BIOL 2425

Division: Natural Science and Mathematics
Department: Biology
Course: BIOL 2425
Title: Human Physiology Laboratory
Catalog Description:

The laboratory portion of human physiology provides hands on exercises that reinforce the major topics covered in the lecture portion of the course. This course must be taken concurrently with BIOL 2420.

General Education Requirements: Life Science
Semesters Offered: Fall, Spring
Credit/Time Requirement: Credit: 1; Lecture: 0; Lab: 2
Clock/Hour Requirements: 0
Offered for Non-Credit: No
Prerequisites: Strongly recommended BIOL 2320 (formerly BIOL 2620), CHEM 1110 or 1210

Corequisites: BIOL 2425 must be taken concurrently with the lecture, BIOL 2420

Justification:

The Human Physiology Laboratory (BIO 2425) is the laboratory portion to accompany Human Physiology (BIO 2420). Some colleges offer these as one combined course. At Snow College they are separated into two courses taken concurrently. Together they cover the topics in sufficient detail to provide the scientific foundation for further study in all allied health professions. Some majors at the four-year colleges and universities require both the laboratory and the physiology lecture. BIOL 2425 will be comparable to courses offered by other Utah colleges and universities: CEU, BIO 2425; DSC, BIOL 2425; SLCC, BIOL 2425; SUU, BIOL 2425; U of U, BIOL 2425.BIOL 2420 AND 2425 together will be comparable to courses offered by other Utah colleges and universities that combine the lecture and lab into one course: USU, BIO 2420; UVSC, ZOOL 2420; WSU, BIO 2200; Westminster, BIOL 104.

Student Learning Outcomes:

Upon successful completion of this course, students will be able to:

- recognize some the characteristics of water that make it so essential to life
- describe the forces that create hydrogen bonding, its effects and how it is broken
- understand pH, acid, base, and neutral pH
- know the steps of the Scientific Method, and be able to apply the scientific method to gaining an understanding of physiologic response
- be familiar with the light microscope, its uses, abilities, function, proper handling and care

- know cell structures and their functions
- know the identifying characteristics of the four primary tissue types and be familiar with several specific tissue types
- explain enzyme function and factors affecting their function
- be able to explain the process of diffusion and osmosis
- explain the effect on tonicity on osmosis
- know the stages of mitosis and meiosis and also be able to explain the major events of each phase of each
- explain the events of the action potential and how the action potential is affected by such variables as strength of stimulus, duration of stimulus, and ion concentrations
- explain the phenomenon of the refractory period
- identify the structures of the nervous system and correlate their associated functions
- explain the law of specific nerve energies and give examples
- compare phasic and tonic receptors
- explain the process of taste perception
- explain the special sense of hearing and how to identify conduction deafness vs. nerve deafness
- explain the physiology of vision and the alterations of structure and physiology that affect vision
- know the mechanisms of endocrine regulation, the endocrine glands with their associated hormones and functions
- explain the process of muscle contraction
- diagram examples of reflex pathways and elicit some basic reflexes used in physical examination
- identify components of the cardiovascular system and their functions
- identify the components of blood and know the basics of blood typing
- explain the function and control of respiration and relate these with the structure of respiration
- explain the role the respiratory system has in maintaining homeostasis
- explain the process of urine formation and the role of the urinary system in waste elimination and homeostasis

Content:

This laboratory course will include:

- water, pH, science and the scientific method
- use of the light microscope and cell structure and function
- tissues
- enzymes function
- osmosis and diffusion
- mitosis and meiosis
- the action potential
- physiology of the nervous system
- sensory perception
- physiology of vision
- physiology of the endocrine system
- muscle physiology
- the cardiovascular system
- blood

- respiratory physiology
- urinary system physiology

General Education Outcomes:

1) Read effectively, constructively, and critically.

Students must be able to constructively and critically evaluate the text and laboratory manual written description of physiologic processes and instructions in order to successfully complete the laboratory exercises.

2) Write clearly, informatively, and persuasively.

Lab reports include writing components in which the student, after conducting laboratory exercises, expresses his or her understanding of physiologic processes.

4) Retrieve, evaluate, interpret, and deliver information through a variety of traditional and electronic media.

Laboratory students will use microscopes, other lab equipment and supplies, and computers to conduct exercises designed to evaluate physiologic processes, and obtain and analyze data generated.

7) Apply scientific reasoning to a variety of contexts.

Students will demonstrate scientific reasoning in conducting laboratory exercises based on testable hypothesis, and evaluate their acquired data in supporting or refuting the hypothesis. In class discussion they will share their finding and observations with their classmates and evaluate their findings.

Key Performance Indicators:

Since multiple faculty members teach the lab course, teaching styles will vary, as will evaluation methods. The biology department allows a variable number of quizzes and tests, projects, etc. in the evaluation process. Evaluation will be based on

- practical lab quizzes: 30-70%
- lab reports: 0-35%
- lab participation, and lab final exam: 0-35%.
- Students cannot miss more than two labs. Students missing more than two laboratories will fail the course.

Representative Text and/or Supplies:

- L. Cook, P. Gardner, *Biology 2425 Laboratory Manual*, current edition, self published or published by the Biology Department.

Optimum Class Size:

16

Maximum Class Size: 24

Signatures:

I hereby submit this course syllabus:

Allan Stevens, , Professor

I hereby find this course consistent with the goals and resources of the Biology Department:

Allan Stevens, , Professor, Chair

I hereby find this course consistent with the goals and resources of the Natural Science and Mathematics Division:

Dan Black, EdD, Associate Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

Michelle Olsen, MLS, Campus Librarian (Richfield Campus)