Teacher: CORE
AnatomyPhysH Year: 2016-17

Course: AnatomyPhysicH Month: All Months

Intro to Anatomy and Physiology

Essential Questions	Content	Knowledge and Skills	Vocabulary	Standards
What is anatomy and physiology?	Homeostasis	Identify the major levels of organization in organisms.	Anatomy, Physiology, Anatomical position	3.3.11.A-Explain the relationship between structure and function found among living things.
How does your body maintain homeostasis?	Directional terminology	Compare/contrast negative and positive feeback in specific situations	Homeostasis, Receptor, Control center, Effector, Positive feedback, Negative feedback	3.1.12.A.1-Relate changes in the environment to various organisms' ability to compensate using homeostatic mechanisms.
How is position and location in your body determined?	Body regions and quadrants	Use of anatomical terms to describe body sections, body regions and relative positions.	Anterior, Posterior, Superior, Inferior, Medial, Lateral, Promixal, Distal, Superficial, Deep, Dorsal, Ventral	
		Identify the major body cavities and their subdivisions	Transverse plane, Coronal plane, Saggital plane, Abdominal cavity, Pelvic cavity, Craninal cavity, Spinal cavity, Thoracic cavity, Pericardial cavity, Pleural cavity, Mediastinum, Dorsal cavity, Ventral cavity	
			Cephalic, Cevical, Thoracic, Abdominal, Lumbar, Pelvic, Pubic, Brachial, Carpal, Tarsal, Femoral, Plantar, Gluteal	

Histology

Essential Questions	Content	Knowledge and Skills	Vocabulary	Standards
What types of tissues make up the human body?	Light Microscopy	Use of light microscope to study tissues and cells.	Simple squamous, Stratified Squammous, Simple cuboidal, Stratified cuboidal, Simple columnar, Stratified columnar, Transitional, Pseudostratified ciliated columnar	3.3.11.A-Explain the relationship between structure and function found among living things.
	Epithelial Tissues	Use oil immersion techiques with the light microscope.	Aeolar, Adipose, Dense regular, Dense Irregular, Lymph, Blood, Bone, Hyaline cartilage, Elastic cartilage, Fibrocartilage	3.3.11.B-Analyze the chemical and structural basis of living organisms.
	Connective Tissues	Identify tissue types using microscopes.	Cardiac muscle, Skeletal Muscle, Smooth muscle, striations, intercalated discs	3.1.12.A.5-Analyze how structure is related to function at all levels of biological organization from molecules to organisms.
	Muscle Tissues		Neuron,, Axon, Soma, Dendrites, neuroglia	3.1.12.A.6-Analyze how cells in different tissues/organs are specialized to perform specific functions.
	Neural Tissues		Inflammation	
	Tissue Healing		Regeneration	

Integumentary System

Essential Questions	Content	Knowledge and Skills	Vocabulary	Standards
What is the structure and function of the integumentary system?	Organization of the Epidermis	Identify the layers of the epidermis and dermis.	Epidermis, Stratum germinativum, Stratum spinosum, Stratum granulosum, Stratum lucidum, Stratum corneum, Basal Lamina	3.3.11.A-Explain the relationship between structure and function found among living things.
	Organization of the Dermis	Identify the accessory structures of the integumentary system and describe their functions	Dermis, Papillary layer, Reticular layer, subcutaneous layer	3.3.11.B-Analyze the chemical and structural basis of living organisms.
	Accessory Structures of the Integument	Compare and contrast the different types of glands.	Sebaceous glands, Sebaceous follicle, Apocrine gland, Merocrine gland, Hair follicle, Arrector pili muscle	3.1.12.A.1-Relate changes in the environment to various organisms' ability to compensate using homeostatic mechanisms.
	Glands			3.1.12.A.5-Analyze how structure is related to function at all levels of biological organization from molecules to organisms.
	Integument Healing			3.1.12.A.6-Analyze how cells in different tissues/organs are specialized to perform specific functions.
	Integument disorders			

