

Toms River Regional Schools
Anatomy/Physiology Curriculum - Honors

Body Organization Unit – Anatomy/Physiology

<p><u>Standard:</u> HS-LS1 From Molecules to Organisms: Structures and Processes</p>	<p><u>Performance Expectation:</u> HS-LS1-2 Develop and use a model to illustrate the hierarchal 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.</p>
<p><u>Essential Question:</u> How is the human body organized?</p>	<p><u>Science and Engineering Practices:</u> Developing and Using Models based on evidence of systems Scientific Investigations use a variety of methods</p>
<p><u>Disciplinary Core Idea:</u> Structure and Function</p>	<p><u>Crosscutting Concepts:</u> Stability and Change Structure and Function</p>
<p><u>Resources:</u> See Checklist for Timeline</p>	<p><u>Assessments:</u> Body Organization Worksheets Homeostasis Lab / Gizmo Assessment probes Rat Dissection Online Homework/Integrated Questions Terminology Quiz Chapter Test</p>
<p><u>Vocabulary:</u> Atoms Molecules Cell Tissue Organs Organ systems Metabolism Responsiveness Homeostasis Negative feedback Positive feedback Cranial</p>	<p>Abdominal Pelvic Parietal pleurae Membranes Skeletal Anatomical position Superior Inferior Anterior Posterior Medial Lateral Bilateral</p>

Dorsal	Proximal
Ventral	Distal
Frontal	Superficial
Vertebral	Deep
Transverse	Sagittal
Homeostatic Mechanism	Coronal

Cell Chemistry Unit – Anatomy/Physiology

<p><u>Standard:</u> HS -LS1 From Molecules to Organisms: Structures and Processes</p>	<p><u>Performance Expectation:</u> LS1-1 Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins LS1-4 Use a model to illustrate the role of cellular division and differentiation. LS1-7 Illustrate that cell respiration is a chemical process whereby bonds are broken and formed to create energy</p>
<p><u>Essential Question:</u> How do cells maintain balance within the human body?</p>	<p><u>Science and Engineering Practices:</u> Developing and Using Models Planning and Carrying out investigations Constructing Explanations and Designing Solutions Scientific Investigations Use a Variety of Methods</p>
<p><u>Disciplinary Core Idea:</u> Structure and Function Growth and Development of Organisms Organization for Matter and Energy Flow In Organisms</p>	<p><u>Crosscutting Concepts:</u> Systems and Systems Models Structure and Function</p>
<p><u>Resources:</u> See Checklist for Timeline</p>	<p><u>Assessments:</u> Cell Worksheets Osmosis/Diffusion – Egg Lab Unit Project – Necessity Breeds Invention Online Homework/Integrated Questions Chapter Test</p>
<p><u>Vocabulary:</u> Elements Atoms Nucleus Protons Electrons Isotopes</p>	<p>Nucleic Acids Cell membrane Organelles Selectively permeable Cytoplasm Ribosomes Cytoskeleton</p>

Covalent bond	Mitochondria
Polarity	Lysosomes
Ionic bond	Cilia
Hydrogen bond	Flagella
Synthesis reaction	Diffusion
Decomposition reaction	Osmosis
Exchange reaction	Mitosis
Acids	Meiosis
Bases	Protein synthesis
pH	RNA
Carbohydrates	Endocytosis
Lipids	Exocytosis
Proteins	Active Transport
Neutrons	Cell Cycle
Ribosomes	Nucleus
	Endoplasmic Reticulum
	Golgi Apparatus

Histology Unit – Anatomy/Physiology

<p><u>Standard:</u> HS -LS1 From Molecules to Organisms: Structures and Processes</p>	<p><u>Performance Expectation:</u> LS 1-2 Develop and use a model to illustrate the hierarchal organization of interacting systems</p>
<p><u>Essential Question:</u> How does the specificity of a tissue affect the overall organ function in the human body?</p>	<p><u>Science and Engineering Practices:</u> Developing and Using Models Planning and Carrying out investigations Constructing Explanations and Designing Solutions Scientific Investigations Use a Variety of Methods</p>
<p><u>Disciplinary Core Idea:</u> Structure and Function</p>	<p><u>Crosscutting Concepts:</u> Systems and Systems Models Structure and Function</p>
<p><u>Resources:</u> See Checklist for Timeline</p>	<p><u>Assessments:</u> Histology Worksheets Flow Chart Construction Microscope Test Tissue Slides Tissue Jeopardy Online Homework/Integrated Questions Quiz Chapter Test</p>
<p><u>Vocabulary:</u> Tissues Epithelium Basement membrane Simple squamous Simple cuboidal Simple columnar Pseudostratified columnar Stratified squamous Stratified cuboidal Transitional epithelium Glandular epithelium Exocrine gland Endocrine gland Connective tissue Collagen Reticular</p>	<p>Elastin Areolar tissue Adipose Dense connective Loose connective Hyaline cartilage Elastic cartilage Fibrocartilage Blood Bone Osteocytes Serous membrane Mucous membrane Cutaneous membrane Skeletal muscle Smooth muscle Cardiac muscle Nervous tissue</p>

