Las Positas College
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Course Outline for BIO 50

ANATOMY AND PHYSIOLOGY

Effective: Fall 2019

I. CATALOG DESCRIPTION:
BIO 50 — ANATOMY AND PHYSIOLOGY — 4.00 units

Structure and function of the human body is studied. Emphasis on human anatomy and physiological principles at the cellular and systemic level. Designed primarily for majors in paramedic and medical assisting programs and pre-medical students who wish to explore the realm of anatomy and physiology.

3.00 Units Lecture 1.00 Units Lab

Grading Methods:
Letter Grade

Discipline:
- Biological Sciences

	MIN
Lecture Hours:	54.00
Lab Hours:	54.00
Total Hours:	108.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:

IV. MEASURABLE OBJECTIVES:

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

A. Explain basic structural organization and function of the major tissues, organs, and organs systems of the human body
B. Relate structure to function in the organs and tissues
C. Explain the role of individual organs in maintaining homeostasis and predict the major effects of upsetting the function of each organ
D. Properly use anatomical and physiological terminology
E. Make a cursory evaluation of pathological states
F. Solve conceptual and practical anatomy and physiology problems
G. Develop necessary background for further health and medical science coursework

V. CONTENT:
A. General introduction to Chemistry and Physics
    1. Atoms, molecules, and ions
    2. Organic/inorganic compounds
    3. Osmosis and diffusion
B. Introduction to the Human Body
    1. Terminology
    2. Body regions
    3. Anatomical position and planes of section
    4. Survey of systems
    5. Homeostasis
C. Cell structure and function
    1. Organelles
    2. Cell division
    3. Cellular respiration
    4. Gene expression
D. Tissue types
    1. Epithelia
    2. Connective tissue
    3. Muscle
    4. Nerve
E. Integumentary system
    1. Epidermis
    2. Dermis
    3. Hypodermis
    4. Body membranes
F. Skeletal system

1. Axial
2. Appendicular
3. Microscopic anatomy of bone
4. Bone growth, development and repair

G. Muscular system
1. Key muscles by region
2. Physiology of muscle contraction

H. Cardiovascular system
1. Heart anatomy and conducting system
2. Arterial, venous and capillary circulation

I. Pulmonary system
1. Trachea-bronchial tree
2. Lung organization
3. Ventilation
4. Gas exchange

J. Blood
1. RBC morphology, gas exchange
2. WBC morphology and physiological differences

K. Nervous system
1. CNS: Brain, spinal cord anatomy and function
2. PNS: Organization, reflexes, autonomic nervous system

L. Special senses
1. Eye and ear anatomy and physiology
2. Function and structure of olfactory and taste senses
3. Balance

M. Endocrine system
1. Classification of hormones and their general effects
2. Survey of endocrine glands and their respective hormones
3. Roles of hormones in maintaining homeostasis of organ systems.

N. Urinary system
1. Basic concept of excretion as a function of filtration, secretion, and absorption
2. Functional anatomy of the nephron
3. Endocrine considerations of the kidney
4. Urinary bladder and urethra anatomy

O. Reproductive system
1. Male functional anatomy
2. Female functional anatomy and changes in pregnancy

P. Digestive system
1. Anatomy and physiology of digestive organs
2. Enzymes and hormones involved in digestive process

VI. LAB CONTENT:

A. Planes of section
B. Body cavities and membranes
C. Organization of the human body
D. Osmosis and diffusion
E. Use of the Microscope
F. Identifying tissue types
G. Integumentary system
H. Skeletal system
I. Muscular system
J. Neuroanatomy and reflexes
K. General and special senses
L. Endocrine system
M. Cardiovascular system
N. Formed elements of the blood and blood typing
O. Respiratory system
P. Anatomy of the digestive system
Q. Anatomy of the urinary system and urinalysis
R. Reproductive system

VII. METHODS OF INSTRUCTION:

A. Laboratory exercises (experiments, organ dissections, histological studies)
B. **Discussion** -
C. **Lecture** -
D. Video
E. Models, slides, PowerPoint images
F. Case studies

VIII. TYPICAL ASSIGNMENTS:

A. Research Assignment
1. Discussion of how to determine the scientific validity of information, ranging from websites, articles and news media.
2. Gather and synthesize information from valid scientific sources on a pre-approved topic.
3. Present information in an oral or written form with standardized bibliography

IX. EVALUATION:

Methods/Frequency

A. Exams/Tests
3-4 per semester. Multiple choice, short answers, and essays.

B. Quizzes
In class or online assessments, 6 or more as needed

C. Research Projects
Research assignment

D. Class Participation
Participation in discussion, care of equipment.

E. Lab Activities
Laboratory reports and practical examinations

X. TYPICAL TEXTS:

1. Marieb, Elaine, and Pamela Jackson. *Essentials of Human Anatomy and Physiology.* 12th ed., Pearson, 2018.
2. Saladin, Kenneth, and Robin McFarland. *Essentials of Anatomy and Physiology.* 2nd ed., McGraw-Hill, 2017.
3. Marieb, E., & Jackson, P.. Essentials of Human Anatomy and Physiology Laboratory Manual. Pearson , 2018.
4. Amerman, Erin. Exploring Anatomy & Physiology in the Laboratory: Core Concepts. Morton Publishing , 2018.

XI. OTHER MATERIALS REQUIRED OF STUDENTS:

A. Colored pencils