

Lecture Contact Hours: 32-36; Outside-of-Class Hours: 64-72;
Laboratory Contact Hours: 96-108; Outside-of-Class Hours: 0;
Total Student Learning Hours: 192-216

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

Biology 140 – Human Anatomy

2 hours lecture, 2 units
6 hours laboratory, 2 units
Total Units: 4 units

Catalog Description

Students will embark on a study of the systems of the human body. This is accomplished through a study of the organization of the body's systems from a microscopic level of organization to the gross anatomy level. The relationship between structure and function will be examined through the study of histological slides, photomicrographs, anatomical models and charts, and dissection of preserved specimens.

Prerequisite

"C" grade or higher or "Pass" in BIOL C1000 or equivalent

Entrance Skills

Without the following skills, competencies and/or knowledge, students entering this course will be highly unlikely to succeed:

- 1) Recognize the goals, methods and limitations of science.
- 2) Ability to design an experiment, gather and interpret data, and draw conclusions based on that data.
- 3) Identify and describe the properties of life shared by all organisms.
- 4) Compare and contrast cellular structures and functions.
- 5) Compare the structures and functions of biological macromolecules.
- 6) Explain the role of enzymes in the cell.
- 7) Compare and contrast the functions and mechanisms of meiosis and mitosis in the organism's life cycle.
- 8) Demonstrate how the chemical composition and architecture of the cell membrane controls the exchange of molecules in the cell.

Course Content

- 1) The body plan
 - a. The basic organization and orientation of the human body with comparison to other mammals
 - b. The change to bipedal erect posture and its implications for the organs of the body
- 2) Cells and tissues
 - a. Microscopic examination and discussion of representative cells and tissues of the human body
 - b. General microscopic anatomy and its relationship to gross anatomy
 - c. Review of structure of the generalized animal cell
- 3) Human growth and development
 - a. Review of development of an organism with particular emphasis on mammalian development
 - b. The origin of selected organs from the generalized or undifferentiated zygote
- 4) Skeletal system: structure and function of the skeletal system both microscopic and macroscopic
- 5) Muscles: structure of muscle tissue and the major muscles of the body
- 6) Digestive system: organs of digestion and their structure
- 7) Respiratory system: gross and microscopic structure of the lungs and associated organs
- 8) Endocrine system: the glands of internal secretion, their location, structure and function

- 9) -cardiovascular system
 - a. Venous and - arterial - circulation
 - b. Structure of blood as a tissue
- 10) Lymphatic system: lymphatic organs and lymphatic circulation
- 11) Nervous system
 - a. The central and peripheral nervous systems and their interrelationships with particular emphasis on the cranial nerves
 - b. Structure of the brain and spinal cord
 - c. Sensory organs
- 12) Human reproduction and the urogenital system: organs of reproduction and their relationship to the urogenital and -urinary system
- 13) Urinary system: – urinary organs of the body with particular emphasis on the macroscopic and microscopic structure of the kidney
- 14) Integumentary system
- 15) Comparison of normal versus diseased, injured, or age-related structural changes for each system

Course Objectives

Students will be able to:

- 1) Develop a vocabulary of appropriate terminology to effectively communicate information across health-related disciplines.
- 2) Apply correct anatomical terminology to the structures and processes studied.
- 3) Identify the major structural components of the human body for all organ systems.
- 4) Relate the structural organization of cells, tissues, organs, and organ systems to their functions in the human body.
- 5) Describe how organ systems relate to the maintenance of homeostasis.
- 6) Interpret microscope slides of vertebrate tissue sections, relating tissue microstructure to organ macrostructure.
- 7) Compare the structures and processes of the embryonic body to the adult structures for major organ systems.
- 8) Apply appropriate techniques to expose anatomical structures during laboratory dissection.
- 9) Compare and contrast the structures of mammalian body at the cellular, tissue, organ, and system levels of organization.
- 10) Describe how the concepts of structure contribute to the function of living systems.
- 11) Analyze injury and disease cases presented, and correctly deduce causes, processes, and structures involved.
- 12) Demonstrate an understanding of clinical presentations and strategies for health maintenance.

