

Interdisciplinary Programs

The College of Science is home to three interdisciplinary undergraduate programs: behavioral neuroscience, biochemistry, and linguistics. Overviews of these programs can be found below, and details about degree programs and courses in these fields are linked to above. For additional information, please visit these programs' websites: behavioral neuroscience (<https://cos.northeastern.edu/behavioral-neuroscience/>), biochemistry (<https://cos.northeastern.edu/biochemistry/>), and linguistics (<https://cos.northeastern.edu/linguistics/>).

Behavioral Neuroscience

Website (<https://cos.northeastern.edu/behavioral-neuroscience/>)

Advising Information (https://docs.google.com/document/u/2/d/e/2PACX-1vQnM_Bw7PHR9zWmqU245FpSrNgG8_BDdAsQXmqu1O-wy3RLpEXD3-znNG9ksuBcrAKPXZYEuGxMI5fv/pub/)

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Behavioral neuroscience is a broad and dynamic interdisciplinary field that focuses on understanding physiological brain mechanisms and how they give rise to behavioral functions in humans and animals. The relationship between the brain's activity and an organism's behavior, both healthy and pathological, is examined at multiple levels of analysis, from how a cell functions to how a facial expression conveys trust or fear.

As a behavioral neuroscience major, you will take courses across multiple departments to acquire foundational knowledge and strong critical-thinking skills in the disciplines of biology, psychology, physical sciences, and mathematics. Through our combined majors, you can explore the intersection of behavioral neuroscience with complementary disciplines including philosophy, design, computer science, and data science. For some of our majors, we offer an accompanying PlusOne Master of Science in Bioinformatics or Applied Behavior Analysis.

Ample opportunities exist for students to put theory into practice while acquiring valuable hands-on research and clinical experience at renowned institutions across the world through Northeastern University's co-op program. Faculty-mentored directed studies and honors projects are guided by investigators with shared interests from academic units, centers, and institutes throughout campus.

Our rigorous and comprehensive curriculum is designed to prepare students for employment in clinical settings or the biotech and pharmaceutical industry or for further graduate training in a plethora of scientific disciplines or in healthcare professions. Our graduates are qualified for a wide variety of careers including nonprofits, law, science writing, Big Data, artificial intelligence, and more.

Biochemistry

Website (<https://cos.northeastern.edu/biochemistry/>)

Faculty Advisor website (<http://tinyurl.com/bioadv/>)

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Biochemistry focuses on the chemical processes occurring in the wide variety of living systems and touches essentially all aspects of our own lives. Our Northeastern University program engages you in two integrated paths to a career in biochemistry: rigorous coursework that is designed to prepare you to interpret the ever-expanding knowledge base and hands-on learning that positions you to leverage cutting-edge technology to solve fundamental problems in the chemistry of life.

After required basic coursework in biochemistry, biology, chemistry, physics, and mathematics, our majors select elective courses that reflect many areas of biochemistry including neuroscience, bioorganic chemistry, stem cell and regenerative biology, microbial biotechnology, and systems biology and engineering.

In our interdisciplinary program, students take advantage of faculty-mentored research guided by investigators from bioengineering, biology, chemical engineering, chemistry, pharmaceutical sciences, physics, psychology, and other academic units.

Northeastern's signature co-op program provides complementary opportunities in world-class biotechnology companies, hospitals, and research facilities as close as Boston and as far as your global interest takes you.

Our biochemistry program is designed to prepare students to enter the job market directly or to go on to graduate, medical, veterinary, dental, law, or business school. Our graduates are qualified for a wide range of careers that span academics, industry, government, and medicine, working in laboratory or clinical research, regulation and quality control, production, marketing, or information systems.

Linguistics

Website (<https://cos.northeastern.edu/linguistics/>)

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Linguistics is the scientific study of human language. A growing and exciting field, it has links to a diverse range of others including psychology, philosophy, neuroscience, cognitive science, computer science, artificial intelligence, sociology, language teaching, anthropology, and education.

Linguists work to understand the structures and social uses of human language at all levels. Questions about linguistic structures and cognitive structures include: How do children learn to speak? How is language represented in the mind? What do all languages, including sign languages, have in common? How is language different from the communication systems used by whales, bees, and chimpanzees? What linguistic information do computers need in order for us to converse with them? What are the neurological tie-ins of language disorders such as aphasia or Williams Syndrome, and what can such impairments tell us about the brain mechanisms for language? These scientific and technological questions lead us to ask other questions about language and society: How might we think about linguistic controversies, including debates about official languages, Black English, gender bias, and bilingualism in education? Linguistics attempts to answer each of these questions and covers a surprisingly broad range of topics related to language and communication. And cutting-edge work in cognitive science investigates how natural languages are acquired and processed. Computational linguists apply linguistic theory to build all of the applications that we use that interface with language: grammar checkers, translation programs, search engines, browsers, voice recognition, and speech synthesis. To work in a field that involves language in any way, you will need to know how language works, the core of the field of linguistics.