Nervous System

Essential Questions	Content	Knowledge and Skills	Vocabulary	Standards
What are the structures and functions associated with the nervous system?	Brain anatomy	Identify regions of the brain and describe their functions	Cerebrum, Cerebellum, Diencephalon, Mesencephalon, Pons, Medulla oblongata, Thalamus, Hypothalamus	3.1.11.E-Evaluate change in nature, physical systems and man-made systems.
How do nerves conduct impulses?	Sensory and motor areas of the brain.	Identify the regions of the cerebellum and describe their functions	Frontal lobe, Parietal lobe, Occipital lobe, Temporal lobe, Wernicke's area, Cortex, Association area	3.3.11.A-Explain the relationship between structure and function found among living things.
How do your special senses work?	Hemispheric lateralization	Describe the events that occur at a synapse	Afferent, Efferent, Somatic, Autonomic, Sympathic, Parasympathetic	3.3.11.B-Analyze the chemical and structural basis of living organisms.
	Spinal cord	Describe how neurons generate and propagate nerve impulses	Axon, Dendrite, Soma, Myelin sheath, Schwann cell	3.1.12.A.5-Analyze how structure is related to function at all levels of biological organization from molecules to organisms.
	Divisions of the peripheral nervous system	Compare and contrast the different types of propagation	Resting potential, Graded potential, Action potential, Membrane potential, Threshold potential, Sodium-Potassium pump, Ion channel, Depolarization, Repolarization, Hyperpolarization, Continuous propagation, Saltatory propagation	3.1.12.A.6-Analyze how cells in different tissues/organs are specialized to perform specific functions.
	Neuron structure	Use dissection skills to dissect a brain to identify the regions of the brain and cerebellum		

	Nerve conduction and propagation	Describe the structures involved in taste, smell, hearing, equilibrium, and sight and how they function to produce those senses.		
	Synapses	Use dissection skills to dissect a cow's eye to identify the structures involved in sight.		
	Special senses			

Endocrine System

Essential Questions	Content	Knowledge and Skills	Vocabulary	Standards
What are the structures of the endocrine system and what are their functions?	Glands/organs of the endocrine system	Identify on a diagram where each of the endocrine glands/organs are located	Adrenal glands, Ovaries, Testicles, Hypothalamus, Pancreas, Parathyroid gland, Pineal gland, Pituitary gland, Thymus, Thyroid gland	3.3.11.B-Analyze the chemical and structural basis of living organisms.
	Major hormones of the endocrine system	List the hormones released from each gland/organ and describe the function of the hormones in the human body	Aldosterone, Cortisol, Hydrocortisone, Corticosterone, Androgens, Epinephrine, Norepinephrine, Estrogen, Antidiuretic Hormone, Oxytocin, Glucagon, Insulin, Parathyroid hormone, Melatonin, Thyroid stimulating hormone, Follicle-stimulating hormone, Prolactin, Growth hormone, Melanocyte-stimulating hormone, Thymosin, Thyroxine, Calcitonin	3.1.12.A.1-Relate changes in the environment to various organisms' ability to compensate using homeostatic mechanisms.
				3.1.12.A.6-Analyze how cells in different tissues/organs are specialized to perform specific functions.

Skeletal System

Essential Questions	Content	Knowledge and Skills	Vocabulary	Standards
How is skeletal tissue organized?	Bone shapes	Compare and contrast the types of ossification	Endochondral Ossification Intramembranous Ossification	3.3.11.A-Explain the relationship between structure and function found among living things.
What are the bones of the skeleton?	Bone markings/features	Identify various bone shapes and marking from diagrams and specimens	Epiphysis, Metaphasis, Diaphysis, Marrow Cavity, Compact Bone, Spongy Bone	3.3.11.B-Analyze the chemical and structural basis of living organisms.
	Bone histology	Describe and analyze the dynamic nature of bone	Head, Base, Tubercle, Tuberosity, Condyle, Epicondyle, Fossa, Process	3.1.12.A.1-Relate changes in the environment to various organisms' ability to compensate using homeostatic mechanisms.
	Bone formation and growth	Identify the bones of the axial skeleton	Osteon, Central canal, Concentric Lamellae, Concentric Lamellae, Interstitial Lamellae, Lacunae, Perforating Canal	3.1.12.A.5-Analyze how structure is related to function at all levels of biological organization from molecules to organisms.

