Common Course Outline for: BIOL 2041 Human Anatomy

A. Course Description
   1. Number of credits: 4
   2. Lecture hours per week: 3
      Lab hours per week: Minimum of 3 hours of self-directed lab work
   3. Prerequisites: CHEM 1050 or 1061 (C or higher) or concurrent registration; Eligible for READ 1106
   4. Co-requisites: None
   5. MnTC Goal: None

   A rigorous and demanding study of the human body, intended for students pursuing careers in the health professions. Emphasis is on both gross and microscopic anatomy. Laboratory includes small mammal dissection, basic histology, and the gross and microscopic study of the human organ systems. Small mammal dissection is required for course completion. Lecture 3 hours per week. Lab requires a minimum of 3 hours per week of self-directed laboratory work.

B. Date last revised: August 2017

C. Outline of Major Content Areas

Lecture
   1. Introduction to Anatomy and Anatomical Terminology
      a. Levels of Organization
      b. Directional and Regional Terms
      c. Body Planes and Sections
      d. Body Cavities and Membranes
   2. Light Microscopy
   3. Cells
      a. Eukaryotic Cell Structure
      b. Plasma Membrane, Cytoplasm, Nucleus
      c. Basic Function of Organelles
      d. Cell Cycle
   4. Histology
      a. Major Tissue Types (epithelial, connective, muscle, nervous)
      b. Epithelial Tissues
         1) Classification, Function, Location
         2) Basement Membrane, Intercellular Junctions, Apical Membrane Specializations
      c. Connective Tissues
         1) Classification, Function, Location
         2) Extracellular Matrix
d. Muscle Tissues  
   1) Classification, Function, Location  

e. Nervous Tissue

5. Epithelial and Connective Tissue Membranes  
   a. Structure, Function, Location

In this course, the study of human anatomy is taught using an organ system approach. As a result, the following major topics are based on the organ systems of the body. The subtopics under each major topic are basically the same, and therefore will be listed once at this point:

Subtopics for each of the Organ Systems listed in items #6-17:  
   a. Overview of components and general functions  
   b. Location in relation to other body structures  
   c. Organs  
      1) Gross Anatomy  
      2) Microscopic Anatomy (Histology)  
   d. Functional Anatomy  
      1) Design Analysis: How does the structure and composition of organs relate to function?  
      2) Special Adaptive Characteristics  
   e. Anatomical Variation: Normal Range, Life Span, Disease

6. Integumentary System  
7. Skeletal System  
8. Articular System  
9. Muscular System  
10. Nervous System  
11. Cardiovascular System  
12. Lymphatic System  
13. Respiratory System  
14. Urinary System  
15. Gastrointestinal System  
16. Reproductive System  
17. Endocrine System

**Laboratory:** Students will actively participate in lab by engaging in study of the following:  
1. Operation of a compound microscope  
2. Histology  
   a. Six epithelial tissues  
   b. Seven connective tissues  
   c. Three muscle tissues  
   d. One nervous tissue  
3. Microscopic examination of the integumentary system (thick skin)  
4. Gross anatomy of skeletal system (human bones and models)  
   a. Bones  
   b. Bone processes and foramina  
   c. Selected joints (sutures, temporomandibular joint, knee)
5. Gross anatomy of muscular system (models)
   a. Fourteen superficial muscles and muscle groups with actions, origins and insertions
   b. Four superficial muscles
   c. Five muscles of mastication with actions

6. Gross and microscopic anatomy of nervous system
   a. Brain and spinal cord models
   b. Preserved sheep brain
   c. Preserved human brain and spinal cord
   d. PNS models
   e. Dissection of a cow eye
   f. Microscopic examination of nerve and spinal cord

7. Gross and microscopic anatomy of cardiovascular system
   a. Heart models
   b. Preserved sheep heart
   c. Preserved human heart and renal vasculature
   d. Major artery and vein models
   e. Microscopic examination of small artery, small vein and blood

8. Dissection of a small mammal (preserved rat). This is required of each student; there are no exceptions or alternate activities.

9. Gross anatomy of organ systems (models and preserved human organs)
   a. Respiratory system
   b. Lymphatic system
   c. Digestive system
   d. Urinary system
   e. Male and female reproductive systems

10. Microscopic examination of selected organs (trachea, lung, esophagus, stomach, small intestine, large intestine, liver, pancreas, ureter, urinary bladder, kidney, ovary, testis)

**D. Course Learning Outcomes**

Upon successful completion of the course, the student will be able to:

1. Define and distinguish among terms associated with the study of human anatomy.
2. Demonstrate knowledge of anatomical relationships: anatomical position, terms of direction, planes of section and levels of organization.
3. Demonstrate knowledge of cells as the basic structural unit of the human organism.
4. Relate the shape, arrangement and composition of tissues to their function.
5. Explain how the location, shape and composition of gross anatomical structures adapt them for their functions.
6. Describe the microscopic anatomy of body organs and relates the structure to the function.
7. Identify and differentiate among gross structures through dissection of a small mammal and examination of preserved organs, human skeletal materials and anatomical models.
8. Identify selected tissues and their components in histological microscope slides.
9. Identify the microscopic structures of organs and their component parts through study of microscope slides.
10. Demonstrate knowledge of the normal range of human anatomic variation in adults as well as variation during development and changes related to aging.

E. Methods for Assessing Student Learning
A variety of evaluation and assessments methods will be used including, but not limited to, the following:
1. Written examinations (multiple-choice, true-false, fill-in-the-blank, matching, short answer, and essay questions)
2. Laboratory oral examinations
3. Laboratory practical examinations (fill-in-the-blank questions)
4. A final comprehensive exam

F. Special Information
The laboratory portion of the course is delivered in the Biology Learning Center (BLC). The BLC is an open lab and has its own set of operating policies and procedures. An instructor will include the most recent version of the Departmental and Biology Learning Center Policies in the course syllabus.

Dissection of a small mammal is required of each student; there are no exceptions or alternate activities.