Linguistics at Northeastern University offers courses examining the structure of language (such as phonetics, phonology, morphology, syntax, and semantics); the sociocultural nature of language (such as language and culture, language and gender, and sociolinguistics); and applied fields (such as language acquisition, language change, and historical linguistics).

Students can pursue a major in linguistics or one of a number of combined majors including linguistics and psychology, linguistics and cultural anthropology, linguistics and English, linguistics and communication studies, computer science and linguistics, data science and linguistics, American Sign Language and linguistics, and linguistics and speech-language pathology and audiology. A minor in linguistics is also available.

Linguistics offers a variety of co-ops, including positions at local and national companies involved in speech recognition and production, as well as at Northeastern's own language processing and language acquisition labs in the Department of Psychology. Linguistics majors can also participate in international co-ops—for example, working with researchers at the University of Kaiserslautern in Germany.

Students with backgrounds in linguistics have pursued advanced degrees in fields including law, cognitive science, education, English, interpreting, business, speech-language pathology, computer science, developmental psychology, sociology, and linguistics itself. Other graduates have gone on to work in neurological research, computational linguistics, translation, language software, education, dictionary publishing, robotics, and criminal justice.

Opens

Programs

Interdisciplinary Majors

- American Sign Language and Linguistics, BS (<https://catalog.northeastern.edu/undergraduate/social-sciences-humanities/cultures-societies-global-studies/american-sign-language-linguistics-bs/>)
- Behavioral Neuroscience, BS (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/behavioral-neuroscience-bs/>)
- Behavioral Neuroscience and Design, BS (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/behavioral-neuroscience-design-bs/>)
- Behavioral Neuroscience and Philosophy, BS (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/behavioral-neuroscience-philosophy-bs/>)
- Biochemistry, BS (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/biochemistry-bs/>)
- Bioengineering and Biochemistry, BSBioE (<https://catalog.northeastern.edu/undergraduate/engineering/bioengineering/bioengineering-biochemistry-bsbioe/>)

- Chemical Engineering and Biochemistry, BSChE (<https://catalog.northeastern.edu/undergraduate/engineering/chemical/chemical-engineering-biochemistry-bs/>)
- Computer Science and Behavioral Neuroscience, BS (<https://catalog.northeastern.edu/undergraduate/computer-information-science/computer-information-science-combined-majors/computer-science-behavioral-neuroscience-bs/>)
- Computer Science and Linguistics, BS (<https://catalog.northeastern.edu/undergraduate/computer-information-science/computer-information-science-combined-majors/computer-science-linguistics-bs/>)
- Data Science and Behavioral Neuroscience, BS (<https://catalog.northeastern.edu/undergraduate/computer-information-science/computer-information-science-combined-majors/data-science-behavioral-neuroscience-bs/>)
- Data Science and Biochemistry, BS (<https://catalog.northeastern.edu/undergraduate/computer-information-science/computer-information-science-combined-majors/data-science-biochemistry-bs/>)
- Data Science and Linguistics, BS (<https://catalog.northeastern.edu/undergraduate/computer-information-science/computer-information-science-combined-majors/data-science-linguistics-bs/>)
- Interdisciplinary Studies, BS (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/interdisciplinary-studies-bs/>)
- Linguistics, BS (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/linguistics-bs/>)
- Linguistics and Communication Studies, BA (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/linguistics-communication-studies-ba/>)
- Linguistics and Cultural Anthropology, BS (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/linguistics-cultural-anthropology-bs/>)
- Linguistics and English, BA (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/linguistics-english-ba/>)
- Linguistics and Psychology, BS (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/linguistics-psychology-bs/>)
- Linguistics and Speech-Language Pathology and Audiology, BS (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/linguistics-speech-language-pathology-bs/>)
- Spanish and Linguistics, BA (<https://catalog.northeastern.edu/undergraduate/social-sciences-humanities/cultures-societies-global-studies/spanish-linguistics-ba/>)
- Speech-Language Pathology and Audiology and Behavioral Neuroscience, BS (<https://catalog.northeastern.edu/undergraduate/health-sciences/clinical-rehabilitation-sciences/speech-language-pathology-audiology-behavioral-neuroscience-bs/>)

Interdisciplinary Minors

- Behavioral Neuroscience (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/behavioral-neuroscience-minor/>)
- Biochemistry (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/biochemistry-minor/>)
- Environmental Chemistry (<https://catalog.northeastern.edu/undergraduate/science/chemistry-chemical-biology/environmental-chemistry-minor/>)
- Linguistics (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/linguistics-minor/>)
- Network Science (<https://catalog.northeastern.edu/undergraduate/science/interdisciplinary/network-science-minor/>)