

Behavioral Neuroscience and Philosophy, BS

Overview

The behavioral neuroscience and philosophy combined degree program engages students in the interdisciplinary study across the biology, psychology, and philosophy departments. The major provides rigorous training in both disciplines with a specific focus on understanding seminal questions concerning human nature and the mind. Courses in the basic sciences will lay a strong foundation in biology, chemistry, and data analytics that are relevant to neuroscience. In behavioral neuroscience core courses, students will examine the structure and function of the human nervous system in order to explore brain mechanisms that give rise to behavioral functions, including cognitive processes, as well as pathological states. In philosophy courses, successful students will develop core analytics skills, including ethical reasoning; learn to recognize and question deep theoretical assumptions at the heart of scientific theories and practice; and explore the social and ethical dimensions of neuroscience and scientific practice more broadly. The fields of behavioral neuroscience and philosophy are further bridged with course work that is designed to enable students to apply neuroscientific concepts to philosophical, moral, and ethical questions.

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 | | |
| 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 | 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 |
| PSYC 1101 | Foundations of Psychology | 4 |
| 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 Foundation | | |
| PSYC 3200 | Clinical Neuroanatomy | 4 |
| PSYC 3458 | Biological Psychology | 4 |
| Psychology Elective | | |
| Complete one of the following: | | 4 |

| | |
|-----------|---|
| PSYC 1214 | The Moral Mind: The Science Underlying Ethical Decision-Making and Virtuous Character |
| 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 |
| PSYC 4524 | Cognitive Development |

Behavioral Neuroscience Core Courses

Complete two of the following: 8

| | |
|-----------|---|
| BIOL 3415 | Current Topics in Behavioral Neuroscience |
| BIOL 3601 | Neural Systems and Behavior |
| BIOL 3605 | Developmental Neurobiology |
| BIOL 4705 | Neurobiology of Cognitive Decline |
| 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 |

Upper-Division Elective

Complete one course that is not already taken as long as pre-requisites have been met: 4

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|---------------------|
| BNSC 4970 or higher |
| BIOL 3403 or higher |
| PSYC 3404 or higher |

¹ Students entering through CSSH may take Philosophy at Northeastern (PHIL 1000).

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

Philosophy Requirements

| Code | Title | Hours |
|--|--|-------|
| Philosophy Foundation | | |
| PHIL 1105 or PHIL 3050 | Science and Pseudoscience Information and Uncertainty | 4 |
| PHIL 1115 | Introduction to Logic | 4 |
| PHIL 1145 | Technology and Human Values | 4 |
| PHIL 2325 or POLS 2325 | Ancient Philosophy and Political Thought Ancient Philosophy and Political Thought | 4 |
| PHIL 2330 | Modern Philosophy | 4 |
| Philosophy Restricted Electives | | |
| Complete eight credits from the following list, not taken to fulfill other requirements: 8 | | |
| PHIL 3305 | Philosophy of Emotions | |
| PHIL 3360 | Scientific Approaches to Philosophy | |
| PHIL 3435 | Moral Philosophy | |
| PHIL 4500 | Theory of Knowledge | |
| PHIL 4510 | Philosophy of Science | |
| PHIL 4535 | Philosophy of Mind | |
| PHIL 4555 | Philosophy of Biology | |

Additional Electives

Complete two additional PHIL courses, not taken to fulfill other requirements. 8

Integrative Requirements

| Code | Title | Hours |
|---------------------------|---|-------|
| BIOL 4709 or BIOL 5587 | Neurobiology of Learning and Memory Comparative Neurobiology | 4 |
| PHIL 4535 or PHIL 4555 | Philosophy of Mind Philosophy of Biology | 4 |

Writing Courses

| 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 3308 or ENGW 3309 or ENGW 3315 | Advanced Writing in the Sciences Advanced Writing in the Social Sciences Advanced Writing in the Humanities Interdisciplinary Advanced Writing in the Disciplines | 4 |

Required General Electives

| Code | Title | Hours |
|---|-------|-------|
| Complete 16 credits of general electives. | | 16 |

Behavioral Neuroscience GPA Requirement

A minimum 2.000 GPA in all behavioral neuroscience courses is required.

Major Credit Hour Requirement

96 total semester hours required in major.

