

# NEUROSCIENCE

**Program Website:** Neuroscience – Hiram College (<https://www.hiram.edu/academics/undergraduate-studies/undergraduate-programs/neuroscience/>)

## Introduction

Have you ever wondered how a fly avoids a flyswatter, how a fish navigates the currents, or how caffeine affects your brain? All of these questions fall within the broad domain of neuroscience: the study of the intersection between mind, brain, body, and behavior.

Neuroscience spans many disciplines, including biology, psychology, chemistry, physics, computer science, mathematics, and philosophy. The neuroscience program at Hiram College provides students with a strong and comprehensive major that encompasses the study of brains, behavior, and evolution at multiple levels, from the cellular and molecular through the cognitive and behavioral. Students who wish to major in neuroscience can expect a rigorous and intensive course load emphasizing contributions from many academic programs and research opportunities on campus.

## Faculty

**Nicolas Hirsch, (2008) Director of the School of Science & Technology; Associate Professor of Biology; Chair**

B.A., University of Chicago;  
Ph.D., University of California, San Diego  
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**Thomas Koehnle, (2007) Associate Professor of Biology; Neuroscience Program Coordinator**

B.S., Ohio University;  
Ph.D., University of California, Davis  
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**Michelle Nario-Redmond, (2007) Professor of Psychology and Biomedical Humanities; Chair**

B.A., University of Tulsa;  
M.A., Ph.D., University of Kansas  
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## Course Descriptions

**NEUR 18000: WKSP: 1 Hour(s)**

WORKSHOP ~ Workshops may be taken Pass/No Credit only. Students may take no more than nine workshops for credit toward graduation. Workshops can be used as elective credit only.

**NEUR 22700: INTRO TO NEUROSCIENCE: 4 Hour(s)**

INTRODUCTION TO NEUROSCIENCE ~ Introduction to neuroscience is a laboratory-based course designed to orient students to the many approaches to neuroscience. In addition to covering the development, evolution, anatomy, and physiology of the nervous system, students will learn about cell and molecular, cognitive and behavioral, computational, and philosophical approaches to the study of the brain. The lecture component of the course emphasizes finding, using, and criticizing primary sources in each domain of neuroscience. The lab component comprises two major original research projects designed, carried out, summarized, and presented by students based on topics that interest them in the lecture component. Students must register for a NEUR 22700 lab. Also listed as BIOL 22700. CHEM 12000 is not mandatory, you may ASK instructor for permission. PSYC 10100 is mandatory. Prerequisite: CHEM 12000 or PSYC 10100

**NEUR 28000: SEM: 1-4 Hour(s)**

SEMINAR ~

**NEUR 28100: INDEPENDENT STUDY: 1-4 Hour(s)**

INDEPENDENT STUDY ~

**NEUR 29800: FIELD EXPERIENCE: 1-4 Hour(s)**

FIELD EXPERIENCE ~

**NEUR 33000: CELLULAR & MOLECULAR NEUROBIO: 4 Hour(s)**

CELLULAR AND MOLECULAR NEUROBIOLOGY ~ This course is a study of the microscopic parts of the nervous system: the molecular, cellular and developmental aspects of what is arguably the most complex biological system ever studied. We will cover the basic plan of the nervous system, the cellular components of the nervous system (neurons and glia), the electrical properties of neurons, neurotransmitters and synaptic transmission. We will also study the embryonic development of the nervous system, including neurogenesis, axonal pathfinding, neuronal cell death and synapse elimination. In addition, we will discuss primary scientific papers describing fundamental breakthroughs in cellular and molecular neuroscience. Also listed as BIOL 33000. Prerequisite: BIOL 23000 or NEUR 22700

**NEUR 38000: SEM: 4 Hour(s)**

SEMINAR ~

**NEUR 38100: SPC TPC: 1-4 Hour(s)**

SPECIAL TOPICS ~

**NEUR 48000: NEUROSCIENCE CAPSTONE: 1-4 Hour(s)**

NEUROSCIENCE CAPSTONE ~ Students in this course will design and execute original research related to the discipline of neuroscience. The student must submit a project proposal to his or her neuroscience faculty advisor outlining the research problem, the methods to be used and anticipated results prior to beginning the project. The student will submit a final report to the sponsoring faculty member and a public presentation. Prerequisites: Senior standing and permission.

**NEUR 48100: INDEPENDENT RESEARCH: 1-4 Hour(s)**

INDEPENDENT RESEARCH ~

**NEUR 49800: INTERNSHIP: 4 Hour(s)**

INTERNSHIP ~

## Academic Offerings

- Neuroscience Major (<https://catalog.hiram.edu/undergraduate/academic-programs/neuroscience/neuroscience-major/>)