

## Human Anatomy & Physiology

Unit 1: The Basis		
Chunk 1		
SC.O.HAP.2.1	<p>apply directional terminology to locate human body structures:</p> <ul style="list-style-type: none"> <li>• proximal</li> <li>• dorsal</li> <li>• medial</li> <li>• visceral</li> <li>• superficial</li> <li>• deep.</li> </ul>	
	<ul style="list-style-type: none"> <li>• Self-explanatory</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn definitions of all direction terminology</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Use directional terminology in description</li> </ul>	2
SC.O.HAP.2.2	<p>describe the organizational levels, interdependency and the interaction of</p> <ul style="list-style-type: none"> <li>• cells</li> <li>• tissues</li> <li>• organs</li> <li>• organ systems.</li> </ul>	
	<ul style="list-style-type: none"> <li>• Learn definitions of cells</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn definitions of tissues</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn definitions of organs</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn definitions of organ systems</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn organization levels</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn definitions of interdependency</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn definitions of interaction</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Describe interdependency</li> </ul>	2
	<ul style="list-style-type: none"> <li>• Describe interactions</li> </ul>	2
SC.O.HAP.1.2	<p>formulate scientific explanations based on historical observations and experimental evidence, accounting for variability in experimental results.</p>	

	<ul style="list-style-type: none"> <li>• Learn scientific method</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Use scientific method</li> </ul>	3
SC.O.P.1.5/SC.O.HAP.1.5	draw conclusions from a variety of data sources to analyze and interpret systems and models (e.g., use graphs and equations to measure and apply variables such as rate and scale, evaluate changes in trends and cycles, or predict the influence of external variances such as potential sources of error, or interpret maps).	
	<ul style="list-style-type: none"> <li>• Learn lab safety</li> </ul>	2
	<ul style="list-style-type: none"> <li>• Learn proper procedures for each lab material</li> </ul>	2
	<ul style="list-style-type: none"> <li>• Learn to handle live organisms</li> </ul>	2
	<ul style="list-style-type: none"> <li>• Learn to handle dissecting equipment</li> </ul>	2
	<ul style="list-style-type: none"> <li>• Learn to handle dissecting materials</li> </ul>	2
SC.O.P.1.6/SC.O.HAP.1.6	investigate, compare and design scientific and technological solutions to address personal and societal problems.	
	<ul style="list-style-type: none"> <li>• Solve problems</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Measure data</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Collect data</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Interpret data</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Analyze data</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Report data</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Present conclusions</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Communicate conclusions</li> </ul>	3
SC.O.P.1.7/SC.O.HAP.1.7	given current science-technology-societal issues, construct and defend potential solutions.	
	<ul style="list-style-type: none"> <li>• Design experiments</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Conduct experiments</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Evaluate experiments</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Revise experiments</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Compose a question to be investigate manipulate variables</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Design a controlled investigation</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Produce numeric data</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Evaluate the data</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Construct a conclusion</li> </ul>	3

	<ul style="list-style-type: none"> <li>Propose revisions to investigate</li> </ul>	3
	<ul style="list-style-type: none"> <li>Analyze errors</li> </ul>	3
	<ul style="list-style-type: none"> <li>Communicate results</li> </ul>	3
	<ul style="list-style-type: none"> <li>Defend results</li> </ul>	3
	<ul style="list-style-type: none"> <li>Defend conclusions</li> </ul>	3
SC.O.P.3.3/SC.O.HAP.3.3		
	<ul style="list-style-type: none"> <li>Communicate experimental designs</li> </ul>	3
	<ul style="list-style-type: none"> <li>Communicate results</li> </ul>	3
	<ul style="list-style-type: none"> <li>Communicate conclusions</li> </ul>	3
	<ul style="list-style-type: none"> <li>Learn what advanced/technology tools are</li> </ul>	2
	<ul style="list-style-type: none"> <li>Figure out how to obtain advanced technology tools for our classroom</li> </ul>	2
SC.O.P.3.4/SC.O.HAP.3.4		
	<ul style="list-style-type: none"> <li>Learn to collaborate</li> </ul>	4
	<ul style="list-style-type: none"> <li>Research current environmental issues</li> </ul>	3
	<ul style="list-style-type: none"> <li>Research current technological issues</li> </ul>	3
	<ul style="list-style-type: none"> <li>Learn to predict</li> </ul>	3
	<ul style="list-style-type: none"> <li>Present collaboration on current environmental issues</li> </ul>	3
	<ul style="list-style-type: none"> <li>Present collaboration on current technological issues</li> </ul>	3
	<ul style="list-style-type: none"> <li>Predict possible solutions collaboratively for environmental issues</li> </ul>	3
Unit 1: The Basis		
Chunk 2		
SC.O.HAP.2.3	<p>categorize, by structure and function, the various types of human tissue:</p> <ul style="list-style-type: none"> <li>muscle</li> <li>epithelial</li> <li>connective</li> <li>nervous.</li> </ul>	
	<ul style="list-style-type: none"> <li>Learn difference between structure and functions</li> </ul>	

