Las Positas College
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Course Outline for BIOL 50

ANATOMY AND PHYSIOLOGY

Effective: Fall 2008

I. CATALOG DESCRIPTION:
BIOL 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:

	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. Know the role of individual organs in maintaining homeostasis and predict the major effects of upsetting the function of each organ;
D. Understand anatomical and physiological terminology;
E. Make a cursory evaluation of pathological states;
F. Solve conceptual and practical anatomy and physiology problems in the form of case studies;
G. Develop necessary background for further health and medical science coursework.

V. CONTENT:
(Lecture: A-P, Laboratory: Q-AK)

A. General introduction to Chemistry and Physics
    1. Atoms, molecules, and ions
    2. Periodic table and reactivity
    3. Organic/inorganic compounds
    4. Potential and kinetic energy
    5. 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. Labor of respiration
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. Entry of hormones into target cells
3. Survey of endocrine glands and their respective hormones
4. 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 and physiology

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
3. Nutritional considerations

Q. Cardinal planes of section
R. Working with the metric system
S. Organization of the human body
T. Osmosis and diffusion
U. Microscope
V. Identifying tissue types
W. Phases of mitosis
X. Skeletal system (axial)
Y. Skeletal system (appendicular)
A@. Muscular system
AA. Cardiovascular system
AB. Pulmonary studies
AC. Blood
AD. Neuroanatomy
AE. Anatomic-physiological considerations of the eye
AF. Nerve reflex and cranial nerve testing
AG. Anatomy of the digestive system
AH. Enzyme studies
AI. Anatomy of the kidney and urinalysis
AJ. Endocrines: A histologic survey
AK. Reproductive system

VI. 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

VII. TYPICAL ASSIGNMENTS:
A. Written Assignment 1. Using written and demonstrated guidelines, find a current article on a pre-approved topic. 2. Discussion of how to determine the scientific validity of information, ranging from websites, articles and news media. 3. One to two page research paper with standardized bibliography

VIII. EVALUATION:
A. **Methods**

1. Exams/Tests
2. Quizzes
3. Class Participation
4. Lab Activities

B. **Frequency**

1. Frequency of Evaluation
    a. Minimum of one midterm examination
    b. Minimum of one Lab Practical
    c. Final examination

IX. TYPICAL TEXTS:

1. Marieb, Elaine N *Essentials of Human Anatomy and Physiology.* 8th ed., Benjamin Cummings, 2006.
2. Marieb, Elaine N *Essentials of Human Anatomy and Physiology Laboratory Manual.* 3rd ed., Benjamin Cummings, 2006.

X. OTHER MATERIALS REQUIRED OF STUDENTS:

A. Colored pencils
B. Drawing paper
C. Three-ring binder (for Lab Notebook)