

# Anatomy and Physiology (#2000350)

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## Course Standards

Click here for Resources	Description
<a href="#">SC.912.L.14.11:</a>	Classify and state the defining characteristics of epithelial tissue, connective tissue, muscle tissue, and nervous tissue.
<a href="#">SC.912.L.14.12:</a>	Describe the anatomy and histology of bone tissue.
<a href="#">SC.912.L.14.13:</a>	Distinguish between bones of the axial skeleton and the appendicular skeleton.
<a href="#">SC.912.L.14.14:</a>	Identify the major bones of the axial and appendicular skeleton.
<a href="#">SC.912.L.14.16:</a>	Describe the anatomy and histology, including ultrastructure, of muscle tissue.
<a href="#">SC.912.L.14.17:</a>	List the steps involved in the sliding filament of muscle contraction.
<a href="#">SC.912.L.14.18:</a>	Describe signal transmission across a myoneural junction.
<a href="#">SC.912.L.14.20:</a>	Identify the major muscles of the human on a model or diagram.  <b>Clarifications:</b> Refer to MAFS.K12.MP.4: Model with mathematics.
<a href="#">SC.912.L.14.21:</a>	Describe the anatomy, histology, and physiology of the central and peripheral nervous systems and name the major divisions of the nervous system.
<a href="#">SC.912.L.14.23:</a>	Identify the parts of a reflex arc.
<a href="#">SC.912.L.14.24:</a>	Identify the general parts of a synapse and describe the physiology of signal transmission across a synapse.
<a href="#">SC.912.L.14.25:</a>	Identify the major parts of a cross section through the spinal cord.
<a href="#">SC.912.L.14.26:</a>	Identify the major parts of the brain on diagrams or models.  <b>Clarifications:</b> Annually Assessed on Biology EOC. Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics.
<a href="#">SC.912.L.14.28:</a>	Identify the major functions of the spinal cord.
<a href="#">SC.912.L.14.29:</a>	Define the terms endocrine and exocrine.
<a href="#">SC.912.L.14.30:</a>	Compare endocrine and neural controls of physiology.
<a href="#">SC.912.L.14.32:</a>	Describe the anatomy and physiology of the endocrine system.
<a href="#">SC.912.L.14.33:</a>	Describe the basic anatomy and physiology of the reproductive system.
<a href="#">SC.912.L.14.34:</a>	Describe the composition and physiology of blood, including that of the plasma and the formed elements.
<a href="#">SC.912.L.14.35:</a>	Describe the steps in hemostasis, including the mechanism of coagulation. Include the basis for blood typing and transfusion reactions.
<a href="#">SC.912.L.14.36:</a>	Describe the factors affecting blood flow through the cardiovascular system.

<a href="#"><u>SC.912.L.14.38:</u></a>	Describe normal heart sounds and what they mean.
<a href="#"><u>SC.912.L.14.39:</u></a>	Describe hypertension and some of the factors that produce it.
<a href="#"><u>SC.912.L.14.41:</u></a>	Describe fetal circulation and changes that occur to the circulatory system at birth.
<a href="#"><u>SC.912.L.14.42:</u></a>	Describe the anatomy and the physiology of the lymph system.
<a href="#"><u>SC.912.L.14.44:</u></a>	Describe the physiology of the respiratory system including the mechanisms of ventilation, gas exchange, gas transport and the mechanisms that control the rate of ventilation.
<a href="#"><u>SC.912.L.14.46:</u></a>	Describe the physiology of the digestive system, including mechanical digestion, chemical digestion, absorption and the neural and hormonal mechanisms of control.
<a href="#"><u>SC.912.L.14.47:</u></a>	Describe the physiology of urine formation by the kidney.
<a href="#"><u>SC.912.L.14.49:</u></a>	Identify the major functions associated with the sympathetic and parasympathetic nervous systems.
<a href="#"><u>SC.912.L.14.50:</u></a>	Describe the structure of vertebrate sensory organs. Relate structure to function in vertebrate sensory systems.
<a href="#"><u>SC.912.L.14.51:</u></a>	Describe the function of the vertebrate integumentary system.
<a href="#"><u>SC.912.L.14.52:</u></a>	<p>Explain the basic functions of the human immune system, including specific and nonspecific immune response, vaccines, and antibiotics.</p> <p><b>Clarifications:</b></p> <p>Annually Assessed on Biology EOC. Also assesses SC.912.L.14.6; HE.912.C.1.7; and HE.912.C.1.5.</p>
<a href="#"><u>SC.912.L.16.8:</u></a>	<p>Explain the relationship between mutation, cell cycle, and uncontrolled cell growth potentially resulting in cancer.</p> <p><b>Clarifications:</b></p> <p>Integrate HE.912.C.1.7. Analyze how heredity and family history can impact personal health.</p>
<a href="#"><u>SC.912.L.18.1:</u></a>	<p>Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules.</p> <p><b>Clarifications:</b></p> <p>Annually assessed on Biology EOC. Also assesses SC.912.L.18.11.</p>
<a href="#"><u>SC.912.L.18.11:</u></a>	Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, and their effect on enzyme activity.
<a href="#"><u>SC.912.N.1.1:</u></a>	<p>Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following:</p> <ol style="list-style-type: none"> <li><b>Pose questions about the natural world,</b> (Articulate the purpose of the investigation and identify the relevant scientific concepts).</li> <li><b>Conduct systematic observations,</b> (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines).</li> <li><b>Examine books and other sources of information to see what is already known,</b></li> <li><b>Review what is known in light of empirical evidence,</b> (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models).</li> </ol>

	<ol style="list-style-type: none"> <li>5. <b>Plan investigations,</b> (Design and evaluate a scientific investigation).</li> <li>6. <b>Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),</b> (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage).</li> <li>7. <b>Pose answers, explanations, or descriptions of events,</b></li> <li>8. <b>Generate explanations that explicate or describe natural phenomena (inferences),</b></li> <li>9. <b>Use appropriate evidence and reasoning to justify these explanations to others,</b></li> <li>10. <b>Communicate results of scientific investigations, and</b></li> <li>11. <b>Evaluate the merits of the explanations produced by others.</b></li> </ol>
<p><b><u>SC.912.N.1.2:</u></b></p>	<p>Describe and explain what characterizes science and its methods.</p> <p><b>Clarifications:</b>  Science is characterized by empirical observations, testable questions, formation of hypotheses, and experimentation that results in stable and replicable results, logical reasoning, and coherent theoretical constructs.</p> <p>Florida Standards Connections: MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.</p>

## GENERAL NOTES

Laboratory investigations that include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course. The National Science Teachers Association (NSTA) recommends that at the high school level, all students should be in the science lab or field, collecting data every week. School laboratory investigations (labs) are defined by the National Research Council (NRC) as an experience in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC, 2006, p. 3). Laboratory investigations in the high school classroom should help all students develop a growing understanding of the complexity and ambiguity of empirical work, as well as the skills to calibrate and troubleshoot equipment used to make observations. Learners should understand measurement error; and have the skills to aggregate, interpret, and present the resulting data (National Research Council, 2006, p.77; NSTA, 2007).