BACHELOR OF SCIENCE IN BEHAVIORAL NEUROSCIENCE

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Behavioral neuroscience is an interdisciplinary field that explores the connection between the brain, experience, and behavior in an integrative way. All behavioral neuroscience majors complete foundational and advanced courses in psychology, neuroscience, biology, and chemistry. Based on individual goals and interests, majors then complete one of three tracks: the *Self-Directed* track, *Psychological Science* track or *Pre-Health* track.

- The ***Self-Directed track*** provides students the freedom to select one additional introductory- and upper-level course based on interest. Some students explore biology, while others focus on biomedical sciences, ethics, computer science, or data science.
- The ***Psychological Science track*** requires additional upper-level psychology courses to broaden and deepen psychological understanding and better prepare students for fields that strongly connect psychology to biological basis of behavior, affect and experience (e.g., clinical practice, counseling, child development, special needs).
- The ***Pre-Health track*** explicitly connects the major to careers in medicine, dentistry, nursing and healthcare more broadly. By completing this science-intensive track, majors will complete most of the requirements for the Pre-Medical Studies designation and the prerequisites for health-related professional programs (e.g., medical or dental schools, physician assistant programs, nursing).

Students completing the behavioral neuroscience major are well prepared for employment or entry into master's and PhD programs in behavioral neuroscience and related fields. Students can consider Quinnipiac University's Master of Science in Molecular and Cell Biology program (http://catalog.qu.edu/graduate-studies/arts-sciences/molecular-cell-biology-ms/) or the Master of Health Sciences in Biomedical Sciences (http://catalog.qu.edu/graduate-studies/health-sciences/medical-laboratory-sciences-mhs/) and their respective dual-degree (https://catalog.qu.edu/arts-sciences/biological-sciences/#programstext) programs (https://catalog.qu.edu/health-sciences/biomedical-sciences/#programstext).

Students seeking a BS in Behavioral Neuroscience must complete the University Curriculum and demonstrate foreign language competency at the 102 level or higher. Initial placement in English and mathematics is determined by examination and evaluation of high school units presented. After PS 101 (Introduction to Psychology), all majors complete a sequence of PS 206 (Statistics), PS 307 (Introduction to Research Methods), and PS 401 (Capstone). Students must earn a grade of C- or higher#in PS 101 before progressing to any 200-level PS courses and C- or higher before progressing to the next sequence course: PS 206, PS 307, PS 401. For PS 252, a C- or higher is required before continuing to PS 351 or PS 357 (https://catalog.qu.edu/search/?P=PS%20357). The capstone course (PS 401) must be completed as a seminar in the senior year during the regular academic year. All majors are encouraged to work closely with their academic adviser to plan their progress through the major.

BS in Behavioral Neuroscience

Students majoring in Behavioral Neuroscience must complete:

Code	Title	Credits
University Curriculum [1]		**46**
Modern Language Requirement		**3-6**
Foundational Core		**25**
BIO 150/150L	General Biology for Majors [2]	
BIO 151/151L	Molecular and Cell Biology and Genetics [3]	
CHE 110 & 110L	General Chemistry I and General Chemistry I Lab	
CHE 111 & 111L	General Chemistry II and General Chemistry II Lab	
PS 101	Introduction to Psychology	
PS 206	Introduction to Statistics in Psychology [4]	
PS 307	Introduction to Research Methods in Psychology	
Advanced Core		**24-25**
BIO 211 & 211L	Human Anatomy and Physiology I and Human Anatomy and Physiology Lab I	
or BMS 3	Neuroanatomy	
BIO 329	Neurobiology	
PS 233	Cognitive Psychology	
PS 252	Biological Psychology	
PS 272	Psychopathology	
PS 353	Research Methods in Behavioral Neuroscience	
PS 363	Preclinical Models in Behavioral Neuroscience	
PS 401	Integrative Capstone for Psychology and Behavioral Neuroscience Majors	
Specialization - Must Complete One Track		**9-30**
Self-Directed Track (At Least 9 Credits)		
Psychological Science Track (At Least 9 Credits)		
Pre-Health Track (At Least 30 Credits)		
Total Credits		**107-132**

All majors are encouraged to work closely with their academic adviser to plan their progress through the major.

