

Course Descriptions for BIOS Project Labs (BIOS 4590) and Special Topics (BIOS 48X1, 48X2, 48X3)

Summer 2023 Special Topics

BIOS 4803 ES Nutrition (Rosbruck)

ASYN

Prerequisite: APPH 1040/1050

Credits: 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.

Fall 2023 Special Topics and Project Lab Descriptions

BIOS 4803 BAL Integrative Physiology (Balog)

Prerequisite: BIOS 3755 or BMED 3100

Credits: 3

Description: This course will provide students with a more sophisticated understanding of how organ systems interact to maintain homeostasis than is provided by the pre-requisites.

BIOS 4803 ROS Nutrition (Rosbruck)

ASYN

Prerequisite: APPH 1040/1050

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.

BIOL 4590 – Research Project Lab section A and AL (Jiang)

Prerequisite: SR standing

Corequisite: BIOS 4460 Communicating Biological Research

Credits: 3

Description: 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.

BIOS 4590 – Research Project Lab section B and BL (Lobachev)

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.