	<ul style="list-style-type: none"> <li>• Learn properties of muscle tissue</li> </ul>	
	<ul style="list-style-type: none"> <li>• Learn properties of epithelial tissue</li> </ul>	
	<ul style="list-style-type: none"> <li>• Learn properties of connective tissue</li> </ul>	
	<ul style="list-style-type: none"> <li>• Learn properties of nervous tissue</li> </ul>	
	<ul style="list-style-type: none"> <li>• Learn different epithelial tissues</li> </ul>	
	<ul style="list-style-type: none"> <li>• identify microscopically different epithelial tissues</li> </ul>	
	<ul style="list-style-type: none"> <li>• Identify microscopically different connective tissues</li> </ul>	
	<ul style="list-style-type: none"> <li>• Identify microscopically different muscle tissues</li> </ul>	
SC.O.P.1.4/SC.O.HAP.1.4	design, conduct, evaluate and revise experiments (e.g., compose a question to be investigated, design a controlled investigation that produces numeric data, evaluate the data in the context of scientific laws and principles, construct a conclusion based on findings, propose revisions to investigations based on manipulation of variables and/or analysis of error, or communicate and defend the results and conclusions).	
	<ul style="list-style-type: none"> <li>• Conduct experiments</li> </ul>	
	<ul style="list-style-type: none"> <li>• Design investigation</li> </ul>	
	<ul style="list-style-type: none"> <li>• Establish research protocol</li> </ul>	
	<ul style="list-style-type: none"> <li>• Establish accurate record keeping</li> </ul>	
	<ul style="list-style-type: none"> <li>• Replicate results</li> </ul>	
	<ul style="list-style-type: none"> <li>• Do a peer review</li> </ul>	
	<ul style="list-style-type: none"> <li>• Be objective</li> </ul>	
	<ul style="list-style-type: none"> <li>• Be open</li> </ul>	
	<ul style="list-style-type: none"> <li>• Be skeptic</li> </ul>	
	<ul style="list-style-type: none"> <li>• Be fair</li> </ul>	
	<ul style="list-style-type: none"> <li>• Be creative</li> </ul>	
	<ul style="list-style-type: none"> <li>• Be logical</li> </ul>	
Unit 2: Moving Connections		
Chunk 1		
SC.O.HAP.2.4	design, conduct, evaluate and revise experiments (e.g., compose a question to be investigated, design a controlled investigation that produces numeric data, evaluate the data in the context of scientific laws and principles, construct a conclusion based on findings, propose revisions to investigations based on manipulation of variables and/or analysis of	

	error, or communicate and defend the results and conclusions).	
	• Learn layers of integument	1
	• Learn structures found in each layer of integument	1
	• Learn function of each structure found in different layers of integument	1
	• Relate sensory functions to structures	2
	• Relate immunity/barrier functions to structures	2
	• Relate temperature regulation to structures	2
SC.O.HAP.2.5	relate how bone tissue is important to the development of the human skeleton.	
	• Self explanatory	3
SC.O.P.1.3/SC.O.HAP.1.3	conduct and/or design investigations that incorporate the skills and attitudes and/or values of scientific inquiry (e.g., established research protocol, accurate record keeping, replication of results and peer review, objectivity, openness, skepticism, fairness, or creativity and logic).	
	• Learn meaning of society culture economy innovations	1
	• Read newspapers and relate	2
SC.O.P.3.2/SC.O.HAP.3.2		
	• Learn definition of investigate	1
	• Learn definition of comparison	1
	• Learn definition of science	1
	• Learn definition of technology	1
	• Learn difference between personal and societal problems	1
	• Investigate scientific solutions to address personal problems	3
	• Compare scientific solutions to address personal problems	3
	• Design scientific solutions to address personal problems	3
	• Investigate scientific solutions to address societal problems	3
	• Compare scientific solutions to address societal problems	3
	• Design scientific solutions to address societal problems	3
Unit 2: Moving Connections		
Chunk 2		
SC.O.HAP.2.6	correlate the structure and function of the elements of the skeletal system:	