Program Requirement

130 total semester hours required

Plan of Study

Sample Plans of Study

FIVE YEARS, THREE CO-OPS

| Year 1 | | | | | | | |
|---|-------|------------------------------|-------|------------|-------|----------|-------|
| Fall | Hours | Spring | Hours | Summer 1 | Hours | Summer 2 | Hours |
| BIOL 1107 and BIOL 1108 | | 5 BIOL 2299 | | 4 Vacation | | Vacation | |
| BNSC 1000 | | 1 ENGW 1111 | | 4 | | | |
| CHEM 1161 and CHEM 1162 and CHEM 1163 | | 5 MATH 1251 | | 4 | | | |
| PHIL 1145 | | 4 PSYC 3458 | | 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 CHEM 2311 and CHEM 2312 | | 5 Vacation | | Co-op | |
| PHIL 1105 | | 4 EESC 2000 | | 1 | | | |
| PHIL 1115 | | 4 PHIL 2330 | | 4 | | | |
| PSYC 3200 | | 4 PSYC 2320 | | 4 | | | |

| | | | | | | | |
|--------|-------|--------------------------|-------|--------------------|-------|--------------------|-------|
| | | PHIL restricted elective | | 4 | | | |
| 17 | | | | 18 | | 0 | |
| Year 3 | | | | | | | |
| Fall | Hours | Spring | Hours | Summer 1 | Hours | Summer 2 | Hours |
| Co-op | | BNS core course | | 4 PHIL 2325 | | 4 Co-op | |
| | | PHIL restricted elective | | 4 General elective | | 4 | |
| | | PSYC elective | | 4 | | | |
| | | General elective | | 4 | | | |
| 0 | | | | 16 | | 8 | |
| Year 4 | | | | | | | |
| Fall | Hours | Spring | Hours | Summer 1 | Hours | Summer 2 | Hours |
| Co-op | | BIOL 4709 or 5587 | | 4 Vacation | | Co-op | |
| | | BNS core course | | 4 | | ENGW 3315 (online) | 4 |
| | | PHIL elective | | 4 | | | |
| | | General elective | | 4 | | | |
| 0 | | | | 16 | | 0 | |
| Year 5 | | | | | | | |
| Fall | Hours | Spring | Hours | | | | |
| Co-op | | PHIL 4535 or 4555 | 4 | | | | |
| | | BNS upper-level elective | 4 | | | | |
| | | PHIL elective | 4 | | | | |
| | | General elective | 4 | | | | |
| 0 | | | | 16 | | | |

Total Hours: 130

FOUR YEARS, TWO CO-OPS

| Year 1 | | | | | | | |
|---|-------|------------------------------|-------|--------------------|-------|----------------------|-------|
| Fall | Hours | Spring | Hours | Summer 1 | Hours | Summer 2 | Hours |
| BIOL 1107 and BIOL 1108 | | 5 BIOL 2299 | | 4 PHIL 2325 | | 4 Vacation | |
| BNSC 1000 | | 1 ENGW 1111 | | 4 PSYC elective | | 4 | |
| CHEM 1161 and CHEM 1162 and CHEM 1163 | | 5 MATH 1251 | | 4 | | | |
| PHIL 1145 | | 4 PSYC 3458 | | 4 | | | |
| PSYC 1101 | | 4 | | | | | |
| 19 | | 16 | | 8 | | 0 | |
| Year 2 | | | | | | | |
| Fall | Hours | Spring | Hours | Summer 1 | Hours | Summer 2 | Hours |
| BIOL 2301 and BIOL 2302 | | 5 CHEM 2311 and CHEM 2312 | | 5 PSYC 2320 | | 4 Co-op | |
| PHIL 1115 | | 4 EESC 2000 | | 1 General elective | | 4 | |
| PHIL 1105 | | 4 PHIL 2330 | | 4 | | | |
| PSYC 3200 | | 4 PHIL restricted elective | | 4 | | | |
| | | BNS core course | | 4 | | | |
| 17 | | 18 | | 8 | | 0 | |
| Year 3 | | | | | | | |
| Fall | Hours | Spring | Hours | Summer 1 | Hours | Summer 2 | Hours |
| Co-op | | BNS core course | | 4 PHIL elective | | 4 Co-op | |
| | | PHIL restricted elective | | 4 General elective | | 4 ENGW 3315 (online) | 4 |
| | | PHIL elective | | 4 | | | |
| | | General elective | | 4 | | | |
| 0 | | 16 | | 8 | | 4 | |

| | | | |
|------------------|-------|--------------------------|-------|
| Year 4 | | | |
| Fall | Hours | Spring | Hours |
| Co-op | | BIOL 4709 or 5587 | 4 |
| | | PHIL 4535 or 4555 | 4 |
| | | BNS upper-level elective | 4 |
| | | General elective | 4 |
| | 0 | | 16 |
| Total Hours: 130 | | | |