Position and concentration in chemistry, biochemistry and cell biology, and must obtain permission to register.

BIOL 805 - Molecular and Cellular Neurobiology
Credits: 4
The overarching goal of this course is to examine the molecular and cellular mechanisms underlying neuronal function. This course builds on fundamental knowledge in neuroscience. Students will be exposed to primary literature regarding the most advanced techniques in neuroscience, with emphasis in cellular and molecular processes. Students will learn how different model organisms have been used in neuroscience, with emphasis in cellular and molecular processes. Labs will be project-based and students will conduct experiments to explore basic plant processes. Prereq: Knowledge of plant biology and chemistry (introductory plant biology and college level general or organic chemistry); or permission. Equivalent(s): PBIO 801

BIOL 806 - Plant Microbe Interactions
Credits: 3
Microbes and plants have developed intriguing strategies to encourage, resist or profit from their coexistence. The primary objective of the course is to provide students with a comprehensive overview of the various ways in which microbes interact with plants, the outcomes of that interplay, and applications of these interactions and explore how these interactions impact ecosystem function. Prereq: BIOL 411 and BIOL 412, BMS 503 and BMS 504 or GEN 604.

BIOL 805 - Molecular and Cellular Neurobiology
Credits: 4
The overarching goal of this course is to examine the molecular and cellular mechanisms underlying neuronal function. This course builds on fundamental knowledge in neuroscience. Students will be exposed to primary literature regarding the most advanced techniques in neuroscience, with emphasis in cellular and molecular processes. Students will learn how different model organisms have been used to understand neurons. Graduate students should have a strong background in chemistry, biochemistry and cell biology, and must obtain permission to register.
Biology (BIOL)

BIOL 829 - Agricultural Waste Management
Credits: 4
The management of agricultural wastes is crucial in the development of sustainable agricultural practices. This course covers principles of managing, handling, treating, and applying animal manures and organic byproducts from an agricultural system perspective. Topics include waste characterization, descriptions of systems and technology, utilization of wastes as resources (land application, composting, electricity generation, fertilization, etc.), land application principles, preparations of waste management plans, and potential impacts to the environment. Prereq: SAFS 502 or permission of instructor.

BIOL 852 - New England Mushrooms: a Field and Lab Exploration
Credits: 4
This is a hands-on field, lab and lecture course in the identification, classification, life histories, and ecology of mushrooms and other macrofungi. Lectures focus on macrofungal ecology and systematics. Laboratory instruction emphasizes morphological, microscopic, and molecular identification techniques, plus the use of smart-phone field note recording and online resources. Several field trips are required in addition to the weekly laboratory. Previous experience with fungi is not required. Grades are based on a collection, a project, and presentations. Prereq: Intro course in Biology or Plant Biology, or permission.
Equivalent(s): PBIO 852

BIOL 855 - Biological Oceanography
Credits: 4
Biological processes of the oceans, including primary and secondary production, trophodynamics, plankton diversity, zooplankton ecology, ecosystems and global ocean dynamics. Field trips on R/V Gulf Challenger and to the Jackson Estuarine Laboratory. Prereq: One year of biology or permission of the instructor. Special Fee.
Equivalent(s): ESCI #850, ZOOL 850

BIOL 873 - Physiology of Fishes
Credits: 4
Investigates the physiological processes responsible for maintaining homeostasis in fishes. Focuses on the function and regulation of the major organ systems during stress and environmental adaptation. Topics include reproduction, osmoregulation, digestion, endocrinology, and sensory perception. Special Fee.
Equivalent(s): ZOOL 873

BIOL 895 - Advanced Studies
Credits: 1-4
Advanced research or seminar, supervised by a faculty member.

BIOL 899 - Master's Thesis
Credits: 1-10
Master's thesis research. Cr/F.
Repeat Rule: May be repeated for a maximum of 10 credits.

BIOL 901 - Introductory Graduate Seminar
Credits: 2
This seminar provides an introduction to the Biological Sciences Graduate Program, offering students an overview of program structure and requirements, introducing faculty research and campus resources, and helping participants develop skills and strategies useful in graduate school. Requirements include preparation of a written research proposal and a brief oral presentation. Cr/F.
Equivalent(s): ZOOL 901

BIOL 902 - Writing and Publishing Science
Credits: 2
Participants in this seminar (1) make significant progress on one or more of their current academic writing projects; (2) increase their understanding of the genres, protocols, and mechanisms of scientific writing and publishing; and (3) develop strategies and skills for getting professional writing done efficiently and well, in graduate school and beyond. Cr/F.
Repeat Rule: May be repeated for a maximum of 6 credits.

BIOL #903 - Graduate Research Techniques
Credits: 2
Introduction to a range of research approaches in biology and to research skills needed for success in graduate school and beyond. Topics include scientific methods and experimental design, research techniques, and instrumentation available for graduate research. Cr/F. Offered every spring.

BIOL 950 - Scientific Communication
Credits: 2
Professional success in science depends on the ability to communicate, both by publishing in professional journals and by explaining the implications of research to a broad audience. This course covers a wide range of topics related to scientific communication. Students work on multiple forms of communication, practice communicating science to the public, strengthen peer reviewing skills, explore online scientific communities, and enhance awareness of relevant economic, legal, and ethical issues.
Equivalent(s): LSA 950

BIOL #997 - Graduate Seminar in Biology
Credits: 1-2
Current topics in biological sciences; discussion of literature in the field, and student research. Topics span a wide range of biological disciplines (agricultural sciences, marine biology, integrative and organismoal biology, etc.), and vary to reflect the faculty and student interests.
Repeat Rule: May be repeated for a maximum of 8 credits.

BIOL 999 - Doctoral Dissertation Research
Credits: 0
Doctoral dissertation research. Cr/F.