	<ul style="list-style-type: none"> <li>• bone</li> <li>• articulations</li> <li>• insertions.</li> </ul>	
	• Learn and use vocabulary dealing with bone physiology	1
	• Identify disarticulated bones and articulated bones and processes and marking	2
	• Learn types of articulations	2
	• Classify articulations by structure and function	2
	• Correlate structural and functional and classification of articulations	3
SC.O.P.1.7/SC.O.HAP.1.7	given current science-technology-societal issues, construct and defend potential solutions.	
	• Design experiments	3
	• Conduct experiments	3
	• Evaluate experiments	3
	• Revise experiments	3
	• Composed a question be investigated manipulate variables	3
	• Design a controlled investigation	3
	• Produce numeric data	3
	• Evaluate the data	3
	• Construct a conclusion	3
	• Propose revisions to investigations	3
	• Analyze errors	3
	• Communicate results	3
	• Defend results	3
	• Defend conclusions	3
SC.O.P.3.5/SC.O.HAP.3.5		
	• Learn academic requirements for science profession	3
	• Learn academic requirements for engineering professions	3
	• Learn academic requirements for technology professions	3
	• Research types and amounts of jobs available	3
Unit 2: Moving Connections		

Chunk 3		
SC.O.HAP.2.7	model the mechanisms of muscular contraction on the cellular and molecular levels.	
	• Learn parts of muscle fibers	1
	• Learn structure and function of parts of muscle fibers	1
	• List steps of muscle fiber contraction	2
	• List levels of organization from sacromere through whole muscle	2
SC.O.HAP.2.8	integrate the skeletal, muscular and nervous systems to the functioning of the organism.	
	• Dissect chicken wing and use as example to id structures and functions	
	• Of skeletal, muscular, and nervous systems	
SC.O.HAP.2.9	model the muscular system including:	
	• locations	
	• origins	
	• insertions	
	• muscle groups	
	• types of muscles.	
	• Learn definitions of origins	1
	• Learn definitions of insertions	1
	• Identify muscles on models and on your on physical activities	1
	• Use different muscles groups in different	2
SC.O.HAP.1.8/SC.O.P.1.8	relate societal, cultural and economic issues to key scientific innovations.	
	• Draw conclusion	3
	• Use graphs	3
	• Use equations	3
	• Measure variable	3
	• Apply variables	3
	• Use rates	3
	• Use scales	3
	• Evaluate changes in trends and cycles	3
	• Predict the influence of external variances	3

