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Course Outline for BIO 7A

HUMAN ANATOMY

Effective: Fall 2019

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

Structural organization of the human body: gross and microscopic structure of the integumentary, skeletal, muscular, nervous, sensory, endocrine, cardiovascular, lymphatic, respiratory, digestive, excretory, and reproductive systems, from cellular to organ system levels of organization. This course is primarily intended for nursing, allied health, kinesiology, and other health related majors.

3.00 Units Lecture 2.00 Units Lab

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

Strongly Recommended
- Eligibility for ENG 1A -

Grading Methods:
Letter Grade

Discipline:
- Biological Sciences

	MIN
Lecture Hours:	54.00
Lab Hours:	108.00
Total Hours:	162.00

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. Describe and apply the scientific method and how it is used by scientists to further scientific knowledge
2. Cite the characteristics and levels of organization exhibited by all living organisms
3. Know the use of light microscope and dissecting scope
4. Describe how cells/specialized cells are structured and function
5. Describe basic cell metabolism
6. Describe/contrast, mitosis, and meiosis
7. Describe structure, transmission and expression of genes
8. Explain the Darwinian concept of evolution as modified by modern scientific knowledge
9. Describe how the modern (binomial) system names and classifies organisms

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

A. -Eligibility for ENG 1A
1. Annotate a text during the act of reading
2. Employ strategies that enable a critical evaluation of a text
3. Write effective summaries of texts that avoid wording and sentence structure of the original
4. Respond to texts drawing on personal experience and other texts
5. Organize coherent essays around a central idea or a position
6. Provide appropriate and accurate evidence to support positions and conclusions
7. Produce written work that reflects academic integrity and responsibility, particularly when integrating the exact language and ideas of an outside text into one's own writing

IV. MEASURABLE OBJECTIVES:

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

A. Speak and write using anatomical terminology

B. Identify organizational levels of the body and explain how they are related
C. Describe the developmental processes that occur during embryogenesis and describe the 3 primary germ layers that give rise to all organs of the body
D. Use anatomical terminology for regions, positions, planes and cavities
E. Identify cellular organelles and relate the cellular organelles to the function of a variety of cell types
F. Identify histological tissues and describe the structures, and functions of specific types of epithelial, connective, muscle and nervous tissues
G. Give the structure, function, and location of body membranes
H. Identify the structures and describe the function of the integumentary system
I. Identify all bones of the skeletal system and selected bone features
J. Describe the structure of selected types of articulations
K. Describe the microscopic structure of skeletal muscles
L. Identify selected human muscles and describe the action of selected human muscles
M. List the structural and functional divisions of the nervous system and describe the microscopic structure of a typical neuron
N. Describe the anatomy of peripheral nerves including spinal and cranial nerves and the anatomy of the autonomic nervous system
O. Identify and describe the anatomy of the brain and spinal cord
P. Describe the structure of sensory receptors and selected special senses, and the neural pathways to the central nervous system
Q. Describe the location and structure of the major endocrine glands
R. Identify components of blood and list their functions
S. Identify the organs of the cardiovascular system, and describe the anatomy of the heart and blood vessels
T. Trace the arterial and venous paths of circulation
U. Describe the structure and function of the lymphatic system
V. Describe the structures and functions of the respiratory system
W. Describe the structures and functions of the organs and accessory organs of the digestive system
X. Describe the gross anatomy and functions of urinary organs and the microscopic structure of the nephron
Y. Describe the structures and functions of the male and female reproductive systems
A@. Compare normal versus diseased structures, injured or age-related structural changes in any or all of the above organ systems
AA. 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 select special senses
8. Pathological conditions or age-related changes of the nervous system
I. Endocrine system
1. Overall function of endocrine glands and hormones
2. Types and locations of endocrine glands
3. Pathological conditions or age-related changes of the endocrine system
J. Cardiovascular system
1. Composition of blood
2. Functions of blood cells
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. Structures and functions of the lymphatic system
3. Lymphatic pathways
4. Examples of lymphatic disorders

L. Respiratory system
1. Anatomy of 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.

VI. LAB CONTENT:

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 select bone landmarks
I. Articulations
J. Muscle histology and muscle features
K. Identification of major muscles
1. Dissection and identification of muscles in a cat or fetal pig
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/or 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 or fetal pig to identify internal organ systems
W. Observation of internal organs of a dissected cadaver
X. Reproductive systems
Y. Surface anatomy using a regional approach

VII. 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. **Classroom Activity** - Practice identification of structures with the questions developed by students and then answered individually and/or by groups.
F. **Audio-visual Activity** - Online interactive homework including short video clips
G. **Demonstration** - Demonstration of dissected human cadaver
H. **Lab** - Cat or fetal pig dissection as well as various organs attained from sheep or cows
I. **Demonstration** - Demonstrations of models and organs

VIII. TYPICAL ASSIGNMENTS:

A. Preparation for lecture and lab on skeletal muscles:
1. Complete the online homework (Mastering A&P) using the textbook to answer the questions and identify the structures.
2. Complete the pre-lab portion of the laboratory manual.

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 or fetal pig.

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 questions in your laboratory manual.
2. Practice the correct spelling of the selected muscles.

E. Self-Assessment
1. Complete assigned online assessment questions including identification of skeletal muscles
2. Create labels to identify skeletal muscles on the models.
3. Use the study area that accompanies Mastering A&P for labeling structures and answering sample test questions.

IX. EVALUATION:

Methods/Frequency

A. Exams/Tests
   4 minimum
B. Home Work
   Weekly online homework
C. Lab Activities
   Lab practicals 4 minimum

X. TYPICAL TEXTS:

1. Marieb, , Wilhelm, and Mallatt. *Human Anatomy.* 8th ed., Pearson, 2016.
2. McKinley, Michael, O'Loughlin, and Pennefather-O'Brien. *Human Anatomy.* 5th ed., McGraw Hill, 2016.
3. Marieb, E. and L. Smith. Human Anatomy Laboratory Manual with Cat Dissections. Pearson , 2016.
4. Amerman, Erin. Exploring Anatomy in the Laboratory. Morton Publishing , 2016.
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

XI. OTHER MATERIALS REQUIRED OF STUDENTS:

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