

**CARTERVILLE SCHOOL DISTRICT  
ANATOMY AND PHYSIOLOGY CURRICULUM  
HIGH SCHOOL  
REVISED 2009**

**1<sup>ST</sup> QUARTER**

- Compare and contrast Anatomy and Physiology.
- Understand organization of atoms to organisms.
- Understand basics of each body system.
- Understand basic functions that are necessary for life
- Discuss homeostasis and needs for survival
- Understand and demonstrate anatomical position.
- Discuss and define medical directional terms
- Discuss and define medical terminology regarding landmarks on the body, sections, and body cavities
- Visit basic chemistry and energy forms
- Revisit basic cell structure and function from biology.
- Understand characteristics, shapes, and subdivisions of epithelial tissue.
- Compare and contrast different epithelial shapes and locations in body(columnar, cuboidal, squamous)
- Understand relationship of glands and epithelial tissue.
- Understand importance of connective tissue.
- Know basic characteristics of connective tissue.
- Know three components of extracellular matrix.
- Relate importance of extracellular matrix to functions of connective tissue.
- Know types and locations of various connective tissues.
- Compare and contrast various connective tissues.
- Compare and contrast epithelial vs. connective tissues.
- Understand functions of muscle tissue.
- Compare and contrast three types of muscle tissue.
- Understand structure of nervous tissue.
- Understand basic tissue repair and regeneration.
- Observe various tissues under the microscope.
- Know four classifications of body membranes.
- Define integumentary system.
- Understand structure of the skin.
- Understand importance of Melanin and melanocytes.

- Compare and contrast various strata of the skin.
- Compare and contrast papillary and reticular layer.
- Know the appendages of the skin.
- Compare and contrast various glands.
- Describe and identify structures of hair and nails in the skin.
- Analyze how skin impacts homeostatic functions.
- Identify various disorders of the skin.
- Compare and contrast first, second, and third degree burns.
- Understand causes and effects of skin cancer.
- Discuss basic nutrition
- Compare and contrast proteins, carbohydrates, lipids, and nucleic acids
- Discuss importance of nutrients, vitamins, and minerals in a balanced diet
- Perform a research project regarding fad diets and their implications

#### **SECOND QUARTER**

- Understand structure and functions of bones.
- Distinguish between axial and appendicular system.
- Compare and contrast spongy and compact bone.
- Compare and contrast long, short, flat, and irregular bones, and know where they are found in body.
- Understand Structure of long bones.
- Define diaphysis, epiphyses, periosteum.
- Compare and contrast red and white marrow.
- Understand basic microscopic anatomy of bones.
- Understand bone growth and repair.
- Define ossification, osteoblasts, osteoclasts.
- Understand and describe common fractures(simple, compound, comminuted, compression, depressed, impacted, spiral)
- Define open and closed reductions.
- Know basic subdivisions of axial skeleton.
- Identify and recognize bones of the skull.
- Know regions of spinal column.
- Know importance of disks in spine.
- Know number of bones in each region of spinal column.
- Identify location and structure of various bones in body.

- Observe bones of humans and other animals in the laboratory.
- Know components and importance of the bony thorax.
- Identify bones of the shoulder girdle.
- Analyze advantages and disadvantages of great mobility in the shoulder.
- Identify bones of the appendicular skeleton.
- Identify the bones of the pelvic girdle.
- Compare and contrast male and female pelvic bones.
- Understand purpose of joints in body.
- Compare and contrast fibrous, cartilaginous, and synovial joints.
- Describe aspects of arthritis and osteoporosis.
- Compare and contrast three muscle tissues.
- Understand structure and functions of muscles in body.
- Understand basic microscopic anatomy of muscle cells.
- Observe muscle tissues under microscope, and draw.
- Define various filaments of microscopic muscle tissue.
- Understand basic stimulation and contraction of muscle tissue.
- Compare and contrast various methods of energy production for muscle contraction.
- Evaluate various types of exercise impacts on muscles.
- Understand origin and insertion.
- Compare and contrast various types of muscle movements.
- Understand various naming methods of muscles.
- Identify muscles in various areas of the body.
- Understand 3 main functions of nervous system(sensory input, integration, and motor output).
- Understand two basic subdivisions of structural classifications of the nervous system(CNS and PNS).
- Understand subdivisions of functional classifications of the nervous system
- Contrast structural and functional classifications of the nervous system.
- Understand that the motor division of the nervous system has two subdivisions(somatic and autonomic).
- Analyze importance of voluntary vs. involuntary.
- Analyze basic anatomy of neurons.
- Analyze the physiology of nerve impulses.
- Understand reflexes and importance.
- Understand and identify the structure and function of various parts of the central nervous system.

