Las Positas College
3000 Campus Hill Drive
Livermore, CA 94551-7650
(925) 424-1000
(925) 443-0742 (Fax)

Course Outline for BIO 7A

HUMAN ANATOMY

Effective: Fall 2015

I. CATALOG DESCRIPTION:
BIO 7A — HUMAN ANATOMY — 5.00 - 0 units

Structure and function of the human body with emphasis on microscopic, gross, and developmental anatomy. Microscopic examination of normal and pathological tissues, and dissection, supplemented by use of charts, models, and computer assisted instruction. (Note: Formerly ANAT 1.)

3.00 Units Lecture 2.00 Units Lab

Prerequisite
BIO 30 - Intro to College Biology
with a minimum grade of C

Strongly Recommended
- Eligibility for ENG 1A -

Grading Methods:
Letter Grade

Discipline:

	MIN	MAX
Lecture Hours:	54.00	0
Lab Hours:	108.00	
Total Hours:	162.00	0.00

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

III. PREREQUISITE AND/OR ADVISORY SKILLS:

Before entering the course a student should be able to:

A. BIO30
1. Cite the characteristics and levels of organization exhibited by all living organisms;
2. Know the use of light microscope and dissecting scope.
3. Describe how cells/specialized cells are structured and function;

Before entering this course, it is strongly recommended that the student should be able to:

A. -Eligibility for ENG 1A

IV. MEASURABLE OBJECTIVES:

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

1. speak and write using anatomical terminology
2. identify organizational levels of the body and explain how they are related
3. describe the developmental processes that occur during embryogenesis and describe the 3 primary germ layers that give rise to all organs of the body
4. use anatomical terminology for regions, positions, planes and cavities
5. identify cellular organelles and relate the cellular organelles to the function of a variety of cell types
6. identify histological tissues and describe the structures, and functions of specific types of epithelial, connective, muscle and nervous tissues
7. give the structure, function, and location of body membranes
8. identify the structures and describe the function of the integumentary system
9. identify all bones of the skeletal system and selected bone features
10. describe the structure of selected types of articulations
11. describe the microscopic structure of skeletal muscles
12. Identify selected human muscles and describe the action of selected human muscles
13. list the structural and functional divisions of the nervous system and describe the microscopic structure of a typical neuron
14. describe the anatomy of peripheral nerves including spinal and cranial nerves and the anatomy of the autonomic nervous system

15. identify and describe the anatomy of the brain and spinal cord
16. describe the structure of sensory receptors and selected special senses, and the neural pathways to the central nervous system
17. describe the location and structure of the major endocrine glands
18. identify components of blood and list their functions
19. identify the organs of the cardiovascular system, and describe the anatomy of the heart and blood vessels
20. trace the arterial and venous paths of circulation
21. describe the structure and function of the lymphatic system
22. describe the structures and functions of the respiratory system
23. describe the structures and functions of the organs and accessory organs of the digestive system
24. describe the gross anatomy and functions of urinary organs and the microscopic structure of the nephron
25. describe the structures and functions of the male and female reproductive systems
26. compare normal versus diseased structures, injured or age-related structural changes in any or all of the above organ systems
27. identify surface anatomy of major superficial structures

V. CONTENT:

A. Basic concepts of anatomy
   1. Levels of anatomical organization
   2. Anatomical terminology
   3. Relationship of structure and function

B. Cellular Structures
   1. Organelles, inclusions and plasma membrane
   2. Relationship of structure and function

C. Embryology
   1. Embryonic period and differentiation

D. Histology
   1. Types and functions of tissues
   2. Glands
   3. Membranes

E. The integument and its derivatives
   1. Histology of the integument
   2. Functions of the integument
   3. Integumentary derivatives
   4. Pathological conditions or age-related changes of the skin

F. Skeletal system
   1. Structure and types of skeletal materials
   2. Formation and growth of cartilage
   3. Formation and growth of bone
   4. The axial skeleton
   5. The appendicular skeleton
   6. Identification of key bone features
   7. Classification and types of articulations
   8. Movements at articulations
   9. Pathological conditions or age-related changes of bones and joints

G. Muscular system
   1. Microanatomy of skeletal muscle
   2. Types of skeletal muscle fibers
   3. Naming of skeletal muscles
   4. Axial Muscles
   5. Appendicular Muscles
   6. Pathological conditions, exercise-induced or age-related changes in muscle

H. Nervous system
   1. Structural and functional organization of the nervous system
   2. Cytology of nervous tissue
   3. Brain
   4. Spinal cord
   5. Peripheral nervous system
   6. Autonomic nervous system
   7. General and special senses
   8. Pathological conditions or age-related changes of the nervous system

I. Endocrine system
   1. Histology
   2. Overall function of endocrine glands and hormones
   3. Types and locations of endocrine glands
   4. Pathological conditions or age-related changes of the endocrine system

J. Cardiovascular system
   1. Composition of blood
   2. Functions of blood
   3. Formation of blood cells
   4. Structure and function of the heart
   5. Types, structure, and function of blood vessels
   6. Arterial paths and venous paths of circulation
   7. Pathology of blood and blood-forming tissues
   8. Pathology of cardiovascular structures

