Course Outline

2026-2027 Catalog

BIOL 10 - Survey of Human Systems

Catalog Description

Transfer Status: CSU/UC

Unit(s): 4.00

Lecture: 51.00 Contact hours/102.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

Lab: 51.00 Contact hours/0.00 Out of class hours/51.00 Total hours/1.00 Unit(s)

Total: 102.00 Contact hours/102.00 Out of class hours/204.00 Total hours/4.00 Unit(s)

Course Description: This course is intended for students in programs such as Emergency Medical Services and Health Information Management. Topics include fundamentals of the structure and function of the human body from an organ system perspective: Key concepts and basic principles of the chemistry of life, cells and tissues, cell physiology, structural organization and physiological principles in organ systems, system integration, and homeostasis in health and disease. (Not intended for Nursing students).

Objectives

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

1. Describe the basic principles of the chemistry of life
2. Describe key structural and functional features of different cells, major tissue types, and anatomical systems
3. Recognize and identify, using correct terminology, anatomical structures on diagrams or plates, three-dimensional models, interactive online resources, and the human cadaver
4. Identify key functions of major organ systems and the physiological mechanisms underlying their operation
5. Evaluate how organ systems of the body are integrated and regulated in order to maintain homeostasis
6. Synthesize basic information, and apply learned course concepts in the analysis of new material
7. Apply the scientific method and philosophy of science by designing components of and carrying out physiological experiments

Course Content

Topic Titles / Suggested Time Topic

Lecture

Topics	Lec Hrs
Human Body Orientation: Levels of organization, anatomical terminology	1.00
Basic Chemistry: Molecules and compounds, chemical bonds and reactions	3.00
Cells and Tissues: Generalized cell and body tissues	3.00
Body Membranes and Skin: Membranes, integumentary system	3.00
Homeostasis and Feedback: System regulation	1.00
The Skeletal System: Bone tissue, axial and appendicular skeleton, joints	3.00
The Muscular System: Muscle tissue, muscle, contraction mechanism	3.00
The Nervous System: Neuronal tissue, central nervous and peripheral nervous systems	6.00
Special Senses: Vision, hearing and equilibrium, gustation, olfaction	2.00
The Endocrine System: Endocrine glands, hormonal axes	3.00
The Cardiovascular System: Blood, heart, cardiac activity, blood vessels, regulation	6.00
The Lymphatic System: Lymphatic tissues and organs, defense mechanisms	3.00
The Respiratory System: Respiratory tissues and organs, ventilation, respiration	3.00
The Digestive System: Digestive tissues and organs, mechanical and chemical processing, regulation	3.00
The Urinary System: Urinary tissues and organs, filtration, reabsorption, regulation, fluid/electrolyte and acid base balance	4.00
The Reproductive System: Male and female reproduction, hormonal regulation	3.00
Development: Embryonic development	1.00
Total Hours:	**51.00**

Lab

Topics	Lab Hrs
Scientific Method: Scientific method, data acquisition and analysis	3.00
Body Organization and Basic Terminology: Surface anatomy, body orientation and direction, body planes, sections, and cavities	3.00
Molecular Biology: Molecules, protein synthesis, inheritance	3.00
Cells and Tissues: Cellular structure, division, basic tissues	3.00
Cell Membrane Transport: Passive diffusion, osmosis, phagocytosis	3.00

Topics	Lab Hrs
The Integumentary System: Tissues, sensory reception, pigmentation	3.00
Skeletal System: Tissue, axial and appendicular skeleton, joints	3.00
Muscular System: Tissue, musculature, muscle mechanics	3.00
The Nervous System: Nervous tissue, central and peripheral nervous systems, reflexes	4.00
The Special Senses: Vision, hearing and equilibrium, gustation, olfaction	3.00
The Endocrine System: Glands, hormones	2.00
The Cardiovascular System: Heart, blood vessels, blood and blood typing, blood pressure, electrocardiograms	6.00
The Respiratory System: Respiratory anatomy, pulmonary function	3.00
The Digestive System: Digestive anatomy	3.00
The Urinary System: Urinary anatomy, urinalysis	3.00
The Reproductive System: Male and female anatomy, embryonic development	3.00
Total Hours:	**51.00**

Methods of Instruction

A. Class Activities
B. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
C. Instructor Demonstrations
D. Laboratory Experiments
E. Lecture
F. Multimedia Presentations
G. Certificate of Achievement in Health Information Management

Methods of Evaluation

A. Quizzes
B. Homework
C. Class participation
D. Lab Projects
E. Written Assignments
F. Written Examinations
G. Practical Evaluations
H. Mid-term and final examinations

Examples of Assignments

Reading Assignments

1. Read the section of the text that covers pancreatic islet secretions and be prepared to discuss how blood glucose levels are regulated
2. Read the section of the text that covers feedback mechanisms in homeostasis and be prepared to discuss how this applies to specific parameters in the human body

Writing Assignments

1. Prepare a one page outline addressing each of the four general tissue categories. For each tissue include the following information; A) the basic cellular characteristics including extra-cellular matrices, B) examples of specific tissue types that fall under the general category, and C) where in the body you would find each of the examples listed
2. Study the diagram of the ear in the text and describe the pathway (either in paragraph format or as a numbered/bulleted list) for the conduction of sound waves from the external environment to the reception of sensory information. Continue the pathway through the nervous system up to the perception of sound in the brain.

Out-of-Class Assignments

1. Choose one of the inherited disorders from the list provided. Using the NCBI site OMIM (Online Mendelian Inheritance in Man) identify the following; 1) which chromosome and loci is the disorder linked to, 2) what are the basic mechanics behind the disorder, and 3) what are the current treatment methods used to treat the disorder. Be prepared to give a short 3-5 minute presentation on your findings to the class.
2. Using a medical dictionary, text on medical terminology, or internet resource, indicate the meaning of the root word, prefix, and/or suffix on the provided list. Using your list of terms, be prepared to identify a set of anatomical structures shown in the lab by assembling the appropriate terminology.

Recommended Materials of Instruction

Marieb, Elaine N. (2018). Essentials of Human Anatomy and Physiology. *Pearson, 12th.* 9780134395326.
Wood, Kelly. (2021). Survey of Human Systems Laboratory Guide. *Butte College.* 0000000000000.

Minimum Qualifications

Biological Sciences (Masters Required)

Created/Revised by: Wood, Kelly
Date: 10/25/2021