BIOL Special Topics Courses – Spring 2015

BIOL 4803 Environmental Microbial Genomics (Konstantinidis)
Meets: TR 9:30-11
Course description: To expose students to advanced concepts and principles of contemporary microbiological research and associated bioinformatics techniques through representative examples from recent literature. Topics covered include, but are not limited to: the diversity of microbial genes and genomes; the value of this diversity for the life-sustaining biogeochemical cycles, disease control, and biotechnology; the complexity of microbial communities; the interactions among microbes and their environment; and the influence of the environment in shaping and driving the evolution of microbial genomes and microbial communities. Advancing microbiological research has always been linked tightly to technological innovations. Thus, the course will also offer an extensive discussion of the cutting-edge technologies and methodologies that enable contemporary research. Emphasis will be given on “How-To” tackle recurrent research problems through bioinformatics exercises, which will make up about 1/3 of the course. The course should be of interest to graduate students working with microbial systems of environmental or clinical relevance, in engineered or natural settings and to bioinformatics students who wish to get exposed to microbial research and “real-life” data.

BIOL 4803 Biology of Terrestrial Vertebrates
Meets: MW 2-3, F 2-5
Course 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, birds, and mammals. The laboratory portion of the course will emphasize behavioral biology of the animal collection housed at Zoo Atlanta, with several additional weekend field trips offered. You will also develop and carry out a short behavioral research project at the Zoo.
Prerequisites: BIOL 1520 and 2335 (required), BIOL 3600 (recommended).

BIOL 4803 Public Health (Snell and Houlroyd)
Meets: MWF 9-10 am
Course Description: Discover the biological basis of how public health impacts us all through epidemiology and global disease dynamics, environmental toxicology, human health impact of water, air and soil contamination, assessing and minimizing environmental risks, hazards associated with occupational exposures, and mitigating health disparities among populations. Students will apply principles of biology to issues of public health to assess the impact of scale: as it relates to the study of biology and the ultimate application of public health principles.
Prerequisites: BIOL 1510 (required), BIOL 2335 (recommended).

BIOL 4803 Health, Genes, and Society (Gibson)
Meets: TR 9:30-11 am
Course Description: The objective of this course is to provide students with an alternative perspective on health and wellness to that offered by standard cell/molecular biology or engineering classes. The emphases will be on evidence-based changes in healthcare practices, where relevant, discussing implications of contemporary genetics. A large component of the course will be student-driven projects addressing contemporary healthcare needs chosen by small teams. There are three sub-sections. (1) Health care models from epidemiology to molecular medicine: introduction to health and wellness, including comparative practices, the impact of socioeconomic status on health outcomes, and race and gender disparities; the epidemiological transition, and contrasting the roles of medicine and international public health programs for global health. (2) Health behavior and its impact on well-being, focusing on smoking, drinking, eating, exercise, and stress reduction. (3) Personalized medicine, examining the impacts of social media and predictive health initiatives (including the Emory-GT Center for Health Discovery and Well Being) and discussing the ethics and practicality of parental choice in reproduction.