Self-Directed Track

Code	Title	Credits
Six Credits in Advanced Psychology:		**6**
PS 354	Sensation and Perception	
or PS 35	Drugs, Brain and Behavior	
or PS 35	Learning and Memory	

At Least 3 Credits of Elective Exploration	**3**
Total Credits	**9**

Psychological Science Track

Code	Title	Credits
Advanced Psychology:		
PS 351	Learning and Memory	3
PS 354	Sensation and Perception	3
At Least 3 Credits in PS at the 200 Level or Higher		3
Total Credits		**9**

Pre-Health Track

Code	Title	Credits
BIO 346 & 346L	Cell Physiology and Cell Physiology Lab	4
CHE 210 & 210L	Organic Chemistry I and Organic Chemistry I Lab	4
CHE 211 & 211L	Organic Chemistry II and Organic Chemistry II Lab	4
CHE 315 & 315L	Biochemistry I and Biochemistry I Lab	4
MA 141	Calculus of a Single Variable [5]	3
or MA 151	Calculus I	
PHY 110 & 110L	General Physics I and General Physics I Lab	4
or PHY 121	University Physics	
PHY 111 & 111L	General Physics II and General Physics II Lab	4
or PHY 122	University Physics II	
PS 354	Sensation and Perception	3
Total Credits		**30**

Elective Exploration Courses

Code	Title	Credits
BIO 225/225L	Physiological Diversity	
BIO 240	Cellular Communication	
BIO 282/282L	Genetics	
BIO 317/317L	Developmental Biology	
BIO 329	Neurobiology	
BIO 346/346L	Cell Physiology	
BIO 375/375L	Physiological Models for Human Disease	
BIO 382/382L	Human Genetics	
BIO 471/471L	Molecular Genetics	
BMS 200	Biomedical Basis and Experience of Human Aging	
BIO 205	Bioethics	
BMS 213/213L	Microbiology and Pathology	
BMS 276	Drug Development	
BMS 318	Pathophysiology	
BMS 325	Toxicology	
BMS 330	Endocrinology	
BMS 370/370L	General Microbiology	
CHE 210/210L	Organic Chemistry I	
CHE 211/211L	Organic Chemistry II	
CSC 110/110L	Programming and Problem Solving	
CSC 111/111L	Data Structures and Abstraction	
CSC 210	Digital Logic and Design	
CSC 215	Algorithm Design and Analysis	
DS 110	Introduction to Data Science	
DS 201	Introduction to Python	
DS 300	Tools for Data Science	
MA 141	Calculus of a Single Variable	
MA 170	Probability and Data Analysis	
MA 205	Introduction to Discrete Mathematics (CSC 205)	
PHY 110/110L	General Physics I	
PHY 121	University Physics	
PL 102	Introduction to Ethics	
PL 222	Bioethics	
PS 372	Child Psychopathology	
Any PS course at the 200 level or higher		

Footnotes

1. All students must complete the 46 credits of the University Curriculum (http://catalog.qu.edu/academics/university-curriculum/). Students in the BNS major must take MA 140, 141, or 170 to complete the major and the University Curriculum.
2. Students who took BIO 101 and 101L before declaring the BNS major may use these courses in lieu of BIO 150 and 150L.
3. Students who took BIO 102 and 102L before declaring the BNS major may use these courses in lieu of BIO 151 and 151L.
4. Students who took MA 275 or MA 206 before declaring the BNS major may use these courses in lieu of PS 206.
5. Students in the Pre-Health Track who do not directly place into MA 141 should take MA 140. Students in the Psychological Science or the Self-Directed Tracks should take MA 140, 141, or MA 170.

Self-Directed Track or Psychological Science Track

Shown below is one of many possible paths through the curriculum. Each student's individual academic plan is crafted in consultation with their academic adviser.