Methods of Evaluation

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- 1) Exams (objective, subjective) and quizzes that assess students' ability to recognize, apply and integrate fundamental principles of anatomy.
- 2) Laboratory practical exams that require students to demonstrate the location and function of specific structures, organs and organ systems, and the relationships among them.
- 3) Laboratory exercises and homework assignments that measure students' ability to identify key structures, and describe the relationships between the structures and their functions.

Special Materials Required of Student

- 1) Lab coat or apron for dissection
- 2) Disposable gloves and face masks for dissection.
- 3) Goggles (optional, available in class).

Minimum Instructional Facilities

- 1) Classroom with facilities for projection of transparencies or computer presentations
- 2) Laboratory with appropriate disposal facilities
- 3) Microscope for ~2 students
- 4) Preserved specimens, models and charts for dissection and demonstration
- 5) Prepared slides of appropriate human and other tissues

Method of Instruction

- 1) Traditional and computer-assisted lectures
- 2) Individual and team lab work
- 3) Discussion and demonstration
- 4) Computer or Internet-based instruction

Out-Of-Class Assignments

- 1) **Reading:** Students will read assigned textbook chapters, lecture notes, and supplemental materials to reinforce core anatomical concepts, including systemic anatomy, anatomical terminology, tissue structure, and the organization of major organ systems. Readings may include clinical case studies and scientific articles that connect anatomical structures to real-world applications in health, disease, and clinical practice. Students are expected to review diagrams, tables, and anatomical illustrations to strengthen spatial understanding of anatomical structures and their relationships.
- 2) **Writing / Problem Solving:** Students will complete written assignments that require them to analyze anatomical structures, interpret diagrams and clinical scenarios. Assignments may include short written reflections, labeling and identification exercises, study guides that integrate organ system organization. Students will document observations from dissections, anatomical models and histological slides.
- 3) **Other:** Students will review anatomical terminology and study model diagrams and histology images to ensure meaningful participation in laboratory sessions. Students are expected to prepare for practical quizzes by studying structures on models, dissections and images. Collaborative work may involve comparing anatomical observations, analyzing clinical case questions, or preparing group study resources.

Texts and References

- 1) Required (representative examples):
 - a. O'Loughlin, Pennefather-O'Brien & McKinley. *Human Anatomy*. McGraw, 2024.
 - b. Martini, Tallitsch & Nath. *Human Anatomy*. 9th edition. Benjamin Cummings, 2018.
 - c. Cuyamaca College Biology Department. *Biology 140 Lab Manual*. 8th edition. Cuyamaca College, 2023.
- 2) Supplemental (optional): Van De Graaff et al. *Photographic Atlas for Anatomy and Physiology Laboratory*. 9th edition. Morton, 2019.

Exit Skills

Students having successfully completed this course exit with the following skills, competencies and/or knowledge:

- 1) Identify, compare and contrast the major macroscopic and microscopic structural tissues, organs, and organ systems- of the human body and relate each to function.
- 2) Recognize and discuss the significance of the interdependence of organs and organ systems in the human body.
- 3) Utilize techniques of dissection on preserved specimens and relate results to other mammalian systems, including human.
- 4) Identify anatomical structures on a preserved cat and compare structural differences with those of the human body.
- 5) Describe the process and phases of embryological development and growth to adult structure for selected organ systems.

- 6) Recognize and apply anatomical information to diverse disciplines such as nursing, exercise science, athletic training, physical therapy and psychology.

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1) Identify and compare and contrast the major macroscopic and microscopic structural tissues, organs, and organ systems of the human body and relate each to function.
- 2) Identify and discuss the significance of the interdependence of organs and organ systems in the human body.
- 3) Describe the process and phases of embryological development and growth to adult structure for selected organ systems.
- 4) Discuss diseases, disorders, and conditions commonly found in healthcare occupations