	Fracture healing	Identify the bones of the appendicular skeleton	Bones of the Skeleton	3.1.12.A.6-Analyze how cells in different tissues/organs are specialized to perform specific functions.
	Nutritional/hormonal effects on bone Bones of the axial skeleton Bones of the apendicular skeleton			

Muscular System

Essential Questions	Content	Knowledge and Skills	Vocabulary	Standards
What is the organiztion of muscle tissue?	Types of muscle tissue	Describe the organization, blood vessels, nerves and microanatomy of muscle fibers	Sarcolemma, Sarcoplasmic reticulum, T-tubule, Myofilament, Actin, Myosin	3.3.11.A-Explain the relationship between structure and function found among living things.
How do muscles create tension?	Organization of muscle tissue	Explain the Sliding Filament Theory and the neurological control of muscle tissue	Sarcomere	3.3.11.B-Analyze the chemical and structural basis of living organisms.
What are the major muscles of the human body?	Sliding filament theory	Discuss the variations between the different types of muscle performance	Sliding filament theory, Cross-bridge, Power stroke, Active site	3.1.12.A.5-Analyze how structure is related to function at all levels of biological organization from molecules to organisms.
	Muscle activation	Describe how varying resting lengths affect tension production	Neuromuscular junction, Presyaptic membrane, Motor end plate, Synaptic cleft, Acetylcholine, Acetylcholinesterase, Action potential	3.1.12.A.6-Analyze how cells in different tissues/organs are specialized to perform specific functions.
	Muscle contraction	Identify major muscles of the body and describe their actions at the joints	Tension production terms, Twitch, Treppe, Incomplete tetanus, Complete tetanus, Wave summation, Concentric contraction, Eccentric contraction	3.2.11.B-Evaluate experimental information for appropriateness and adherence to relevant science process.
	Electromyography	Use surface electrodes to record muscle activity	Muscles of the Body	
	Muscles of the human body			

Cardiovascular System

Essential Questions	Content	Knowledge and Skills	Vocabulary	Standards
How do the structures of the cardiovascular system help to maintain homeostasis in your body?	Heart Structure	Identify structures in the heart on various diagrams	Atrium, Ventricle, Aortic semilunar valve, Pulmonary semilunar valve, Tricuspid valve, Mitral valve, SA node, AV node, Perkinjie fibers, Aorta, Vena Cava, Pulmonary arteries, Pulmonary veins, Epicardium, Myocardium, Endocardium, Coronary arteries	3.3.12.A-Explain the relationship between structure and function at all levels of organization.

How is blood typing useful in today's society?	Blood flow through the heart	Use dissection skills to dissect a heart to identify structures and analyze how those structures help the heart perform its functions.	Electrocardiogram, Systole, Diastole, P wave, QRS complex, T wave, Tachycardia, Bradycardia, Stroke volume, Cardiac output	3.3.12.B-Analyze the chemical and structural basis of living organisms.
	Electrical activity of the heart	Take an EKG reading	Plasma, Formed elements, Hematocrit, Hemoglobin, Antigen, Antibody, Types of white blood cells, Platelets	3.1.12.A.1-Relate changes in the environment to various organisms' ability to compensate using homeostatic mechanisms.
	The heartbeat	Analyze an EKG for arrhythmias		3.1.12.A.6-Analyze how cells in different tissues/organs are specialized to perform specific functions.
	Cardiodynamics	Compare and contrast arteries and veins		
	Blood vessels	Identify the major blood vessels in the body		
	Blood Pressure	Use a sphygmomanometer and stethescope to take blood pressure		
	Blood	Perform blood typing on simulated blood		
	Blood Typing	Describe how blood typing is useful in today's society		

Immune System

Essential Questions	Content	Knowledge and Skills	Vocabulary	Standards
How does the immune system protect your body from invaders?	Components of the immune system	Describe the components of the immune system	Lymph, Lymph vessel, Lymph node, Spleen, Tonsils	3.1.12.A.1-Relate changes in the environment to various organisms' ability to compensate using homeostatic mechanisms.
	Functions of the immune system	Compare and contrast the types of specific and nonspecific defenses	Specific defense, Nonspecific defense, Immunity, Autoimmune disorder, Immunodeficiency disease, Allergies, Anaphylaxis	3.1.12.A.6-Analyze how cells in different tissues/organs are specialized to perform specific functions.
	The cells of the immune system	Compare and contrast the different types of immunity		
	Specific and nonspecific defenses	Compare and contrast autoimmune disorders, immunodeficiency diseases, and allergies		
	Immunity	Explain how anaphylaxis occurs		

