engaging with the Natural and Designed World
- Understanding Societies and Institutions
- Writing in the First Year
- Writing-Intensive in the Major

Integrating Knowledge and Skills Through Experience is satisfied through co-op.

Program Requirement

130 total semester hours required