



BIOL 219 - Human Physiology Course Outline

Approval Date: 03/12/2020

Effective Date: 08/16/2021

SECTION A

Unique ID Number CCC000263078

Discipline(s) Biological Sciences

Division Science and Engineering

Subject Area Biology

Subject Code BIOL

Course Number 219

Course Title Human Physiology

TOP Code/SAM Code 0410.00 - Anatomy and Physiology / E - Non-Occupational

Rationale for adding this course to the curriculum Changes from previous version: 1. MATH and ENGL prerequisites have been removed. MATH 94 is no longer applicable and MATH prerequisite is met through completion of the CHEM 110 prerequisite. ENGL 90 prerequisite is no longer applicable. 2. Update textbook editions.

Units 5

Cross List N/A

Typical Course Weeks 18

Total Instructional Hours

Contact Hours

Lecture 54.00

Lab 108.00

Activity 0.00

Work Experience 0.00

Outside of Class Hours 108.00

Total Contact Hours 162

Total Student Hours 270

Open Entry/Open Exit No

Maximum Enrollment

Grading Option Letter Grade or P/NP

Distance Education Mode of Instruction

SECTION B

General Education Information:

SECTION C

Course Description

Repeatability May be repeated 0 times

Catalog Description An introduction to the function of the human body, emphasizing mechanisms of homeostasis and integration at the biochemical, cellular, tissue, organ, and organ system levels. Laboratory exercises include measurement and analysis of physiological data and study of structure-function relationships in body tissues and organs. Primarily intended for students pursuing an Associates Degree in Nursing, A.S. degree in Respiratory Care, or B.A./B.S. degree in a Health Sciences field.

Schedule Description

SECTION D

Condition on Enrollment

1a. Prerequisite(s)

- BIOL 105 with a minimum grade of C or better or
- BIOL 120 with a minimum grade of C or better
- CHEM 110 with a minimum grade of C or better

1b. Corequisite(s): *None*

1c. Recommended

- BIOL 218

1d. Limitation on Enrollment: *None*

SECTION E

Course Outline Information

1. Student Learning Outcomes:

- A. Communicate understanding of physiological processes including mechanisms of homeostasis.
- B. Critically evaluate physiological function in normal and disease states.
- C. Perform basic physiological measurements and analyze physiological data quantitatively.

2. Course Objectives: Upon completion of this course, the student will be able to:

- A. Explain the principle of homeostasis and provide examples of homeostatic control mechanisms in the body.
- B. Recognize the chemical structures of the major classes of biomolecules and describe their major roles in living cells.
- C. Relate biological structure to function at the cellular, tissue, organ, and organ system levels of organization.
- D. Explain mechanisms of cellular communication in the nervous, sensory, and endocrine systems.
- E. Describe the function and regulation of the major organ systems of the body and provide examples of integration among these systems.
- F. Compare physiological function in normal and disease states such as diabetes, cardiovascular disease, and obstructive pulmonary disease.
- G. Perform physiological measurements and apply quantitative methods to analyze physiological data.
- H.

3. Course Content

Lecture content includes:

- A. Homeostasis and feedback control systems
- B. Organization and function of the cell membrane, cells, and tissues
- C. Body fluid compartments
- D. Chemistry of life
- E. Cellular metabolism
- F. Membrane permeability and transport
- G. Membrane potentials and action potential
- H. Cell-cell communication
- I. Nervous system organization and function
- J. Sensory transduction and sensory systems
- K. Endocrine system organization and function
- L. Muscle structure and function
- M. Cardiovascular system function and regulation
- N. Lymphatic system and immune function
- O. Respiratory physiology function, regulation, and blood gas transport
- P. Renal physiology: osmoregulation, excretion, electrolyte balance, and acid-base balance
- Q. Digestive system function and regulation
- R. Reproductive systems function and regulation
- S. Clinical applications of physiology

Laboratory content includes:

- 1. Performing scientific measurements and data analysis
- 2. Doing calculations with physiological variables and units
- 3. Preparing dilutions and measuring concentration of solutions
- 4. Observing osmotic effects in cells and dialysis membrane sacs
- 5. Identifying basic tissue types and their functional properties
- 6. Studying anatomical models and dissected specimens
- 7. Observing and interpreting function of sensory systems
- 8. Electromyogram and electrocardiogram recording and analysis
- 9. Blood pressure measurement
- 10. Measuring respiratory volumes by spirometry
- 11. Evaluating acid-base balance using case studies
- 12. Performing urinalysis

4. Methods of Instruction:

Discussion:

Experiments:

Lab:

Lecture:

5. Methods of Evaluation: Describe the general types of evaluations for this course and provide at least two, specific examples.

Typical classroom assessment techniques

Exams/Tests --

Quizzes --

Class Participation --

Home Work --

Lab Activities --
Final Exam --
Mid Term --

Additional assessment information:

Exams include 3-4 midterm exams, 2 laboratory exams, and a cumulative final exam.

Biweekly quizzes cover lecture and lab topics.

Class participation is based on engagement in lab exercises, group learning activities and class discussions.

Homework assignments include problem-solving exercises, laboratory data analysis, and written answers to questions from the lab exercises.

Lab activities include measurement and analysis of physiological data, study of functional anatomy and histology, and case studies.

Letter Grade or P/NP

6. Assignments: State the general types of assignments for this course under the following categories and provide at least two specific examples for each section.

A. Reading Assignments

Textbook and laboratory manual reading assignments.

For example:

Read Chapter 2 in the textbook in preparation for lecture and discussion on protein structure and function.

Read Exercise 6.2 Introduction and Procedure sections prior to the laboratory on protein measurement.

B. Writing Assignments

Recording of laboratory observations, analysis of data, and answering questions assigned in the lab manual.

For example:

Write a short report on results of the serial dilution lab exercise. Include a plot of your standard curve of absorbance versus concentration and show how you determined the concentration of the unknown solution using the standard curve.

C. Other Assignments

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7. Required Materials

A. EXAMPLES of typical college-level textbooks (for degree-applicable courses) or other print materials.

Book #1:

Author: Silverthorn, D.U.
Title: Human Physiology, An Integrated Approach
Publisher: Pearson
Date of Publication: 2019
Edition: 8th

Book #2:

Author: Fox, S.I.
Title: Human Physiology

Publisher: McGraw-Hill

Date of Publication: 2019

Edition: 15th

Manual #1:

Author: Fox, S.I.

Title: A Laboratory Guide to Human Physiology, 13th ed.

Publisher: McGraw Hill

Date of Publication: 01-02-2013

B. Other required materials/supplies.