Code	Title	Credits
First Year		
Milestones: Earn 30 credits and a GPA of 2.00 or higher, and meet with your adviser at least once a semester.		
Fall Semester		
BIO 150 & 150L	General Biology for Majors and General Biology for Majors Laboratory	4
CHE 110 & 110L	General Chemistry I and General Chemistry I Lab	4
EN 101	Introduction to Academic Reading and Writing (UC First Year Writing)	3
FYS 101	First-Year Seminar (UC Foundations Inquiry)	3
Spring Semester		
BIO 151 & 151L	Molecular and Cell Biology and Genetics and Molecular and Cell Biology and Genetics Lab	4
CHE 111 & 111L	General Chemistry II and General Chemistry II Lab	4
EN 102	Academic Writing and Research (UC First Year Writing)	3
PS 101	Introduction to Psychology	3
Second Year		
Milestones: Earn 60 credits and a GPA of 2.00 or higher. Meet with your adviser at least once per semester to discuss academic, experiential learning, career and co-curricular opportunities.		
Fall Semester		
BIO 211 & 211L	Human Anatomy and Physiology I and Human Anatomy and Physiology Lab I	4
or BMS 310	Neuroanatomy	
MA 170	Probability and Data Analysis (UC Math)	3
PS 252	Biological Psychology	3
Language at the 101 level		3
University Curriculum course		3
Spring Semester		
PS 206	Introduction to Statistics in Psychology	3
PS 272	Psychopathology	3
Language at the 102 level (satisfies CAS language requirement)		3
University Curriculum course		3
CAR 150	Introduction to Excel	1
Open Elective		3
Third Year		
Milestones: Earn 90 credits and a GPA of 2.00 or higher. Meet with your adviser at least once per semester. Participate in study abroad, complete internship or research opportunities.		
Fall Semester		
PS 307	Introduction to Research Methods in Psychology	3
PS 233	Cognitive Psychology	3
Elective Exploration		3-4
University Curriculum course		3
Open Elective		3
Spring Semester		
PS 363	Preclinical Models in Behavioral Neuroscience	3
Self-Directed Track: Adv Psychobiology or Psychological Science Track: Adv Psychology		3
Self-Directed Track: Elective Exploration or Psychological Science Track: Any 200- or 300-level PS Course		3
University Curriculum course		3
University Curriculum course		3
Fourth Year		
Milestones: Earn 120 credits and a GPA of 2.00 or higher. Complete possible minor or double major and prepare for graduation.		
Fall Semester		
PS 353	Research Methods in Behavioral Neuroscience	3
Psychological Science Track: Any 200- or 300-level PS Course		3
University Curriculum course		3
Open Elective		1-3
Open Elective		1-3
Spring Semester		
PS 401	Integrative Capstone for Psychology and Behavioral Neuroscience Majors	3
University Curriculum course		3
BIO 329	Neurobiology	3
Open Elective		1-3
Open Elective		3
Total Credits		**114-121**

Pre-Health Track

Shown below is one of many possible paths through the curriculum. Each student's individual academic plan is crafted in consultation with their academic adviser.

Code	Title	Credits
First Year		
Milestones: Earn 30 credits and a GPA of 2.00 or higher, and meet with your adviser at least once a semester.		
Fall Semester		

