

# Anatomy and Physiology

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**Office:** Home Office in Letcher, SD

**Electronic (Virtual) Office Hours:** Students are encouraged to email or call any time M-F from 8am-5pm.

## Course Information

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### Course Description:

Anatomy & Physiology is a laboratory course designed to prepare students in understanding the fundamental concepts of and relationship between basic human structure and function. Through interactive lecture, laboratory activities, projects and assessments, students will practice using correct anatomical terminology, study cells and tissues, and explore anatomical features of the major body systems while also analyzing the physiological mechanisms that maintain homeostasis in the human body. The topics covered during this course will include the integumentary system, skeletal system, muscular system, central nervous system, peripheral and autonomic nervous system, senses, endocrine system, blood and blood vessels, heart and cardiovascular system, lymphatic system and immunity, respiratory system, digestive system, urinary system, fluid, electrolyte and acid-base balance, reproductive system, and development and inheritance.

### Course Prerequisites:

1 year of Biology

### Required Textbooks and Materials:

#### Required:

McGraw Hill Anatomy and Physiology textbook, along with the online Connect account that will be provided by your instructor.

## Response Time Expectations

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### E-mail Response Times:

Students can expect a response to their email during regular school/business hours of 8am-5pm Monday-Friday.

### Grading Response Times:

Grades are updated and posted at the end of each unit.

## Course Goals

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This course will help students develop science process and inquiry skills with applications. Students will study the concepts of Anatomy/Physiology and use scientific problem solving to demonstrate appropriate applications of these concepts. Students will:

- Achieve the learning described in the State Science Standards.
- Demonstrate appropriate communication and technology applications skills.
- Describe how knowledge of Anatomy & Physiology plays an essential role in everyday life.
- Develop an awareness of the potential and limitations of science and technology.
- Demonstrate the knowledge of basic Anatomy & Physiology concepts and skills.

## Topic Outline

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1. Chapter 1: The Human Body: An Orientation
  - a. An Overview of Anatomy and Physiology
  - b. Levels of Structural Organization
  - c. Maintaining Life
  - d. 4 The Language of Anatomy
  - e. Homeostasis
2. Chapter 2 Basic Chemistry
  - a. Concepts of Matter and Energy
  - b. Composition of Matter
  - c. Molecules and Compounds
  - d. Chemical Bonds and Chemical Reactions
  - e. Biochemistry: The Chemical Composition of Living Matter
3. Chapter 3 Cells and Tissues
  - a. Cells
  - b. Body Tissues
  - c. Developmental Aspects of Cells and tissues
4. Chapter 4 Skin and Body Membranes
  - a. Classification of Body Membranes
  - b. The Integumentary System (Skin)
  - c. Developmental Aspects of Skin and Body Membranes
5. Chapter 5 The Skeletal System
  - a. Bones: An Overview
  - b. Axial Skeleton
  - c. Appendicular Skeleton
  - d. Joints
  - e. Developmental Aspects of the Skeleton
6. Chapter 6 The Muscular System
  - a. Overview of Muscle Tissues
  - b. Microscopic Anatomy of Skeletal Muscle
  - c. Skeletal Muscle Activity
  - d. Muscle Movements, Roles, and Names
  - e. Gross Anatomy of Skeletal Muscles
  - f. Developmental Aspects of the Muscular System
7. Chapter 7 The Central Nervous System
  - a. Organization of the Nervous System
  - b. Nervous Tissue: Structure and Function
  - c. Central Nervous System
  - d. Peripheral Nervous System
  - e. Developmental Aspects of the Nervous System
8. Chapter 8 Special Senses
  - a. The Eye and Vision
  - b. The Ear: Hearing and Balance
  - c. Chemical Senses: Smell and Taste
  - d. Developmental Aspects of the special senses
9. Chapter 9 The Endocrine System
  - a. The Endocrine System and Hormone Function-An Overview
  - b. The Major Endocrine Organs
  - c. Other Hormone-Producing Tissues and Organs
  - d. Developmental Aspects of the Endocrine System

10. Chapter 10 Blood
  - a. Composition and Functions of Blood
  - b. Hemostasis
  - c. Blood Groups and Transfusions
  - d. Developmental Aspects of Blood
11. Chapter 11 The Cardiovascular System
  - a. The Heart
  - b. Blood Vessels
  - c. Developmental Aspects of the Cardiovascular System
12. Chapter 12 The Lymphatic System and Body Defenses
  - a. The Lymphatic System
  - b. Body Defenses
  - c. Developmental Aspects of the Lymphatic System and Body Defenses
13. Chapter 13 The Respiratory System
  - a. Functional Anatomy of the Respiratory System
  - b. Respiratory Physiology
  - c. Respiratory Disorders
  - d. Developmental Aspects of the Respiratory System
14. Chapter 14 The Digestive System and Body Metabolism
  - a. Anatomy and Physiology of the Digestive System
  - b. Nutrition and Metabolism
  - c. Developmental Aspects of the Digestive System and Metabolism
15. Chapter 15 The Urinary System
  - a. Kidneys
  - b. Ureters, Urinary Bladder, and Urethra
  - c. Fluid, Electrolyte, and Acid Base Balance
  - d. Developmental Aspects of the Urinary System
16. Chapter 16 The Reproductive System
  - a. Anatomy of the Male Reproductive System
  - b. Male Reproductive Functions
  - c. Anatomy of the Female Reproductive System
  - d. Female Reproductive Functions and Cycles
  - e. Mammary Glands
  - f. Pregnancy and Embryonic Development