Modesto Junior College
Course Outline of Record

ANAT 125

I. **OVERVIEW**
The following information will appear in the 2010 - 2011 catalog

**ANAT 125  Human Anatomy  5 Units**

**Prerequisite:** Satisfactory completion of BIO 116 or BIO 111 or BIO 101.

Study of human body structures including organ, tissue and cellular interrelationships. Involves extensive use of models, specimens, histological material, and dissection. Cadaver materials and demonstrations are used. Intended for students entering the health professions.

Field trips might be required.  (A-F or P/NP - Student choice) Lecture /Lab /Discussion  
**Transfer:** (CSU, UC)  **General Education:** (MJC-GE: A )  (CSU-GE: B2, B3 )  (IGETC: 5B )

II. **LEARNING CONTEXT**
Given the following learning context, the student who satisfactorily completes this course should be able to achieve the goals specified in Section III, Desired Learning:

**A. COURSE CONTENT**

1. **Required Content:**
   a. Introduction
      i. The body plan, planes, cavities, anatomical position, terminology
      ii. Levels of organization
   b. Cells
      i. Generalized cell
      ii. Plasma membrane
      iii. Cytoplasm
      iv. Organelles
      v. Cell division
   c. Tissues
      i. Basic microscopy
      ii. Epithelial tissue
      iii. Connective tissue
      iv. Membranes
      v. Muscle tissue
d. Nervous tissue
   i. Integumentary System
   ii. Skin
   iii. Epidermal derivatives

e. Skeletal System
   i. Gross structure and classification of bones
   ii. Histology of osseous tissue
   iii. Development and growth of bone
   iv. Structure and classification of joints

f. Muscular System
   i. Histology of muscle tissue
   ii. How skeletal muscle produces movement
   iii. Principal skeletal muscles

g. Cardiovascular System
   i. Physical characteristics of blood
   ii. Formed elements of blood
   iii. Anatomy of the heart
   iv. General scheme of circulation
   v. Function and anatomy of blood vessels

h. Lymphatic system

i. Nervous System
   i. Histology of nervous tissue
   ii. Spinal cord and spinal nerves
   iii. Brain
   iv. Cranial nerves
   v. General senses and sensory and motor pathways
   vi. Special senses
   vii. Autonomic nervous system

j. Endocrine System
   i. Histology of endocrine glands
ii. Major endocrine glands

k. Respiratory System
   i. Organs of respiration.
   ii. Histology of respiratory system
   iii. Mechanics and control of pulmonary respiration

l. Digestive System
   i. Basic histology of the digestive system
   ii. Parts of the gastrointestinal tract and accessory structures

m. Urinary System
   i. Parts of the urinary system
   ii. Gross anatomy of the kidney
   iii. Microstructure of the kidney

n. Reproductive System
   i. Histology of the reproductive system
   ii. Essential and accessory structures of the female reproductive system
   iii. Essential and accessory structures of the male reproductive system
   iv. Uterine and ovarian cycles

2. Required Lab Content:
   a. Tissues
      i. Identify the four major types of tissues in the body.

   (There will be more lab content added when we do the official review. Right now trying to add Bio. 116 as a prerequisite at the same time introducing the new Bio. 116 course.)

B. Enrollment Restrictions
   1. Prerequisites
      Satisfactory completion of BIO 116 or BIO 111 or BIO 101.

   2. Requisite Skills
      Before entering the course, the student will be able to:
      a. Use the scientific process in problem solving.
      b. Use binocular compound and dissecting microscopes.
c. Make and label accurate drawings of items observed.

d. Work with other students in problem solving situations

e. Use the language of biology and anatomy as it relates to orientation and direction, planes and sections, cavities, and surface anatomy.

f. Use the language of biology and physiology as it relates to homeostatic mechanisms.

g. Describe general cell structure and explain the organization and anatomical inter-relationships of major membranous and non-membranous organelles.

h. Describe and explain general cell functions, including cellular communication, cellular movement, membrane transport, metabolism, and protein synthesis.

i. Describe and explain the role of DNA and gene expression in the function and action of cells.

j. Name and describe the major categories of tissues and explain the relationship between cells and tissues.

k. Name and describe major organ systems and their corresponding organs and explain the relationships between organs, tissues and cells.

C. HOURS AND UNITS

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<th>INST METHOD</th>
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D. METHODS OF INSTRUCTION (TYPICAL)

Instructors of the course might conduct the course using the following method:

1. Lecture along with visual aids.

2. Specific lab objectives will be carried out through the study of models, microscope slides or student dissected specimens.

3. Students will be required to perform microscope operation and dissection skills under direct supervision of instructor or lab assistant.

E. ASSIGNMENTS (TYPICAL)

1. EVIDENCE OF APPROPRIATE WORKLOAD FOR COURSE UNITS

   Time spent on coursework in addition to hours of instruction (lecture hours)

   1. Students draw representations of anatomical specimens and microscope slides on a daily basis in the lecture and in the laboratory.
   2. Students use their drawings, study guide materials, and textbook to identify and rehearse anatomical features and structural interrelationships on a daily basis.

