BIOL 4510K: Bioinformatics II

4 Credit Hours

Prerequisite: BIOL 4500K

This course emphasizes the principles of laboratory generation, bioinformatics and other computational analysis, and practical application of results from real-world data drawn from genomics-level research projects at KSU and elsewhere. Students will perform genome-wide association studies, assemble transcriptomes, quantitate and visualize differential expressions, and analyze cellular interaction networks. Students will use data that spans and integrates many levels of biological organization, multiple 'kingdoms,' and diverse applications (e.g., human health, agriculture, industrial microbial processing).

BIOL 4550: Cancer Biology

3 Credit Hours

Prerequisite: BIOL 3410

This course will cover the underlying biochemical, molecular and cellular events involved in carcinogenesis, tumor growth, and metastasis. This will include signaling pathways, proteins and regulatory networks involved in cell growth, cell death and tissue organization. Students will also be introduced to modern biochemical and molecular techniques used to dissect the molecular mechanisms controlling cancer development as well as a knowledge of the latest breakthroughs in cancer therapeutics.

BIOL 4610: Advanced Topics in Anatomy & Physiology

1-4 Credit Hours

Prerequisite: BIOL 3410

This course covers advanced topics in physiology that may fit the needs and interests of highly select students. Students may learn advances in laboratory techniques or even microbial and cellular physiology.

BIOL 4620: Advanced Topics in Ecology & Evolution

1-4 Credit Hours

Prerequisite: BIOL 3370 or BIOL 3380

Advanced topics in ecology and evolution that may fit the needs and interests of students and faculty. Such topics might include advanced lab and field techniques, microbial ecology, evolution of specific taxa, biology of gender.