

University of Arkansas – Fort Smith
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General Syllabus

BIOL 4604 General Physiology

Credit Hours: 4

Lecture Hours: 3

Laboratory hours: 3

Prerequisite: BIOL 3803/3801 Genetics/Laboratory and CHEM 2703/2701 Organic Chemistry I/Laboratory.

Effective Catalog: 2018~2019

I. Course Information

A. Catalog Description

Explores the homeostatic mechanisms in both animals and plants and seeks to answer how organisms adapt to environmental stresses in order to survive. Looks at commonalities of physiological regulation among all living organisms. Relationships of structure to function are explored. Readings includes research literature as well as textbook materials. The laboratory focuses on experimental design, data collection, analysis and drawing conclusions in physiology experiments.

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course the student will be able to:

1. Analyze general principles of physiology that maintain homeostasis in both plants and animals.
2. Evaluate similarities and differences between plants and animals and among animal systems.
3. Demonstrate an integrated view of physiological processes of living beings.
4. Design a rigorous physiology experiment.
5. Perform experiments, produce data, analyze data, and draw conclusions based on scientific evidence.
6. Interpret original research literature in physiology and use information to support conclusions drawn in above.

B. University Learning Outcomes

BIOL 4604 General Physiology enhances student abilities in the following areas:

Analytical Skills

Quantitative Reasoning: Students will perform experiments and draw conclusions based on their findings. Students will interpret data and read scientific graphs in original scientific literature, and collect and analyze data in laboratory in order to compose their own scientific research paper. Students will represent mathematical /statistical information symbolically, visually, numerically and verbally, and will interpret models and data in order to draw inferences.

Communication Skills (written and oral)

Students will effectively write research paper(s) based on experiments in both plant and animal physiological systems, and effectively communicate orally their experimental results to the class.

Ethical Decision Making

Students will identify ethical dilemmas and affected parties associated with general physiology and animal research.

Global & Cultural Perspectives

Students will demonstrate understanding or applications of general physiology in a global environment, and identify how general physiology impacts or is impacted by different cultures.

III. Major Course Topics

- A. Water and Electrolyte Regulation
- B. Temperature Regulation
- C. Energy Acquisition and Use
- D. Physiological Communication (hormones, neurotransmission, chemical signaling)
- E. Environmental Stressors and Adaptations
- F. Reproduction
- G. Movement
- H. Sensory systems and Response