Integrated Biology, PhD

Requirements

The Doctor of Philosophy program in integrated biology requires a minimum of 72 s.h. of graduate credit. Students must maintain a cumulative grade-point average of at least 3.00.

New PhD students typically go through three laboratory rotations with different faculty during their first semester (August–December). Students with existing mentors in the Department of Biology may also seek to directly affiliate with that laboratory. Students consult with their temporary advisor and prospective faculty research sponsors before identifying their preferences for research rotations. Based on their rotations, they choose a laboratory affiliation for their thesis late in the first semester.

During the first year, students are required to enroll in BIOL:5512 Readings in Genetics in the fall semester and the 2 s.h. course BIOL:6298 Concepts, Models, and Systems in Biology (COSMOS) Seminar in the fall and spring semesters. BIOL:6298 introduces students to multiple levels of biological analysis and provides them with significant opportunities to hone their skills in written and oral communication. At the end of the first year, students take a qualifying exam that consists of essay questions based on major themes in biology. Students must perform satisfactorily on this exam in order to continue in the program.

During the first two years, students must enroll in at least two advanced lecture courses (or courses approved by the Graduate Affairs Committee)—one elective and one approved data informatics or statistics course.

Prior to the comprehensive examination, students also take BIOL:6188 Seminar: Writing in Natural Sciences and a seminar course with significant writing and oral presentation components.

The comprehensive examination is taken in the summer of the second year in residence. Students prepare a National Institutes of Health/National Science Foundation-style grant application on their planned thesis work and orally defend this work in front of a review committee. They must demonstrate knowledge of biology fundamentals and the analytic and synthetic skills necessary to become creative, independent scientists. Once they complete the coursework and proficiency requirements and pass the comprehensive examination, students may be admitted to full candidacy for the PhD.

Following the comprehensive examination, students must take at least two additional seminar courses (2 s.h. each). Seminar courses from other departments may be approved by the Graduate Affairs Committee in consultation with the faculty advisor to satisfy the requirement.

Students must serve as teaching assistants for at least two semesters in order to develop and demonstrate teaching proficiency. The first teaching semester takes place during the spring of a student’s first year and is preceded by extensive departmental training in effective teaching skills.

The department also offers career seminars that explore types of employment outside of academic research, including teaching careers and other topics.