Integumentary System Unit – Anatomy/Physiology

<p><u>Standard:</u> HS -LS1 From Molecules to Organisms: Structures and Processes</p>	<p><u>Performance Expectation:</u> HS-LS-1-2 Develop and use a model to illustrate the hierarchal organization of interacting systems HS-LS1-3 Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</p>
<p><u>Essential Question:</u> How do the structures of the skin help to regulate other parts of the human body?</p>	<p><u>Science and Engineering Practices:</u> Developing and Using Models Constructing Explanations and Designing Solutions Scientific Investigations Use A Variety of Methods</p>
<p><u>Disciplinary Core Idea:</u> Structure and Function Growth and Development of Organisms</p>	<p><u>Crosscutting Concepts:</u> Systems and Systems Models Structure and Function Stability and Change</p>
<p><u>Resources:</u> See Checklist for Timeline</p>	<p><u>Assessments:</u> Skin Color Origins Case Study Integumentary worksheets Skin coloring Slides/Models Skin Disease Project Online Homework/Integrated Questions Quiz Chapter Test</p>
<p><u>Vocabulary:</u> Epidermis Dermis Subcutaneous layer Keratin Melanin Cyanosis Follicle Sebaceous gland Sweat gland Eccrine Apocrine</p>	<p>Impetigo Herpes Pediculosis Psoriasis Scabies Ulcer Wart Vitiligo Boil Carbuncle Inflammation</p>

Heat regulation Acne Dermatitis	Hair shaft Skin Carcinomas
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Skeletal System Unit – Anatomy/Physiology

<p><u>Standard:</u> HS -LS1 From Molecules to Organisms: Structures and Processes</p>	<p><u>Performance Expectation:</u> HS-LS-1-2 Develop and use a model to illustrate the hierarchal organization of interacting systems HS-LS1-3 Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</p>
<p><u>Essential Question:</u> How is the skeleton used in movement and support within the human body?</p>	<p><u>Science and Engineering Practices:</u> Constructing Explanations and Designing Solutions Scientific Investigations Use a Variety of Methods</p>
<p><u>Disciplinary Core Idea:</u> Structure and Function Growth and Development of Organisms Organization for Matter and Energy Flow in Organisms</p>	<p><u>Crosscutting Concepts:</u> Structure and Function Stability and Change</p>
<p><u>Resources:</u> See Checklist for Timeline</p>	<p><u>Assessments:</u> Skeletal System Worksheets Slides/Models Male/Female Pelvic Comparison Lab Online Homework/Integrated Questions Quiz Study Guide Chapter Test</p>
<p><u>Vocabulary:</u> Long bone Short bone Flat bone Irregular bone Epiphysis</p>	<p>Trunk bones Pelvic bones Fossa Foramen Condyle Epicondyle</p>

Diaphysis	Fovea
Compact bone	Head
Spongy bone	Meatus
Medullary cavity	Process
Endosteum	Spine
Marrow	Suture
Lacunae	Trochanter
Osteocyte	Tubercle
Haversian canal	Tuberosity
Osteoblasts	Bursae
Ossification	Synovial joint
Epiphyseal plate	Fibrous joint
Osteoclasts	Cartilage joint
Cartilage	Pivot joint
Levers	Hinge joint
Hematopoiesis	Flexion
Ossification center	Extension
Calcium	Adduction
Cranial bones	abduction
Vertebral column	
Leg bones	
Arm bones	