- Discuss autonomic and somatic divisions of the PNS.
- Perform dissection of sheep brain.
- Complete reaction time lab

### **3<sup>RD</sup> QUARTER**

- Understand distinguishing factors of senses.
- Name 5 special senses.
- Define special receptors.
- Describe structure of eye and accessory structures.
- Compare and contrast meibomian glands vs. lacrimal glands.
- Understand structure of eyeball and its tunics.
- Know importance of photoreceptors.
- Compare and contrast a human eye and cow eye.
- Demonstrate a dissection of a cow eye.
- Observe demonstration showing the blind spot.
- Trace pathway of light from outside the eye to the brain naming the structures it encounters.
- Understand why some people need vision correction.
- Define mechanoreceptors.
- Understand anatomical structures of the outer, middle, and inner ear.
- Name the three inner ear bones.
- Understand mechanisms of equilibrium, and static vs. dynamic.
- Observe demonstration of audible human frequencies using speakers and tone generators.
- Participate in equilibrium experiment by spinning on bat and racing.
- Discuss various hearing and equilibrium disorders.
- Perform taste lab
- Understand mechanisms of taste and smell.
- Define endocrine system.
- Compare and contrast nervous system vs. endocrine system.
- Understand importance of hormones.
- Define major endocrine organs and functions.
- Understand what causes goiters.
- Discuss various disorders of endocrine system, including: gigantism, acromegaly, dwarfism.
- Discuss negative aspects of steroids and effects on physiology and the mind.
- Discuss diabetes.
- Understand how blood is considered a tissue.

- Define formed elements.
- Compare and contrast formed elements vs. blood matrix.
- Know components of blood.
- Compare and contrast WBCs vs. RBCs.
- Discuss anemia.
- Understand blood formation, clotting, and bleeding disorders.
- Understand different blood types, and compatibility.
- Perform blood typing lab.
- Observe, compare, and contrast various blood cells under the microscope
- Define Cardiovascular system
- Discuss anatomy of heart, including chambers, pericardium, and major veins and arteries.
- Understand path of blood from body through heart, lungs, heart, and back out to body.
- Understand importance of valves.
- Understand nodal system of heart.
- Discuss systole, diastole, and regulation of heart rate.
- Take pulse, and blood pressure.
- Compare and contrast arteries, veins, and capillaries.
- Perform dissection of sheep heart.
- Discuss vital signs.
- Understand differing blood pressure in arteries, veins, and capillaries.
- Understand factors affecting blood pressure.
- Discuss disorders of the cardiovascular system, including coronary artery disease, hypertension, and hypotension.
- Understand capillary exchange.

#### **4<sup>TH</sup> QUARTER**

- Define respiratory system.
- Describe major organs of respiratory system.
- Discuss interrelation of cardiovascular and respiratory systems.
- Observe demonstration of Heimlich maneuver.
- Trace path of air from outside to the capillaries, identifying major structures
- Discuss effects of smoking on the lungs' anatomy and function.
- Identify major organs of the digestive system and describe functions.
- Understand the importance of mucus in digestive system.
- Understand importance of chemicals released in digestion.
- Discuss how teeth are part of the digestive system.

- Understand propulsion throughout the digestive system.
- Discuss basic metabolism of digested food.
- Discuss metabolic rate, and calorie consumption.
- Discuss obesity, BMI, and importance of exercise.
- Discuss homeostatic relationships between digestive system and other body systems.
- Define Reproductive system, gonads, accessory reproductive organs.
- Discuss male reproductive structures including testes, duct system, urethra, prostate, scrotum, penis.
- Discuss spermatogenesis, testosterone, and secondary sex characteristics.
- Discuss female reproductive anatomy including ovaries, duct system, uterus, cervix, and vagina.
- Understand oogenesis and ovarian cycle.
- Discuss fetal development.