

Neuroscience is the study of the relationships between mind, brain, and behavior. It is an interdisciplinary field that combines biological, chemical, and psychological perspectives to better understand neuron structure and function, thought, emotion, and behavior in humans and non-human animals. The neuroscience program at Hiram College is particularly suited for students with interests in animal behavior, psychobiology, cognitive neuroscience, and clinical psychology.

The program

The neuroscience program at Hiram College aims to provide students with a scientific understanding of how neural structures affect cognitive, emotional, and behavioral properties of animals and human beings. To accomplish this, the neuroscience major combines coursework from four academic disciplines: psychology, biology, mathematics, and chemistry.

To fulfill program requirements, students must successfully complete a core of 11 courses from the psychology and biology departments. These courses explore foundational topics such as general psychology, behavioral endocrinology, neuroscience, molecular and cellular biology, genetics, and more. Coursework from chemistry and mathematics further enhances students' abilities to define and quantify the interrelationship of biological processes and behavior. Beyond these fundamental program requirements, students are encouraged to pursue coursework in areas that pique personal interest, for example, physics, immunology, animal behavior, and vertebrate biology.

Students in Hiram's neuroscience program also are required to complete a research project that combines a written thesis and an oral presentation. These projects are often preliminary versions of what will later become published research and graduate-level study.

Facilities

Neuroscience students at Hiram have access to the College's extensive laboratory and research facilities for conducting neuroanatomical, psychophysiological, and experimental investigations into human and animal behavior. In addition to standard laboratory equipment, these facilities include a computer touch-screen for conducting cognitive tests with animals, digital video recording equipment to document test-subject behavior, a number of different spectrophotometers, two teaching laboratories designed to study animal systematics, and much more.

The psychology department maintains an USDA-approved animal housing facility to support laboratory animal populations. Students also have access to off-site magnetic resonance imaging (MRI) and fMRI facilities in Pittsburgh, allowing them to conduct research projects that require the use of brain imaging technologies. In the fall of 2005, Hiram opened an endocrine assay lab that enables students to investigate the relationships among hormone levels and behavior.

Hands-on learning

Laboratory and field experiences are essential to develop working expertise in the discipline of neuroscience. To this end, students of Hiram's program are encouraged to participate in a number of hands-on learning environments through coursework and independent research. A number of Hiram students, for example, are assisting Professor Kimberley Phillips with her non-invasive research on a colony of tufted ca-

puchin monkeys that are housed on the Hiram campus. Students may also participate in Professor Michael Gumert's ongoing field project involving long-tailed macaques in Indonesia. Hiram students also are involved with internships sponsored by the National Science Foundation at various universities nationwide. Many present poster research at annual conferences, such as the American Society for Primatologists and the Society of Neuroscience. To support these and other undergraduate research efforts, Hiram students have access to grant funded summer research opportunities and academic year stipends.

After Hiram

Neuroscience students at Hiram College cultivate a depth and breadth of academic and practical experience, preparing them for success in graduate school and the professional workforce. Alumni of Hiram's program have been accepted into graduate programs at institutions that include Ohio University, University of California, Davis, the Ohio State University, and others. Recent alumni also have entered the professional workforce as laboratory technicians, research associates, veterinary assistants, zookeepers, and social workers.

Neuroscience program faculty

Andrew J. Konick (1967), Professor of Psychology
B.A., Fairmont State College;
M.A., Ph.D., Kent State University
Areas of interest: cognition; memory; decision-making; research design

Kimberley A. Phillips (1994), Associate Professor of Psychology and Biology, Program coordinator
B.S., Wofford College;
M.S., Ph.D., The University of Georgia
Areas of interest: behavioral neuroscience

Eric E. Bauer (2006), Assistant Professor of Biology
B.A., Cornell University;
Ph.D., University of Texas, Austin;
Postdoctoral Research Fellow, University of Washington
Postdoctoral Research Fellow, Duke University
Areas of interest: developmental neuroscience

Michael. D. Gumert (2006), Postdoctoral Fellow
B.S., East Stroudsburg University;
M.S., Bucknell University;
Ph.D., The University of Georgia
Areas of interest: primatology

For more information

If you have specific questions about the neuroscience program at Hiram College or if you would like more information, please contact:

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The core curriculum

Students have the chance to select courses from among the eight different academic areas that span the liberal arts: humanities, fine arts, natural sciences, and social sciences. Each category of our core curriculum has a wide variety of courses that will satisfy the learning outcomes associated with it. As students satisfy each of the ten courses in this requirement – one from each category – they will be accomplishing the breadth component of a liberal arts education.