2. EVIDENCE OF CRITICAL THINKING

   Assignments require the appropriate level of critical thinking

   1. In the Laboratory and in exams, students are given anatomical specimens to compare and evaluate variations in anatomical structure.
   2. In the Laboratory and in exams, students are given questions to explain how anatomical structure serves the functional purposes of the various organs.
   3. In the Laboratory and in exams, students discuss how anatomical structure relates to clinical
problems that are based on anatomy.  
4. In the Laboratory and in exams, students predict the functional limitations of the body based on an analysis of structure.  
5. For example (#1), in the laboratory students are given a prosection of a cadaver arm and asked to distinguish the muscles that extend the pollex (thumb) from the muscles that abduct the thumb, and to explain why these muscles have different actions.  
6. For example (#2), in an exam students are asked to identify layers of skin, identify the tissues found in these layers and explain the purpose of these tissues. In the laboratory practicum portion of an exam, microscopes are set up with pointers on specific layers of skin. "Name the layer of skin at the tip of the pointer in the right eyepiece." "Name the tissue or tissues found in this layer of skin." In the scantron portion of the corresponding exam questions are asked such as, "Stratified squamous epithelia function to A) provide a strong barrier, B) protect the body from external contaminants, C) support blood vessels, D) A and B, E) All of the above.  
7. For example (#3), in an exam students are asked, "Explain how loss of vision in the right visual field of each eye could be related to a tumor of the pituitary gland."  
8. For example (#4), in the laboratory students are given several bones of the appendicular skeleton and asked to identify which joints allow flexion anteriorly and which joints allow flexion posteriorly.

F. TEXTS AND OTHER READINGS (TYPICAL)


III. DESIRED LEARNING

A. COURSE GOAL  
As a result of satisfactory completion of this course, the student should be prepared to:

identify gross and microscopic anatomical structures of the human body as preparation for prerequisite and requisite coursework for allied health professions.

B. STUDENT LEARNING GOALS  
Mastery of the following learning goals will enable the student to achieve the overall course goal.

1. Required Learning Goals  
Upon satisfactory completion of this course, the student will be able to:

a. Define the levels of structural organization that make up the human body.
b. Explain the structure and functions of the plasma membrane.
c. Describe the structure and functions of the cellular organelles.
d. Identify the distinguishing characteristics of the different types of tissue.
e. List the various layers of the skin and describe the epidermal derivatives.
f. Identify the bones of the skeleton and the major markings associated with each.
g. Describe the histological features of compact and spongy bone tissue.
h. Compare and contrast the structural and functional classification of joints.
i. Compare and contrast the histology and function of the three types of muscle tissue.
j. Identify the skeletal muscle in various regions of the body.
k. Identify the external and internal anatomy of the heart.
l. Describe the flow of blood through systemic and pulmonary circulations.
m. Compare and contrast arteries, arterioles, capillaries, venules and veins.
n. Describe the components of the lymphatic system and list their functions.
o. Identify the principal parts of the spinal cord and brain.
p. Identify the cranial nerves by name, number, function and location.
q. Locate and describe the receptors and structures associated with special senses.
r. Compare and contrast the sympathetic and parasympathetic divisions of the autonomic nervous system.
s. Describe the location, histology, and blood and nerve supplies of endocrine glands.
t. Identify the organs of the respiratory system.
u. Compare and contrast the functional histology of different regions of respiratory system.
v. Describe the histological structure of the gastrointestinal tract.
w. Identify the organs of the gastrointestinal tract and explain their functions.
x. Identify the organs of the urinary system.
y. Describe the external and internal gross and microanatomy of the kidney.
a`. Describe the location, structure, histology and function of the sexual organs.
aa. Name the principal regions of the body that are examined in surface anatomy.

2. **Lab Learning Goals**

   *Upon satisfactory completion of the lab portion of this course, the student will be able to:*

   a. Identify using slides and models the histology and structures of skin. (Will include more lab goals when we do the official review. Attempting to add Bio. 116 as a prerequisite at the same time introducing the new Bio. 116)

IV. **METHODS OF ASSESSMENT (TYPICAL)**

A. **FORMATIVE ASSESSMENT**

1. Student drawings in the laboratory are examined on a daily basis to assess progress in identifying anatomical structures.

2. Lecture and laboratory quizzes on a weekly basis assess progress in identifying anatomical structures and explaining anatomical interrelationships.

B. **SUMMATIVE ASSESSMENT**

1. Lecture and laboratory quizzes on a weekly basis assess progress in identifying anatomical structures and explaining anatomical interrelationships.

2. Exams on a tri-weekly basis (lab practicum, multiple choice, short answer, and short essay) assess accumulative learning.