K. Lymphatic system
   1. Lymphatic structures and cells
   2. Functions of the lymphatic system
   3. Lymphatic pathways
   4. Examples of lymphatic disorders

L. Respiratory system
   1. Upper and lower respiratory tracts
   2. Air pathways
   3. Lungs and pleura
   4. Examples of respiratory pathology

M. Digestive system
   1. Gross anatomy, histology and function of the alimentary canal
   2. Gross anatomy, histology and function of the accessory organs
   3. Mesenteries

4. Examples of digestive system pathologies

N. Urinary system
   1. Gross anatomy and functions of urinary organs
   2. Microanatomy of the nephron
   3. Examples of urinary system pathology

O. Reproductive system
   1. Structures, glands and ducts of the male reproductive organs
   2. Structures, glands and ducts of the female reproductive organs
   3. Pathological conditions or age-related changes of the reproductive systems

P. Surface Anatomy
   1. Regional approach to identify selected structures including muscles, nerves, vessels and organs.

(Laboratory):

A. Anatomical terminology
B. Microscopy
C. Cytology
D. Histology of epithelial, connective, muscle, and nervous tissues
E. Integumentary system
F. Microscopic and macroscopic structure of bone
G. Major divisions of the skeleton
H. Identification of bones and bone features
I. Articulations
J. Muscle histology and muscle features
K. Identification of muscles
   1. Dissection and identification of muscles in a cat
   2. Observation of dissected human cadaver
L. Nervous tissue
M. Spinal cord and spinal nerves
N. Brain and cranial nerves
   1. Dissection of a sheep brain
O. Eye and ear
   1. Dissection of a cow eye
P. Endocrine system
Q. Cardiovascular system
   1. Blood
   2. Heart
   3. Blood vessels
R. Lymphatic system
S. Respiratory system
T. Digestive system
U. Urinary system
V. Opening the body cavity of a cat to identify internal organ systems
W. Reproductive systems
X. Surface anatomy using a regional approach

VI. METHODS OF INSTRUCTION:

A. **Lecture** - Multimedia lecture presentations
B. **Discussion** - discussions on major themes and concepts
C. Readings from the text and the laboratory manual
D. Utilization of compound light Microscope to view histology slides
E. Use of Anatomy computer software programs
F. **Classroom Activity** - Practice identification of structures with the questions developed by students and then answered individually and/or by groups.
G. **Audio-visual Activity** - online interactive homework including short video clips
H. **Demonstration** - Demonstration of dissected human cadaver
I. **Lab** - written assignments
J. **Lab** - cat dissection as well as various organs attained from sheep or cows
K. **Demonstration** - Demonstrations of models and organs

VII. TYPICAL ASSIGNMENTS:

A. Preparation for lecture and lab:
   1. Read Chapter 11, "Muscles of the Body," Marieb, Mallatt, Whilhelm, pp. 270-273 Be prepared to list the criteria for naming muscles.
   2. Online Homework, "Mastering A&P, Superficial muscles of the body and their major actions". Using Figure 11-6, Marieb, Mallatt, Whilhelm, pp. 272-273, identify the selected muscles in the homework assignment. Complete the coaching assignments and be prepared to predict the action of selected muscles based on the side of a joint a muscle inserts.
B. Collaborative learning:
   1. With your lab partners identify the selected muscles on the models.
   2. With your lab partners, dissect and identify the selected muscles in a cat.
C. Demonstration and discussion:
   1. Identify selected muscles in a dissected cadaver
   2. Discuss appropriate landmarks and relationships used in identifying muscles.
D. Writing:
   1. Complete the review sheets for exercise 11 in your laboratory manual.
   2. Learn the correct spelling of the selected muscles.

VIII. EVALUATION:

A. **Methods**

   1. Exams/Tests
   2. Quizzes
   3. Home Work
   4. Lab Activities

B. **Frequency**

1. Minimum of 9 assignments and/or quizzes
2. Minimum of 3 lecture examinations
3. Minimum of 5 laboratory practical examinations
4. Final lecture and laboratory examinations

IX. TYPICAL TEXTS:

1. Marieb, , Wilhelm, and Mallatt. *Human Anatomy.* 7th ed., Pearson, 2014.
2. , McKinley, O'Loughlin, Pennefather-O'Brien, and Harris. *Human Anatomy.* 4th ed., McGraw Hill, 2015.
3. Marieb, Mitchell, and Smith. Human Anatomy Laboratory Manual with Cat Dissections. Pearson , 2013.
4. Wood, Michael. Laboratory Manual for Human Anatomy with Cat Dissections. Pearson , 2008.
5. Mastering A&P is an online homework, tutorial and assessment system that delivers self-paced activities for individualized coaching, includes access to an electronic version of Pearson PAL (Practice Anatomy Lab). www.masteringandp.com

X. OTHER MATERIALS REQUIRED OF STUDENTS:

A. Vinyl gloves
B. Colored pencils
C. Dissection kit
D. Disposable laboratory coat