Course: Human Anatomy & Physiology

August/September: Intro to Anatomy & Physiology

State Standards	Content Objectives	Resources
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. **HS-LS1-3.** Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.	- Differentiate between Anatomy and Physiology - Describe and give examples of the levels of structure in humans - List the major body systems, give examples of organs within each system, and describe major functions of each system - Describe the major functions required for life - Explain how the body maintains homeostasis and how disruptions in homeostasis result in disease - Compare positive to negative feedback mechanisms - Use anatomical terms to describe directions in the body - Use proper names for different body regions - Describe the various planes used for anatomical sections - Name the various body cavities and their membranes - Dissect a frog and identify its major organs	- Textbook - Powerpoints - Hands-on Group Activities & Labs - Journal Assignments - Tests - Human Torso Model

September/October: Histology

State Standards	Content Objectives	Resources
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	- Name the four major types of tissues and describe their functions - Recognize the tissue sub-types in the microscope, in photos, and in diagrams - Compare simple, stratified, and pseudostratified epithelium - Explain why bone, cartilage, fat, and blood are considered types of connective tissue - Compare the features of the 3 types of muscle tissue - Explain how neurons communicate	- Textbook - Powerpoints - Hands-on Group Activities & Labs - Journal Assignments - Tests - Microscopes & Histology Slides

October/November: Integumentary System

State Standards	Content Objectives	Resources
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. **HS-LS1-4.** Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.	- Name the major layers of the skin - Describe the functions of the different cell types in the epidermis - Describe the characteristics of the layers of the epidermis - Describe the process of keratinization - List the accessory organs of the dermis and describe their functions - Label a diagram of a cross-section of the skin - Describe the various functions of the integumentary system - Describe various diseases of the integumentary system - Describe the 3 types of skin cancer, how to avoid skin cancer, and how to recognize skin cancer - Describe the different types of touch receptors	- Textbook - Powerpoints - Hands-on Group Activities & Labs - Journal Assignments - Tests - Skin Model

November/December (End 1st Semester): Skeletal System

State Standards	Content Objectives	Resources
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	- Explain why a bone is considered an organ. - Classify bones by shape. - Compare spongy bone to compact bone. - Describe bone functions. - Name bone markings (projections & depressions). - Label a diagram showing the structure of a long bone. - Describe the membranes around and within bones. - Name the types of bone cells and describe their functions. - Label a diagram showing the microscopic structure of bone. - Describe developmental changes in bone. - Describe calcium homeostasis. - Describe basic bone fractures and their healing. - Compare the axial skeleton to the appendicular skeleton. - Name the major bones of the skeleton. - Name the major bones of the skull. - Identify the internal and external anatomical features of a frog.	- Textbook - Powerpoints - Hands-on Group Activities & Labs - Journal Assignments - Tests - Skeleton Model - Animal Bones - Skull Model - Frogs and dissection tools

January/February (Begin Second Semester): Muscular System

State Standards	Content Objectives	Resources
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	- Describe the characteristics of skeletal muscle. - Describe the functions of skeletal muscle. - Name the levels of organization of skeletal muscle. - Label a diagram of the microanatomy of a skeletal muscle. - Label a diagram of a sarcomere. - Describe the sliding filament model of contraction. - Label a diagram of the neuromuscular junction. - Describe the events occurring at the neuromuscular junction. - Describe the physiology of the resting potential and the action potential. - Describe the events of excitation-contrac tion coupling. - Analyze oscilloscope tracings showing major physiological events during muscle contraction. - Name the major muscles of the body. - Compare the characteristics of fast- and slow-twitch muscles.	- Textbook - Powerpoints - Hands-on Group Activities & Labs - Journal Assignments - Tests - Muscle Cell Model - Manikens - Trail Guide to the Body Books & Cards - Interactive Physiology CD-ROM

March: Nervous System

State Standards	Content Objectives	Resources
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	- Describe the 3 major activities of the nervous system. - Describe the structural and functional organization of the nervous system. - Compare the roles of the sympathetic and parasympathetic nervous systems. - Describe the types of glial cells and their functions. - Label a diagram of a neuron and describe the functions of its parts. - Classify neurons by structural and functional characteristics. - Describe the physiology of the resting potential and the action potential. - Explain how the opening and closing of ion gates results in resting and action potentials. - Describe EPSPs, IPSPs, and their role in sending signals along neurons. - Label a diagram of a synapse. - Describe the events of synaptic transmission. - Name several neurotransmitters and describe their major roles in behavior. - Describe the influence of several psychoactive drugs on neuronal activity. - Label a diagram of the anatomical features of the human brain. - Describe the functions of major brain regions. - Dissect a sheep brain and identify its major structures.	- Textbook - Powerpoints - Hands-on Group Activities & Labs - Journal Assignments -Tests - Brain Model - Brain Specimen - Sheep Brains & Dissection Tools

April: Cardiovascular & Respiratory Systems

State Standards	Content Objectives	Resources
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	- Name and describe the functions of the three main types of blood cells. - Compare and contrast the different types of blood vessels. - Label diagrams of the internal and external anatomy of the heart. - Trace the flow of blood throughout the circulatory system. - Label a diagram of an electrocardiogram tracing and relate the major features to events during the cardiac cycle. - Measure blood pressure, explain what each number represents, and describe the causes and effects of high blood pressure. - Label diagrams of the respiratory system at different levels of magnification. - Describe oxygen and carbon dioxide transport through the blood and their exchange with cells and air.	- Textbook - Powerpoints - Hands-on Group Activities & Labs - Journal Assignments - Tests - Heart Model - Human Torso Model - Cats & Dissection Tools - Blood Pressure Cuffs, Stethoscopes, and Syphgomanometers

May/June: Digestive & Excretory Systems

State Standards	Content Objectives	Resources
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	- Label diagrams of the digestive system. - Describe the primary function of each of the organs involved in digestion. - Compare how different kinds of food are broken down into their molecular nutrients. - Label diagrams of the excretory system at different levels of magnification. - Describe the role of osmosis in filtering blood and producing urine.	- Textbook - Powerpoints - Hands-on Group Activities & Labs - Journal Assignments - Tests - Pancreas Model - Kidney Model - Human Torso Model - Cats & Dissection Tools