- **Creative Methods:** The expression of human creativity involves the development of practical and evaluative skills. Courses and experiences satisfy this requirement by helping students understand the creative process and teaching them the intellectual skills necessary for reflection and evaluation of artistic products. Students will choose from such courses as ART 260 Environmental Art, MUSI 102 Survey of American Music, and WRIT 220 Introduction to Creative Writing.
- **Interpretive Methods:** The human experience of meaning involves the application of interpretation to a broad variety of human endeavors, including art, music, literature, and philosophical and religious texts. Courses and experiences satisfy the goals for this requirement by teaching the skills necessary to interpret one or more forms of human expression. Students will choose from such courses as MUSI 108 Rhythm and Revolt: The History of Rock and Roll, PHIL 210, THEA 251 History of Western Theatre I, and POLS 319, The American Founding.
- **Modeling Methods:** Modeling involves the construction of abstractions that capture and simplify physical, social, biological, and other complex phenomena. The models are then analyzed using deduction and logic, statistics, and/or mathematics in order to better understand and interpret the original. Courses and experiences satisfy the goals for this requirement by teaching modeling and methods for analyzing models. Students will choose from such courses as CPSC 171 Introduction to Computer Science, MATH 132 Methods of Decision Making, and PHIL 121 Elementary Logic.
- **Experimental Scientific Methods:** The application of reason to the natural world requires the use of the hypothetical-experimental method. Courses and experiences satisfy the goals for this requirement by teaching, in a hands-on laboratory environment, the empirical method in practical data-gathering learning experiences, and reflection on the nature and limits of this methodology. Students will choose from such courses as BIOL 152 How Life Works, CHEM 101 Chemistry in Context: An Environmental Perspective, and EVST 250 Introduction to Wildlife Management and Techniques.
- **Social and Cultural Analysis Methods:** Human behavior is organized by complex systems which differ widely across societies and over time. Human knowledge cannot be understood without considering historical, social, and cultural contexts. Courses and experiences satisfy this goal by teaching students the conceptual and analytic tools necessary to make sense of these essential dimensions of our existence. Students will choose from such courses as COMM 101 Foundations of Public Communication, EDUC 203 Education, Culture, and Society, and HIST 254 Gender and Sexuality in the U.S.

- **Experiencing the World:** Hiram students must prepare to live as citizens of the world. Courses and experiences help students to do this by helping them develop capacities for understanding international issues, other peoples and other cultures, and the nature of responsible, engaged global citizenship. Students will choose from such courses as ENGL 226 Readings in World Literature, HIST 218 Modern Korea, RELG 224 Comparative Religious Ethics, and have many opportunities to study abroad with Hiram faculty members.

- **Understanding Diversity at Home:** The United States is richly diverse. Encountering and learning the necessary skills for interaction with this diversity is essential to a liberal arts education at Hiram College. Courses and experiences satisfy these goals by introducing students to the diversity of our own country and equipping them with the intellectual skills necessary for conversing in this complex environment. Students will choose from such courses as ECON 230 Workers, Unions, Bosses, and Capitalists: History of Labor in the United States, HIST 269 1960s in the U.S.A., and PHIL 225 Philosophy and Feminism.

- **Meaning, Ethics, and Social Responsibility:** The ability to formulate and evaluate claims about meaning and value is essential to the tasks of forming identity and being responsible citizens. Courses and experiences satisfy this goal by teaching both conceptual tools and practical skills that permit students to reflectively evaluate their own lives and interact responsibly in the lives of others. Students will choose from such courses as CPSC Computer Ethics, EVST 270 Environmental Philosophy, and POLS 345 The Court and Constitutional Government.

- **The Interdisciplinary Requirement:** This requirement of two courses is designed to help students learn how to analyze a topic from the different perspectives of two or more disciplines and to recognize and integrate diverse viewpoints. A student's advisor will explain the different ways this requirement can be satisfied and help select the one that is best for the student's program.

The major

The major provides the depth component of a liberal arts education. As students work to satisfy this requirement, they will be taking progressively more advanced courses in a single discipline. Altogether, the major represents about one-third of a typical academic program. All majors at Hiram College include a “capstone” experience that represents the culmination of your work in your chosen discipline.

In summary, Hiram College degree requirements include:

- 120 semester hours of course work
- minimum of a 2.0 grade point average in all course work
- completion of an academic major
- completion of a capstone experience
- completion of all core curriculum requirements
- senior year in residence (last two semesters of credit to be taken at Hiram College).