Cardiovascular System Unit – Anatomy/Physiology

<p><u>Standard:</u> HS -LS1 From Molecules to Organisms: Structures and Processes</p>	<p><u>Performance Expectation:</u> HS-LS-1-2 Develop and use a model to illustrate the hierarchal organization of interacting systems HS-LS1-3 Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</p>
<p><u>Essential Question:</u> What is the function of the heart, and vessels, and how do they maintain a healthy body?</p>	<p><u>Science and Engineering Practices:</u> Scientific Investigations Use a Variety of Methods Constructing Explanations and Designing Solutions</p>
<p><u>Disciplinary Core Idea:</u> Structure and Function Growth and Development of Organisms Organization for Matter and Energy Flow in Organisms</p>	<p><u>Crosscutting Concepts:</u> Structure and Function Stability and Change</p>
<p><u>Resources:</u> See Checklist for Timeline</p>	<p><u>Assessments:</u> Cardiovascular System Worksheets BP Virtual Lab – Gizmo Sphygmomanometer Lab Heart Dissection – Sheep CV System Travel Models Unit Projects: Are You +?; Mending a Broken Heart ABO Blood Group Lab Online Homework/Integrated Questions Quiz Chapter Test</p>
<p><u>Vocabulary:</u> Pulmonary Pericardium Epicardium Myocardium Endocardium Atria Ventricle Septum Tricuspid</p>	<p>Sinoatrial node Pacemaker Atrioventricular node AV bundle Purkinje fibers Electrocardiogram Artery Arteriole Capillary Venule</p>

Papillary muscle	Veins
Pulmonary valve	Vasoconstriction
Mitral valve	Vasodilation
Aorta	Capillary exchange
Aortic valve	Stroke volume
Coronary artery	Cardiac output
Cardiac veins	Blood volume
Coronary sinus	Viscosity
Systole	Peripheral resistance
Diastole	Jugular
Cardiac cycle	Carotid Iliac
Lub-dup	Femoral
Conduction system	Mesenteric
Radial	Ulnar
ABO Blood Group	

Muscular System – Anatomy/Physiology

<p><u>Standard:</u> HS -LS1 From Molecules to Organisms: Structures and Processes</p>	<p><u>Performance Expectation:</u> HS-LS-1-2 Develop and use a model to illustrate the hierarchal organization of interacting systems HS-LS1-3 Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. LS1-7 Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules are broken and the bonds in new compounds are formed, resulting in a net transfer of energy.</p>
<p><u>Essential Question:</u> How are muscles used to create force and motion in the human body? How do the structures in other animals relate to the human body?</p>	<p><u>Science and Engineering Practices:</u> Developing and Using Models Scientific Investigations Use A Variety of Methods Constructing Explanations and Designing Solutions</p>
<p><u>Disciplinary Core Idea:</u> Structure and Function Organization for Matter and Energy Flow in Organisms</p>	<p><u>Crosscutting Concepts:</u> Systems and Systems Models Structure and Function</p>
<p><u>Resources:</u> See Checklist for Timeline</p>	<p><u>Assessments:</u> Cat Dissection Muscular System Worksheets Muscular System powerpoint Build Myofibril Model Slides/Models Online Homework/Integrated Questions Quiz Chapter Test Identification of Muscles Test</p>
<p><u>Vocabulary:</u></p>	

Fascia	Acetylcholine Muscle
Aponeuroses	impulse
Myofibrils	Acetylcholinesterase
Myosin	Creatine phosphate
Actin	Hemoglobin
Troponin	Myoglobin
Sarcomeres	Oxygen debt
Fiber	Muscle fatigue
Sarcoplasmic reticulum	ATP
H zone	Twitch Latent
Z line I	period
Band	Threshold stimulus
A Band Motor	Summation
neuron	Tetanus
Synapse	Recruitment
Motor end plate	Muscle tone
Motor unit	Insertion
Tropomyosin	Origin
Sliding filament theory	Prime mover
All or none response	Antagonist
All human muscles	Synergist
All cat muscles	Fixator

