Fall 2021 small class size electives

**Biol 3020 Practical Laboratory Skills**
Designed for students who are interested in working in a professional biology laboratory. Covers improvement of manual dexterity skills, understanding common laboratory apparatus, and handling biological macromolecules and living cells.

**Biol 3074 Human Reproductive Biology**
Comprehensive study of anatomy and physiology of human reproduction. Embryogenesis of male and female reproductive systems and detailed analysis of contraception, world population growth and implications, and population control are also covered.

**Biol 3124 Introduction to Molecular Biology**
Provides an understanding of the structure and function of genetic material, with respect to the regulation of gene expression and protein synthesis. Emphasizes eukaryotic systems and the significance of contemporary laboratory-based research.

**Biol 3134 Advanced Topics – Pharmacology**
Includes concepts of pharmacodynamics, including drug targets and drug receptors, and pharmacokinetics for major classes of drugs. Over-the-counter, prescription, natural product, and drugs of abuse are included, along with considerations including drug discovery and development, routes of administration, and toxicology.

**Biol 3521 Vertebrate Biology**
Vertebrata consists of fish, amphibians, reptiles, birds and mammals—some of the most fascinating and most threatened species on earth. This course covers the evolution, taxonomy, anatomy, physiology, ecology and conservation of these organisms.

**Biol 3525 Parasitology**
This course provides a foundation in parasitology to students interested in biodiversity, veterinarian medicine, public health, & health care. The focus of this course is the natural history of ‘traditional’ eukaryotic parasites, including evolutionary associations of parasites with plants and animals (including humans), modes of transmission, and general life cycles.

**Biol 2840/ 3840/ 4840/ 5840 Independent Study**
Student will contribute to ongoing faculty or graduate student’s lab or field-based investigation that makes an original intellectual or creative contribution to the discipline. Associated coursework includes scientific reading/writing/presentation(s). Can be for credit or paid. [https://clas.ucdenver.edu/integrative-biology/research/undergraduate-research-opportunities](https://clas.ucdenver.edu/integrative-biology/research/undergraduate-research-opportunities)

**Biol 2939/ 3939/ 5939 Internship**
Approved internships will provide opportunities to apply classroom knowledge in a professional environment and expand the student’s knowledge of biology. Associated coursework includes scientific reading/writing and presentation(s). [https://clas.ucdenver.edu/integrative-biology/internships-biol-3939](https://clas.ucdenver.edu/integrative-biology/internships-biol-3939)

**Biol 4045/ 5050 Advanced Biology Topics**
Exercise Physiology Laboratory. Taken with BIOL 4464/5464 Exercise Physiology.

**Biol 4045/ 5055 Virology**
This is an upper level undergraduate/graduate class providing an in-depth study of the history of virology, different types of viruses, viral disease, research to combat viral infections, and different uses of viruses in biotechnology.

**Biol 4064/ 5064 Cell Biology of Disease**
Builds on the foundations laid in the prerequisite courses. How alterations in membrane transport, autophagy, mitochondria, lysosomes, cilia, unfolded protein response and autophagy lead to major human diseases.

**Biol 4144/ 5144 Medical Microbiology**
Provides an understanding of the relationship between pathogenic organisms and their host. Emphasis is placed on the area of medical bacteriology, with attention given to mechanisms of pathogenesis, genetics of disease, serology and treatment.

**Biol 4154/ 5154 Conservation Biology**
Basic concepts and theories in ecology, population biology and genetics as they apply to issues relating to the preservation of biodiversity, such as the genetics of small populations, captive propagation, restoration ecology and the design of nature reserves.

**Biol 4165/ 5165 Neurobiology**
Overview of neuroscience, covering the cellular basis of neuronal activity, muscle, sensory structures and the structure and function of the human brain.

**Biol 4250/ 5250 Mechanisms of Animal Behavior**
The proximate and ultimate mechanisms of animal behavior are analyzed using comparative animal examples from the scientific literature. Proximate mechanisms include genetic and physiological processes. Ultimate mechanisms include the role of natural and sexual selection in the evolution of behavior.

**Biol 4345/ 5345 Flora of Colorado**
Lecture, lab and field trips. Introduces the vascular plant flora of Colorado, including ferns, gymnosperms and flowering plants. Emphasis on field identification of species representing a range of natural communities from grassland to alpine tundra, as well as non-natives. Field and herbarium techniques covered.

**Biol 4415/ 5415 Microbial Ecology**
An in-depth study of ecology as it relates to microorganisms; abiotic and biotic interactions within microbial populations in macro- and microhabitats; and the role of microorganisms in maintaining steady state conditions in natural ecosystems. Emphasis is placed on how the ecology of microorganisms affects the human condition.

**Biol 4464/ 5464 Exercise Physiology**
This course addresses the dynamic physiological changes associated with exercise. This course explores how the cardiovascular, respiratory, nervous and endocrine systems support increased energy transfer as skeletal muscle becomes more active. Taken with BIOL 4050/5050 Exercise Physiology Laboratory.

**Biol 4475/ 5475 Mechanisms of Human Pathology**
Studies physiological, cellular and biochemical processes in human diseases. Mechanisms of inflammatory diseases, infectious diseases, neoplastic diseases, and others will be examined.

**Biol 4634/ 5634 Biology of Cancer**
Cancer is the second leading cause of death in the United States. This course offers an overview of recent research into the causes, treatments and possible prevention of cancer. Includes a detailed look at the mechanisms of action of various oncogenes.

**Biol 4825/ 5825 Biochemistry of Metabolic Disease**
Advanced course in biochemistry. An expanded study of selected topics in metabolism and how they relate to diseases, including inflammation, diabetes, obesity, and rare genetic disorders.

**Biol 4880/ 6880 Directed Research**
A student designed lab or field-based investigation that involves data collection, and that makes an original intellectual or creative contribution to the discipline. Can be for credit or paid. [https://clas.ucdenver.edu/integrative-biology/research/undergraduate-research-opportunities](https://clas.ucdenver.edu/integrative-biology/research/undergraduate-research-opportunities)

For biology advising see [https://clas.ucdenver.edu/integrative-biology/academics/undergraduate-programs#advising-73](https://clas.ucdenver.edu/integrative-biology/academics/undergraduate-programs#advising-73)

For biology careers see [https://clas.ucdenver.edu/integrative-biology/content/careers-biology](https://clas.ucdenver.edu/integrative-biology/content/careers-biology)