	<ul style="list-style-type: none"> <li>Discover sources of error</li> </ul>	3
	<ul style="list-style-type: none"> <li>Interpret maps</li> </ul>	3
SC.O.P.3.1/SC.O.HAP.3.1		
	<ul style="list-style-type: none"> <li>Learn definition of synthesize</li> </ul>	1
	<ul style="list-style-type: none"> <li>Learn definition of concepts</li> </ul>	1
	<ul style="list-style-type: none"> <li>Learn definition of disciplines</li> </ul>	1
	<ul style="list-style-type: none"> <li>Learn definitions of natural world</li> </ul>	1
	<ul style="list-style-type: none"> <li>Find examples of form and function in natural world</li> </ul>	2
	<ul style="list-style-type: none"> <li>Find examples of systems and function in natural world</li> </ul>	2
	<ul style="list-style-type: none"> <li>Find examples of change over time in natural world</li> </ul>	2
	<ul style="list-style-type: none"> <li>Learn definitions of form</li> </ul>	1
	<ul style="list-style-type: none"> <li>Learn definitions of functions</li> </ul>	1
Unit 3: Communication		
Chunk 1		
SC.O.HAP.2.10	classify the various types of neurons emphasizing the relationship of structure and function.	
	<ul style="list-style-type: none"> <li>Learn different types of neurons</li> </ul>	1
	<ul style="list-style-type: none"> <li>Classify neurons based on structure</li> </ul>	1
	<ul style="list-style-type: none"> <li>Classify neurons based on function</li> </ul>	1
	<ul style="list-style-type: none"> <li>Relate the classifications of neurons based on structure and function</li> </ul>	2
SC.O.HAP.2.11	model the mechanism of a nerve impulse at the cellular and molecular levels.	
	<ul style="list-style-type: none"> <li>Demonstrate how a nerve impulse travels at cellular level from dendrite to axon</li> </ul>	2
	<ul style="list-style-type: none"> <li>Demonstrate knowledge of sodium-potassium pump</li> </ul>	2
	<ul style="list-style-type: none"> <li>Learn concepts of active transport</li> </ul>	1
	<ul style="list-style-type: none"> <li>Show chemical changes occurring during action</li> </ul>	2
	<ul style="list-style-type: none"> <li>Potential compare to resting potentials</li> </ul>	2
SC.O.HAP.2.12	compare and contrast the parts and functions of the central and peripheral nervous system including the autonomic portions.	
	<ul style="list-style-type: none"> <li>Learn definitions of compare and contrast</li> </ul>	1
	<ul style="list-style-type: none"> <li>Learn parts of central nervous system</li> </ul>	1

	<ul style="list-style-type: none"> <li>• Learn parts of peripheral nervous system</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn functions of CNS parts</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn functions of PNS parts</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Identify parts of the autonomic nervous systems</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Identify functions of the ANS</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Compare CNS to PNS (parts)</li> </ul>	2
	<ul style="list-style-type: none"> <li>• Contrast CNS to PNS (parts)</li> </ul>	2
	<ul style="list-style-type: none"> <li>• Compare CNS to PNS (functions)</li> </ul>	2
	<ul style="list-style-type: none"> <li>• Contrast CNS to PNS (functions)</li> </ul>	2
SC.O.P.3.6/SC.O.HAP.3.6		
	<ul style="list-style-type: none"> <li>• Construct solutions for STS issues</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Defend solutions for STS issues</li> </ul>	3
SC.O.P.1.1/SC.O.HAP.1.1	implement safe procedures and practices when manipulating equipment, materials, organisms, and models.	
	<ul style="list-style-type: none"> <li>• Formulate hypothesis</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Observe variability</li> </ul>	3
	<ul style="list-style-type: none"> <li>• Learn meanings of evidence and visibility</li> </ul>	1
SC.O.HAP.2.13	apply the structure of the ear and eye to their function/dysfunction in relation to environmental perception.	
	<ul style="list-style-type: none"> <li>• Identify structures of ear</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Identify structures of eye</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn functions of structures of ear</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn functions of structures of eye</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Related auditory function to environmental input</li> </ul>	2
	<ul style="list-style-type: none"> <li>• Relate optical function to environmental input</li> </ul>	2
SC.O.HAP.2.14	apply the action of specific enzymes to their roles in bodily functions.	
	<ul style="list-style-type: none"> <li>• Learn definitions of enzymes</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn how enzymes act</li> </ul>	2
	<ul style="list-style-type: none"> <li>• Give examples of specific enzymes for each organ system</li> </ul>	2
SC.O.HAP.2.15	incorporate the role of endocrine glands and their hormones into the overall functions and dysfunctions of the body.	

	<ul style="list-style-type: none"> <li>• Learn definitions of endocrine glands</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn definitions of hormone</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn production organ for each hormone</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn target tissues for each hormone</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn functions of each hormone</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Relate hormone action to overall functionality of each system</li> </ul>	2
Unit 3: Connections		
Chunk 4		
SC.O.HAP.2.18	<p>illustrate the structures of the circulatory and lymphatic systems and the function of blood to the role of:</p> <ul style="list-style-type: none"> <li>• transportation</li> <li>• cellular support</li> <li>• defense.</li> </ul>	
	<ul style="list-style-type: none"> <li>• Learn parts of circulatory system</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn function of parts of circulatory system</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn parts of lymphatic system</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn functions of part of lymphatic systems</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn functions of blood</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn parts of blood</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Demonstrate how blood transports materials</li> </ul>	2
SC.O.HAP.2.19	compare the compatibility of blood types and assess the molecular basis for blood functions.	
	<ul style="list-style-type: none"> <li>• Learn blood types</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn basics for classification of blood types</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Show reasons for no compatibility of blood types</li> </ul>	2
	<ul style="list-style-type: none"> <li>• Show antigen-antibody complex interactions</li> </ul>	2
SC.O.HAP.2.23	assess the role of components of the immune system in defending the body.	
	<ul style="list-style-type: none"> <li>• Learn parts of the immune system</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn functions of the parts of the immune system</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn how immune system helps integument to defend against foreign invaders</li> </ul>	2