Nervous System Unit – Anatomy/Physiology

<p><u>Standard:</u> HS -LS1 From Molecules to Organisms: Structures and Processes</p>	<p><u>Performance Expectation:</u> HS-LS-1-2 Develop and use a model to illustrate the hierarchal organization of interacting systems HS-LS1-3 Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</p>
<p><u>Essential Question:</u> How does the human body receive, interpret, and send information throughout itself?</p>	<p><u>Science and Engineering Practices:</u> Developing and Using Models Scientific Investigations Use a Variety of Methods Constructing Explanations and Designing Solutions</p>
<p><u>Disciplinary Core Idea:</u> Structure and Function Growth and Development of Organisms Organization for Matter and Energy Flow in Organisms</p>	<p><u>Crosscutting Concepts:</u> Energy and Matter Structure and Function Stability and Change</p>
<p><u>Resources:</u> See Checklist for Timeline</p>	<p><u>Assessments:</u> Nervous System Worksheets Slides/Models Phineas Gage Article Beautiful Minds Article Summary Hemispheric Dominance Activity Nervous System Disorder Project Sheep Brain Dissection Concept Map Online Homework/Integrated Questions Quiz Chapter Test Brain Labeling</p>
<p><u>Vocabulary:</u> Neurons Nerve Impulses Cell body Dendrites Axons</p>	<p>Resting potential Potential change Action potential Threshold potential Membrane potential Excitatory</p>

Nerve	Inhibitory
Central nervous system	All or none response
Peripheral nervous system	Reflex arc
Neuroglial cells	Meninges
Sensory receptors	Dura mater
Microglial cells	Pia mater
Astrocytes	Arachnoid mater
Effectors	Cerebrospinal fluid
Somatic nervous system	Spinal nerves
Autonomic nervous system	Spinal cord
Schwann cells	Cranial nerves
Myelin sheaths	Nerve tracts
Neurolemma	Central canal
Nodes of Ranvier	Ascending tract
Multipolar	Descending tract
Bipolar	Brain
Unipolar	Cerebrum Corpus callosum
Sensory	Sulcus
Motor	Fissure
Mixed	Gyrus
Synapse	Lobes
Neurotransmitters	Association area
Choroid plexus	Adrenergic fibers
Midbrain	EEG
Hindbrain	
Medulla	
Cranial nerves	
Cholinergic fibers	
Oligodendrocytes	

Respiratory System Unit – Anatomy/Physiology

<p><u>Standard:</u> HS -LS1 From Molecules to Organisms: Structures and Processes</p>	<p><u>Performance Expectation:</u> HS-LS-1-2 Develop and use a model to illustrate the hierarchal organization of interacting systems HS-LS1-3 Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</p>
<p><u>Essential Question:</u> How do the respiratory organs and blood, exchange gases to keep your body cells alive?</p>	<p><u>Science and Engineering Practices:</u> Developing and Using Models Scientific Investigations Use a Variety of Methods Constructing Explanations and Designing Solutions</p>
<p><u>Disciplinary Core Idea:</u> Structure and Function Organization for Matter and Energy Flow in Organisms</p>	<p><u>Crosscutting Concepts:</u> Systems and Systems Models Structure and Function Stability and Change</p>
<p><u>Resources:</u> See Checklist for Timeline</p>	<p><u>Assessments:</u> Respiratory System Worksheets Respiratory Stations H lab Slides/Models Online Homework/Integrated Questions Quiz Chapter Test</p>
<p><u>Vocabulary:</u> Respiration Nose Nasal cavity Nasal septum Hard palate Soft palate Pharynx Larynx Vocal cords Glottis Trachea</p>	<p>Respiratory cycle Tidal volume Inspiratory reserve volume Expiratory reserve volume Residual volume Total lung capacity Vital capacity Dorsal respiratory group Anterior respiratory group Respiratory membrane Alveolar Gas Exchange</p>

Hyaline cartilage	Hemoglobin
Primary bronchi	Oxyhemoglobin
Bronchial tree	Partial pressure
Bronchioles	Bicarbonate ion
Alveoli	Hypoxia
Alveolar sacs	Carbonic anhydrase
Pleural cavity	Cystic fibrosis
Visceral pleura	pneumothorax
Parietal pleura	Expiration
Lungs	Atmospheric pressure
Inspiration	Surface tension
	Surfactant

Digestive System Unit – Anatomy/Physiology

<p><u>Standard:</u> HS -LS1 From Molecules to Organisms: Structures and Processes</p>	<p><u>Performance Expectation:</u> HS-LS-1-2 Develop and use a model to illustrate the hierarchical organization of interacting systems HS-LS1-3 Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis HS -LS1-7 Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules are broken and the bonds in new compounds are formed, resulting in a net transfer of energy.</p>
<p><u>Essential Question:</u> How does the gastrointestinal tract process our food into energy for the human body?</p>	<p><u>Science and Engineering Practices:</u> Developing and Using Models Constructing Explanations and Designing Solutions Scientific Investigations Use a Variety of Methods</p>
<p><u>Disciplinary Core Idea:</u> Structure and Function Organization for Matter and Energy Flow in Organisms</p>	<p><u>Crosscutting Concepts:</u> Energy and Matter Stability and Change Structure and Function</p>
<p><u>Resources:</u> See Checklist for Timeline</p>	<p><u>Assessments:</u> Digestive System Worksheets Cholesterol Lab Digestive System Stations Unit Project: I Can't Believe it's Not a Liver Student Presentations Online Homework/Integrated Questions Quiz Chapter Test</p>