BIO 150 & 150L	General Biology for Majors and General Biology for Majors Laboratory	4
CHE 110 & 110L	General Chemistry I and General Chemistry I Lab	4
EN 101	Introduction to Academic Reading and Writing (UC First Year Writing)	3
FYS 101	First-Year Seminar (UC Foundations Inquiry)	3
PS 101	Introduction to Psychology	3
Spring Semester		
BIO 151 & 151L	Molecular and Cell Biology and Genetics and Molecular and Cell Biology and Genetics Lab	4
CHE 111 & 111L	General Chemistry II and General Chemistry II Lab	4
EN 102	Academic Writing and Research (UC First Year Writing)	3
MA 140	Pre-Calculus (UC Math)	3
Language at the 101 level		3
Second Year		
Milestones: Earn 60 credits and a GPA of 2.00 or higher. Meet with your adviser at least once per semester to discuss academic, experiential learning, career, and co-curricular opportunities.		
Fall Semester		
BIO 211 & 211L	Human Anatomy and Physiology I and Human Anatomy and Physiology Lab I	4
CHE 210 & 210L	Organic Chemistry I and Organic Chemistry I Lab	4
MA 141	Calculus of a Single Variable	3
PS 252	Biological Psychology	3
Language at the 102 level (satisfies CAS language requirement)		3
Spring Semester		
BIO 212 & 212L	Human Anatomy and Physiology II and Human Anatomy and Physiology II Lab	4
CHE 211 & 211L	Organic Chemistry II and Organic Chemistry II Lab	4
PS 206	Introduction to Statistics in Psychology	3
PS 272	Psychopathology	3
SO 101	Introduction to Sociology	3
Third Year		
Milestones: Earn 90 credits and a GPA of 2.00 or higher. Meet with your adviser at least once per semester. Participate in study abroad, complete internship or research opportunities.		
Fall Semester		
PS 307	Introduction to Research Methods in Psychology	3
PS 233	Cognitive Psychology	3
PHY 110 & 110L	General Physics I and General Physics I Lab	4
University Curriculum course		3
Spring Semester		
PHY 111 & 111L	General Physics II and General Physics II Lab	4
CHE 315 & 315L	Biochemistry I and Biochemistry I Lab	4
University Curriculum course		3
University Curriculum course		3
Fourth Year		
Milestones: Earn 120 credits and a GPA of 2.00 or higher. Complete possible minor or double major and prepare for graduation.		
Fall Semester		
PS 353	Research Methods in Behavioral Neuroscience	3
PS 354	Sensation and Perception	3
BIO 346 & 346L	Cell Physiology and Cell Physiology Lab	4
University Curriculum course		3
CAR 150	Introduction to Excel	1
Spring Semester		
PS 357	Drugs, Brain and Behavior	3
PS 401	Integrative Capstone for Psychology and Behavioral Neuroscience Majors	3
BIO 329	Neurobiology	3
University Curriculum course		3
Open Electives		3-4
Total Credits		**124-125**

Student Learning Outcomes

1. **Breadth of Knowledge**: Use and evaluate various neuroscientific, biological and psychological perspectives to evaluate and predict complexities in behavior, cognition and affect. Understand how behavioral neuroscience integrates with psychology and biology.
2. **Scientific Reasoning**: Conduct, interpret and evaluate scientific studies in terms of the reliability, validity and generalizability of the research designs; develop open-mindedness, curiosity and amiable skepticism toward claims.
3. **Ethical Responsibility**: Apply ethical standards to research and practice situations; demonstrate interpersonal sensitivity in work and communities.
4. **Communication Skills**: Demonstrate flexibility and clarity of argument in both written and oral communication.
5. **Personal Development**: Apply psychological and neuroscientific thinking to issues encountered in work and personal life, such as using evidence to solve problems; engage in teamwork as well as self-reflection and self-management.

Admission Requirements: College of Arts & Sciences

The requirements for admission into the undergraduate College of Arts & Sciences programs are the same as those for admission to Quinnipiac University.

Admission to the university is competitive, and applicants are expected to present a strong college prep program in high school. Prospective first-year students are strongly encouraged to file an application as early in the senior year as possible, and arrange to have first quarter grades sent from their high school counselor as soon as they are available.

For detailed admission requirements, including required documents, please visit the Admissions (http://catalog.qu.edu/general-information/admissions/) page of this catalog.

Pre-Medical Studies

The Pre-Medical Studies Designation is designed for undergraduate students who are interested in pursuing doctoral or advanced professional degrees in medicine such as MD, DO, DDS/DMD, PharmD, OD, DPM, DPT or DVM and allows students to enroll in and track typical medical or professional school course requirements. Students in any major may pursue the Pre-Medical Studies designation. Interested students should refer to the Pre-Medical Studies page for more information.