SC.O.P.3.4/SC.O.HAP.3.4		
	<ul style="list-style-type: none"> <li>Learn to collaborate</li> </ul>	4
	<ul style="list-style-type: none"> <li>Research current environmental issues</li> </ul>	3
	<ul style="list-style-type: none"> <li>Research current technological issues</li> </ul>	3
	<ul style="list-style-type: none"> <li>Learn to predict</li> </ul>	3
	<ul style="list-style-type: none"> <li>Present collaboration on current environmental issues</li> </ul>	3
	<ul style="list-style-type: none"> <li>Present collaboration on current technological issues</li> </ul>	3
	<ul style="list-style-type: none"> <li>Predict possible solutions collaboratively for environmental issues</li> </ul>	3
	<ul style="list-style-type: none"> <li>Predict possible solutions collaboratively for technological solutions</li> </ul>	3
Unit 4: Regulation		
Chunk 1		
SC.O.HAP.2.16	analyze the role of components and processes of the digestive system in supplying essential nutrients.	
	<ul style="list-style-type: none"> <li>Learn parts of digestive system</li> </ul>	1
	<ul style="list-style-type: none"> <li>Learn function of parts of digestive system</li> </ul>	1
	<ul style="list-style-type: none"> <li>Analyze function of each part of digestive system</li> </ul>	2
SC.O.HAP.2.17	explain how structures of the respiratory system are essential to cellular respiration, gas exchange and communication.	
	<ul style="list-style-type: none"> <li>learn structures for respiratory system</li> </ul>	1
	<ul style="list-style-type: none"> <li>learn functions of structure of respiratory system</li> </ul>	1
	<ul style="list-style-type: none"> <li>Identify how functions affect cellular respirations</li> </ul>	2
	<ul style="list-style-type: none"> <li>Identify how functions affect gas exchange</li> </ul>	2
	<ul style="list-style-type: none"> <li>Identify how functions relate to communication</li> </ul>	2
SC.O.HAP.2.20	integrate the functions of the excretory system to the maintenance of the other body systems.	
	<ul style="list-style-type: none"> <li>Learn parts of excretory system</li> </ul>	1
	<ul style="list-style-type: none"> <li>Learn functions of part of excretory systems</li> </ul>	1
	<ul style="list-style-type: none"> <li>Relate how kidney affects other systems</li> </ul>	2
Unit 4: Regulation		
Chunk 2		

SC.O.HAP.2.22	outline the events of reproduction for the formation of gametes through fertilizations and embryological development.	
	<ul style="list-style-type: none"> <li>• Learn how sex makes babies</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn formation of ova</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn formation of sperm</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn stages of development</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn steps necessary for fertilization</li> </ul>	1
SC.O.HAP.2.21	compare and contrast the structure and function of male and female reproductive systems.	
	<ul style="list-style-type: none"> <li>• Learn male structures</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn female structures</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn functions of male structures</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn functions of female structures</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Integrate functions of female and male systems</li> </ul>	2
SC.O.HAP.2.2.4	design, conduct, evaluate and revise experiments (e.g., compose a question to be investigated, design a controlled investigation that produces numeric data, evaluate the data in the context of scientific laws and principles, construct a conclusion based on findings, propose revisions to investigations based on manipulation of variables and/or analysis of error, or communicate and defend the results and conclusions).	
	<ul style="list-style-type: none"> <li>• Learn types of pathogens</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn symptoms of homeostatic imbalance</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn disease treatment</li> </ul>	1
	<ul style="list-style-type: none"> <li>• Learn disease prevention</li> </ul>	1