

Fall 2020 Special Topics and Project Labs

BIOS 4803 Nutrition (Rosbruck)

Meets: Asynchronously online

Prerequisite: APPH 1040/1050

Credit hours: 3

Description: The course is a study of human nutrition as an applied science and covers nutrition physiology: metabolism, energy, production, biochemical aspects, role of nutrients, weight control mechanisms, fitness and consumerism.

BIOS 4803 Proteomics: Technologies and applications (Torres)

Meets: MW 2:00-3:15

Credit hours: 3

Prerequisites: BIOL 1510 or 1511

Description: This course is designed for undergraduate and graduate level students interested in understanding fundamental aspects underlying the study of proteins at the omics level (proteomics), including technologies and their application to biological problems. Particular emphasis will be devoted to a review of primary literature covering specific applications in fundamental as well as translational (i.e. medical) research.

BIOL 4813 Biology of Terrestrial Vertebrates (Mendelson)

Meets: MW 12:30-1:20; F 12:30-3:15

Credit hours: 3

Prerequisites: BIOL 1520 and [BIOL 2335 or BIOS 2300] (required); BIOL/BIOS 3600 (recommended)

Description: This course focuses on the natural history of terrestrial vertebrates: their classification, evolution, anatomy, physiology, behavior, and conservation. Our focus will be on extant amphibians, reptiles including birds, and mammals. The laboratory portion of the course will emphasize behavioral biology of the animal collection housed at Zoo Atlanta, with a potential optional weekend field trip. Students also will develop and carry out a short behavioral research project at the Zoo. Lectures take place at Georgia Tech, while Friday labs take place mostly at Zoo Atlanta (transportation to be provided).

BIOL 4590 A – Research Project Lab (Jiang)

Meets: M 3:30-4:20, M 12:30-3:15; W 12:30-3:15

Prerequisite: SR standing

Corequisite: BIOS 4460 Communicating Biological Research

Credits: 3

Description: Causes and Consequences of Biodiversity

Students will gain experience in designing, implementing, and communicating a biology research project, and practical training in modern approaches for biological research. This section will have a scientific theme of ***Causes and Consequences of Biodiversity***. Students will design and run projects to explore how various ecological factors influence one or multiple dimensions of biodiversity (e.g., genetic diversity, species diversity, functional diversity, phylogenetic diversity) and/or how changes in biodiversity influence ecological properties at the species, community, or ecosystem levels.

BIOL 4590 B – Research Project Lab (Lobachev)

Meets: T 3:30-4:20, T 12:30-3:15, R 12:30-3:15

Prerequisite: SR standing

Corequisite: BIOS 4460 Communicating Biological Research

Credits: 3

Description: This course is designed for upper-level undergraduate students interested in learning modern molecular biology techniques and applying them to study biological processes in model organisms. No previous experience working in the lab is required. Modern approaches and tools used for modification of genetic information will be presented. As a result of this training, students will learn how to work with *E. coli* and baker yeast, to carry out plasmid and genomic DNA extractions, to design and set up PCR reactions, to do restriction digestion analysis, to clone genes, to create mutation alleles on plasmids and in the chromosomal genes and to analyze the effect of these mutations *in vivo*. The course will include traditional lectures, laboratory time and individual projects. During individual projects students working as a team will carry out their own investigation of the effect of mutations in particular genes on chromosomal metabolism. The course is thus an essential resource for students of colleges of science who seek to expand their knowledge of modern molecular genetics tools.