

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: 3
3. Prerequisites: CHEM 1050 or 1061 (C or higher) or concurrent registration; AND ENG 0960 (C- or better) OR READ 0960 (C- or better) OR High School GPA of 2.60+ OR ACT Sub-Score of 21+ OR ACT Sub-Score of 19+ and High School GPA of 2.50+ OR SAT Read/Write score of 480+ OR SAT Read/Write score of 440+ and High School GPA of 2.50+ OR Accuplacer Reading score of 250+ OR Accuplacer Reading score of 236+ and High School GPA of 2.50+ OR MCA Reading score of 1047+ OR MCA Reading score of 1042-1046 and High School GPA of 2.50+
4. Corequisites: None
5. MnTC Goal: #3 Natural Sciences

A scientifically rigorous and systematic 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 credits, 3-hour lab 1 credit.

B. Date last reviewed/updated: January 2023**C. Outline of Major Content Areas:*****Lecture***

1. Scientific Process
2. 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
3. Light Microscopy
4. Cells
 - a. Eukaryotic cell structure
 - b. Plasma membrane, cytoplasm, nucleus
 - c. Basic functions of organelles
 - d. Cell cycle
5. 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
- 6. 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) How does the structure and composition of organs relate to function?
- 7. Integumentary System
 - 8. Skeletal System
 - 9. Articular System
 - 10. Muscular System
 - 11. Nervous System
 - 12. Cardiovascular System
 - 13. Lymphatic System
 - 14. Respiratory System
 - 15. Urinary System
 - 16. Gastrointestinal System
 - 17. Reproductive System
 - 18. 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. Epithelial tissues
 - b. Connective tissues
 - c. Muscle tissues
 - d. Nervous tissues
- 3. Microscopic examination of thick skin
- 4. Gross anatomy of skeletal system

- a. Bones
- b. Bone processes and foramina
- c. Selected joints
5. Gross anatomy of muscular system
 - a. Selected superficial muscles and muscle groups with actions, origins and insertions
 - b. Selected superficial muscles
 - c. Muscles of mastication with actions
6. Gross and microscopic anatomy of nervous system
 - a. Central nervous system
 - b. Peripheral nervous system
 - c. Eye
 - d. Vasculature histology
7. Gross and microscopic anatomy of cardiovascular system
 - a. Heart
 - b. Vasculature
 - e. Histology
8. Gross anatomy of organ systems
 - a. Respiratory system
 - b. Lymphatic system
 - c. Digestive system
 - d. Urinary system
 - e. Male and female reproductive systems
9. Microscopic examination of selected organs
10. Dissection of selected animal organs and a preserved rat—this is required of each student; there are no exceptions or alternate activities
11. Scientific process
 - a. Hypotheses and theories
 - b. Analysis, interpretation, and communication of simulated or experimental data

D. Course Learning Outcomes:

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

1. Demonstrate understanding of scientific theories related to human anatomy. (3a)
2. Define and distinguish among terms associated with the study of human anatomy.
3. Demonstrate knowledge of anatomical relationships: anatomical position, terms of direction, planes of section and levels of organization.
4. Demonstrate knowledge of cells as the basic structural unit of the human organism. (3a)
5. Relate the shape, arrangement, and composition of tissues to their function. (3a)
6. Explain how the location, shape and composition of gross anatomical structures adapt them for their functions. (3a)
7. Describe the microscopic anatomy of body organs and relates the structure to the function. (3a)
8. Identify and differentiate among gross structures through dissection of a small mammal and examination of preserved organs, human skeletal materials, and anatomical models.

9. Identify selected tissues and their components in histological microscope slides.
10. Identify the microscopic structures of organs and their component parts through study of microscope slides.
11. Demonstrate knowledge of the normal range of human anatomic variation in adults as well as variation during development and changes related to aging. (2d, 3d)
12. Formulate and test hypotheses by performing laboratory or simulation experiments. (2a, 2b, 3b)
13. Communicate experimental findings, analyses, and interpretations orally and in writing. (2a, 2b, 2c, 2d, 3c)

D. Methods for Assessing Student Learning:

A variety of evaluation and assessment methods will be used:

1. Assignments and quizzes, both written and oral
2. Written examinations
3. Laboratory examinations
4. A final comprehensive exam

E. Special Information:

Instructors will include the most recent version of the Departmental Expectations document in their course syllabus

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

When offered on-campus,

- The laboratory portion of the course is delivered in the Biology Learning Center (BLC).
- Instructors will include the most recent version of the Biology Learning Center (BLC) Expectations document in their course syllabus.
- Students must receive an orientation prior to human anatomical material access. After completion of the orientation, each student must sign a Human Anatomy Access Orientation Disclosure Form.