	Types of immune disorders	Use culturing techniques to grow bacteria Analyze how infectious disease spreads through a population		

Respiratory System

Essential Questions	Content	Knowledge and Skills	Vocabulary	Standards
How do the structures of the respiratory function to maintain homeostasis?	Structures of the respiratory system	Identify structures of the respiratory sytem on various diagrams	Nasal cavity, pharynx, larynx, trachea, bronchi, bronchioles, alveolar ducts, alveoli, diaphragm	3.3.12.A-Explain the relationship between structure and function at all levels of organization.
	Functions of the respiratory system	Use dissecting skills to dissect a sheep pluck to anlyze how the respiratory system works with the cardiovascular system to maintain homeostasis.	Pulmonary ventilation, Alveolar ventilation, Tidal volume, Vital capacity	3.3.12.B-Analyze the chemical and structural basis of living organisms.
	Respiratory tract histology	Use knowledge of the gas laws to explain how air is inhaled and exhaled.	Dalton's Law, Boyle's Law, Henry's Law	3.1.12.A.1-Relate changes in the environment to various organisms' ability to compensate using homeostatic mechanisms.
	Pulmonary ventilation	Measure various lung capacities	Hemoglobin	3.1.12.A.6-Analyze how cells in different tissues/organs are specialized to perform specific functions.
	Gas exchange	Describe the role of diffusion in gas exchange in the lungs		
	Role of hemoglobin			

Digestive System

Essential Questions	Content	Knowledge and Skills	Vocabulary	Standards
What are the structures of the digestive system and what is their role in digestion?	Organs/structures of the digestive system.	Identify the structures of the digestive system from various visuals.	Anal sphincter, Anus, Cardiac sphincter, Cecum, Colon, Duodenum, Esophagus, Gall Bladder, Ileocecal valve, Ileum, Jejunum, Large Intestine, Liver, Oral Cavity, Panncreas, Pharynx, Pyloric sphincter, Rectum, Salivary glands, Small intestine, Stomach, Teeth, Tongue	3.3.12.A-Explain the relationship between structure and function at all levels of organization.
What role does diet and nutrition play in maintaining homeostasis in your body?	Enzymes of the digestive system	Test food for complex and simple carbs, proteins, and fats.	Bile, Brush border enzymes, Gastric lipase, Gastrin, Lingual lipase, Nuclease, Panncreatic alpha-amylase, Pancreatic lipase, Pepsin, Proteolytic enzymes, Rennin, Saliary amylase, Secretin	3.3.12.B-Analyze the chemical and structural basis of living organisms.
How does your body obtain energy from the food you eat?	Hormones involved in regulating digestion.	Analyze how the function of each digestive system structures helps to maintain homeostasis.	Defecation reflex, Gastroenteric reflex, Gastroileal reflex, Peristalsis, Cephalic phase, Gastric phase, Intestinal phase	3.1.12.A.1-Relate changes in the environment to various organisms' ability to compensate using homeostatic mechanisms.

	Mechanical vs chemical processing	Describe the journey of a piece of food as it makes its way from entering the body to exiting the body.	Bolus, Chyme	3.1.12.A.6-Analyze how cells in different tissues/organs are specialized to perform specific functions.
	Histology of the digestive tract. Reflexes associated with digestion Carbohydrate, lipid, protein metabolism Role of vitamins and minerals Energy in food		Catabolism, Anabolism, Metabolism, Basal metabolic Rate	

Gross Anatomy

Essential Questions	Content	Knowledge and Skills	Vocabulary	Standards
What is the general organization of the organ systems in your body?	Organ systems	Fetal pig dissection.	Nervous system organs	3.3.11.A-Explain the relationship between structure and function found among living things.
What is the general structure and function of the organs and systems of your body?	Body cavities	Use of fetal pig to identify body regions, cavities and organs.	Respiratory system organs	3.3.11.B-Analyze the chemical and structural basis of living organisms.
	General function(s) of major organs in the body.	Comparative anatomy between humans and the fetal pig. Describe the anatomy and physiology of the major organs and organ systems.	Digestive system organs Endocrine system organs Cardiovascular system organs Urinary system organs Reproductive system organs	3.1.12.A.5-Analyze how structure is related to function at all levels of biological organization from molecules to organisms. 3.1.12.A.6-Analyze how cells in different tissues/organs are specialized to perform specific functions.