Vocabulary:

Mechanical digestion
Chemical digestion
Alimentary canal
Mucous membrane
Lumen
Mucosa
Peristalsis
Cheek
Lip
Tongue
Mastication
Papillae
Taste receptors
Palate
Uvula
Teeth
Primary teeth
Secondary teeth
Saliva glands
Parotid gland
Submandibular glands
Sublingual glands
Pharynx
Bolus
Esophagus
Sphincter

Pepsin
Pepsinogen
Intrinsic factor
Gastrin
Chyme
Liver
Pancreas
Hepatic duct
Common bile duct
Bile
Gall bladder
Duodenum
Jejunum
Ileum
Mesentery
Intestinal glands
Cecum
Appendix
Rectum
Anus
Anal canal
Colon
Ascending colon
Transverse colon
Descending colon
Sigmoid colon
Stomach
Villi
Gastric glands

Urinary System Unit – Anatomy/Physiology

<p><u>Standard:</u> HS -LS1 From Molecules to Organisms: Structures and Processes</p>	<p><u>Performance Expectation:</u> HS-LS-1-2 Develop and use a model to illustrate the hierarchal organization of interacting systems HS-LS1-3 Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis</p>
<p><u>Essential Question:</u> How does the urinary system excrete nitrogenous wastes thereby maintaining homeostasis in the human body?</p>	<p><u>Science and Engineering Practices:</u> Developing and Using Models Constructing Explanations and Designing Solutions Scientific Investigations Use a Variety of Methods</p>
<p><u>Disciplinary Core Idea:</u> Structure and Function Organization for Matter and Energy Flow in Organisms</p>	<p><u>Crosscutting Concepts:</u> Energy and Matter Stability and Change Structure and Function</p>
<p><u>Resources:</u> See Checklist for Timeline</p>	<p><u>Assessments:</u> Urinary System Worksheets Urine Lab Diabetic Neuropathy Lab Data Analysis Cat/Rat Model Online Homework/Integrated Questions Quiz Chapter Test</p>

Vocabulary:

Kidney

Ureter

Urethra

Bladder

Cortex

Medulla

Calyx

Sinus

Column

Pelvis

Papilla

Pyramid

Glomeruli

Corpuscle

Tubule

Arteries

Afferent

Efferent

GFR

Filtration

Reabsorb

Urea

Urine

Micturition

Reproductive System Unit – Anatomy/Physiology

<p><u>Standard:</u> HS -LS1 From Molecules to Organisms: Structures and Processes</p>	<p><u>Performance Expectation:</u> HS-LS-1-2 Develop and use a model to illustrate the hierarchal organization of interacting systems HS-LS1-3 Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis HS-LS1-4 Use models to illustrate the role of cell division and differentiation.</p>
<p><u>Essential Question:</u> What is the role of the Reproductive System in gamete formation? How does breast cancer develop?</p>	<p><u>Science and Engineering Practices:</u> Developing and Using Models Constructing Explanations and Designing Solutions Scientific Investigations Use a Variety of Methods</p>
<p><u>Disciplinary Core Idea:</u> Structure and Function Organization for Matter and Energy Flow in Organisms</p>	<p><u>Crosscutting Concepts:</u> Energy and Matter Stability and Change Structure and Function</p>
<p><u>Resources:</u> See Checklist for Timeline</p>	<p><u>Assessments:</u> Reproductive System Worksheets Cat/Rat Model Online Homework/Integrated Questions Quiz Chapter Test Unit Project: Pre-implantation Genetic Diagnosis BioCONNECT Cancer Module</p>

Vocabulary:

Ovary
Uterine/Fallopian Tube
Uterus
Clitoris
Vagina
Cervix
Oogenesis
Follicle
Meiosis
Oogenesis
Estrogen
Menarche
Menopause
Mammary Gland
STD's

Testes
Seminiferous Tubules
Epididymis
Ductus Deferens
Seminal Vesicles
Prostate
Bulbourethral Gland
Scrotum
Penis
Androgen
Testosterone
Spermatogenesis

