

Course Code: BIO 122

Course Title: Anatomy and Physiology II

Department: Natural Sciences

Effective Date: Summer 2026

PCS Code: 1.1 - Baccalaureate/Transfer

CIP Code: 26.0403

Repeatability: 0

Credit Hours

Catalog Notation: 3-3-4

Credit Hour Distribution:

Lecture: 3

Lab: 3

Clinical: 0

Total: 4

General Course Information

Catalog Description

Detailed analysis of special senses; endocrine, cardiovascular, lymphatic, respiratory, urinary, reproductive, and digestive systems; nutrition, metabolism, and bioenergetics; fluid, electrolyte, and pH balance; introduction to genetics and human development. Uses anatomical models, human cadavers, and the Anatomage digital dissection table.

General Course Objectives

- Provide a challenging intellectual environment that prepares students for health career programs and/or transfer to four-year institutions.
- Develop students' abilities to correctly identify anatomical structures, understand and explain physiological processes, and communicate using discipline-specific (anatomical and medical) terminology.
- Students will develop an understanding of functional anatomy and physiology as it pertains to normal body function. (See BIO 121 General Course Objectives.)

Minimum Placement Levels

English

None

Reading

Placement out of CCS 098

Math

None

Prerequisites

Credit in BIO 121 or equivalent with a grade of C or higher

Methods of Evaluation

11 unit quizzes, 3 written hour exams, 4 lab quizzes, 13 lab assignments, 13 pre-lab quizzes, 4 lab practical exams, 11 unit assignments, 11 homework assignments, and a cumulative final exam.

Instructional Materials and Additional Supplies

Visual A&P, Martini, Ober, Nath, and Petti; Pearson 2018 (used for both BIO 121 and 122 (REQUIRED)
(Cost: \$286.61, includes all materials needed for both BIO 121 and 122) (REQUIRED).

Visual A&P Lab Manual, Sarikas; Pearson 2018 (Cost: free when bundled with textbook, or \$86.65 stand alone) (REQUIRED).

Mastering A&P, (Cost: free when bundled with textbook, or \$69+ from publisher) (REQUIRED)

Course Content

General Learning Outcomes (GLOs)

- Communication: Students will demonstrate the ability to read, write, listen, and speak effectively.
- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Special Senses	<ol style="list-style-type: none">1. Demonstrate a working knowledge of function and identification of specialized sensory organs and associated structures.2. Explain the processes and components involved in gustation, olfaction, vision, hearing, and static and dynamic equilibrium.3. Identify components of the sheep eye after dissection.	4	5	0
Endocrine System	<ol style="list-style-type: none">1. Interpret the physiology and interrelationships of hormones.2. Differentiate between steroid and nonsteroid hormones.3. Describe modes of control of endocrine secretion.4. Discuss the hypothalamic/pituitary axis.5. List hormones secreted from major endocrine organs and describe their functions/targets.6. Predict impacts of hyposecretion and hypersecretion of specific hormones.7. Describe integrative endocrine regulation of glucose, blood volume/pressure, and growth.8. Explain the stress response (general adaptation syndrome).	5	3	0
Cardiovascular System	<ol style="list-style-type: none">1. Describe the composition and functions of blood.2. Differentiate between formed elements.3. Explain blood typing.4. Describe hemostasis, coagulation, and hematopoiesis.5. Explain functions of plasma.6. Interpret and explain the cardiac cycle and extrinsic regulation of cardiac activity.7. Explain the cardiac conduction system.8. Recognize all components of the human heart and identify them on human hearts and sheep heart dissection.9. Explain cardiac output and factors that determine and alter it.10. Trace the path of blood through a heart, identifying all structures.11. Describe the physiology underlying circulation--flow, resistance, and blood pressure.12. Recognize and identify major blood vessels on human cadavers, models, and illustrations.13. Describe the path of blood flow through systemic, pulmonary, coronary, and fetal circulation.14. Explain the process of capillary exchange, including roles of capillary hydrostatic pressure and blood colloid osmotic pressure.	7	10	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Lymphatic System and Immunity	<ol style="list-style-type: none"> 1. Demonstrate a working knowledge of the immune system. 2. Differentiate between and explain nonspecific defense mechanisms (chemical/mechanical barriers, inflammation, complement, etc.) and specific defense mechanisms (immune response/humoral vs. cell-mediated). 3. Provide examples of and explain autoimmune disorders, immunodeficiency disorders, and HIV/AIDS. 4. Identify major lymphatic organs. 5. Describe the relationship between plasma, interstitial fluid, and lymph. 6. Trace the path of lymph flow. 	5	4	0
Respiratory System	<ol style="list-style-type: none"> 1. Describe the physiology of respiration. 2. Recognize and understand the components of the human respiratory system and identify these on human cadavers and models. 3. Explain the mechanics and controls of pulmonary ventilation. 4. Describe regulation of respiration and locations of the respiratory centers. 5. Measure and calculate respiratory volumes and capacities. 6. Correctly identify all respiratory structures on human cadavers, models, and illustrations. 	4	6	0
Digestive System	<ol style="list-style-type: none"> 1. Explain the physiology of digestion and absorption. 2. Demonstrate a working knowledge of the components of the human digestive system. 3. Describe and differentiate between chemical and mechanical digestion. 4. Explain the process by which organic macromolecules are broken down and absorbed, including the chemicals and hormones involved. 5. Identify digestive system structures on cadavers, models, and illustrations. 	4	5	0
Nutrition, Metabolism, and Energetics	<ol style="list-style-type: none"> 1. Explain the roles of major nutrients in sustaining life. 2. Discuss how the body utilizes nutrients for its vital processes. 3. Explain the relationship between nutrient use, metabolism, and energy. 4. Provide the location of and describe the major pathways of cellular respiration. 5. Differentiate between and explain the regulation of the absorptive and post-absorptive states. 6. Describe heat transfer mechanisms. 	4	1	0
Urinary System	<ol style="list-style-type: none"> 1. Explain the formation, storage, and excretion of urine. 2. Describe the structure of a nephron and the processes of glomerular filtration (including GFR and autoregulation), reabsorption, and secretion. 3. Compare the composition of urine and blood plasma. 4. Identify urinary system structures on cadavers, models, illustrations, and during a sheep kidney dissection. 	3	4	0
Fluids, Electrolytes, and pH Balance	<ol style="list-style-type: none"> 1. Name, describe, and locate the body's major fluid compartments. 2. Describe interactions between water and electrolytes, the roles each play in maintaining homeostasis, and how this homeostatic balance is maintained, including hormonal control. 3. Define electrolytes and differentiate between acids and bases. 4. Discuss the physiological buffer systems and how they maintain pH balance. 5. Explain the body's compensatory mechanisms that maintain acid-base balance. 6. Differentiate between metabolic vs respiratory acidosis and alkalosis. 	3	1	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Reproductive System, Genetics, and Human Development	<ol style="list-style-type: none"> 1. Describe the structures and functions of the male and female reproductive structures. 2. Discuss the processes of meiosis and gametogenesis. 3. Explain the path of the oocyte from ovulation through implantation. 4. Correlate hormonal control with phases of the ovarian and uterine cycles. 5. Describe secondary sex characteristics of both sexes. 6. Discuss changes that occur in females at menopause. 7. Explain methods of contraception and birth control. 8. Identify male and female reproductive structures on cadaver, models, and illustrations. 9. Describe basic stages of human development. 10. Relate the basic principles of genetics to the inheritance of traits; differentiate between genotype and phenotype. 	6	6	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
45	45	0