

Learning Goals and Outcomes in the Neuroscience Concentration
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The neuroscience concentration is an interdepartmental program administered jointly by the departments of psychology and biology, with additional academic offerings from music, philosophy, and linguistics. The overall goal of the concentration is to capture the strong interdisciplinary flavor of contemporary study of the nervous system, and to expose interested students to a variety of methods that make up neuroscience inquiry. Following our course requirements, the student concentrator will receive instruction to understand the usefulness of genetics, cellular biology, and cognitive and behavioral tests in this complex field. The concentration also provides students a unique opportunity to integrate diverse approaches and principles to address complex contemporary questions about the function of the nervous system. In fact, part of the requirement of the concentration is to force students to take courses outside of their area of expertise, their major, so that we can be sure that they address questions from neuroscience with a more diversified background.

Areas of Knowledge

1. Fundamental knowledge about the genetics, evolution, development, and workings of the nervous system, through our core requirements,
2. Exposure to a variety of methods of inquiry through the laboratory component requirement of our core basic classes and in some electives,
3. Diverse methods within the electives to sample outside of the major, and to sample courses that are related but less concentrated on direct inquiry in neuroscience,
4. Critical thinking and development of questions in contemporary neuroscience, accomplished through our capstone seminar.

Skills of Inquiry and Analysis

It is likely that the interdisciplinary training provided in the concentration would give students a head-start into post-graduate studies in neuroscience. But the concentration is not constructed to give students particular training so that they are on a singular track (i.e., cellular, molecular, or behavioral) toward graduate school. The emphasis to allow students to explore various methods of inquiry seems more appropriate at the undergraduate level than to try to direct and harness their energies toward particular lines of inquiry. Thus the skills trained are less specific to methods and more broad-based. Our students are novice practitioners of neuroscience broadly defined, and as such we want to help to develop skills appropriate for their level of inquiry.

- Show an ability to read, review, and evaluate articles in neuroscience
- Generate methods to test a research question in neuroscience
- Experience laboratory methods to test particular questions in neuroscience

- Actively discuss contemporary issues in neuroscience with critical thinking and methods generation in mind.

Assessment of Learning Outcomes

Our courses are in a sequence that insures that students will learn knowledge fundamental to the field (# 1, Areas) in the core requirements. Different methods and lab experiences are required through 3 of the 4 core courses and in some electives. Assignments from particular courses in the concentration require students to review and evaluate articles, propose research, participate in lab exercises, and actively discuss and critically examine research in neuroscience. The final test of their diverse knowledge will be demonstrated in the capstone seminar, where students will be confronted with a set of articles and guest speakers and will need to generate questions for critical discussion. We will examine their understanding of the materials through a set of tests in the seminar, as well as their proficiency in discussing issues with speakers and us.