

<p><b>Anatomy &amp; Physiology</b> Curriculum Map</p> <p><b>Unit 3</b> <b>Disease &amp; Survival</b> <b>Timeline: Quarter 3</b></p>	<p><b>Course Description:</b></p> <p>The purpose of this course is to help students gain a better understanding of their own bodies and the constant need to maintain balance in living things. Investigations and assessments will require students to apply their knowledge to real-world situations. Students will develop laboratory techniques, study skills, and presentation abilities that will help them in college and beyond.</p> <p><b>Length of Course:</b> One Year/Two Semesters</p>	
<p><b>Essential Questions</b></p>	<p><i>How are oxygen and nutrients delivered to all the cells of the body?</i> <i>How are respiratory and cardiovascular health assessed?</i></p>	
<p><b>Standards</b></p>	<p>Recognize that the body's systems interact to maintain homeostasis. Describe the basic function of a physiological feedback loop. (Standard 4.7)</p> <p>Compare and contrast a virus and a cell in terms of genetic material and reproduction. (Standard 2.8)</p> <p>Explain how the circulatory system (heart, arteries, veins, capillaries, red blood cells) transports nutrients and oxygen to cells and removes cell wastes. (Standard 4.2)</p> <p>Explain how the respiratory system (nose, pharynx, larynx, trachea, lungs, alveoli) provides exchange of oxygen and carbon dioxide. (Standard 4.3)</p>	
<p><b>Concepts and Skills</b></p>	<ul style="list-style-type: none"> <li>• Identify the components of blood and their functions.</li> <li>• Explain how the body protects itself from infections and heals after an injury.</li> <li>• Describe the path of oxygen through the respiratory system.</li> <li>• Relate the structures of the respiratory system to their functions.</li> <li>• Describe the path of blood through the cardiovascular system.</li> <li>• Relate the structures of the cardiovascular system to their functions.</li> <li>• Explain how heartrate, blood volume and pressure, and respiratory rate help the body maintain homeostasis.</li> </ul>	<p>SIS1. Make observations, raise questions, and formulate hypotheses. SIS2. Design and conduct scientific investigations. SIS3. Analyze and interpret results of scientific investigations. SIS4. Communicate and apply the results of scientific investigations</p> <p style="text-align: center;"><b>CCR Reading Standards</b></p> <ul style="list-style-type: none"> <li>• Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.</li> <li>• Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.</li> <li>• Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.</li> <li>• Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11-12 texts and topics</i>.</li> <li>• Analyze the structure of the relationships among concepts in a text, including relationships among key terms.</li> </ul>

		<ul style="list-style-type: none"> <li>Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.</li> <li>Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.</li> <li>Read and comprehend science/technical texts in the text complexity band independently and proficiently.</li> </ul> <p style="text-align: center;"><b>CCR Writing Standards</b></p> <p>CCWSL.4 Produce clear and coherent writing in which development, organization, and style are appropriate to task, purpose, and audience.</p> <p style="text-align: center;"><b>CCR Math Standards</b></p> <p>CCSS.Math.Content.7.SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.</p> <p>CCSS.Math.Content.7.SP.C.6 approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.</p> <p>CCSS.Math.Content.8.SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.</p> <ul style="list-style-type: none"> <li>CCSS.Math.Content.8.SP.A.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.</li> </ul>
<b>Content Objectives</b>	<ul style="list-style-type: none"> <li>Identify the functions of blood, including transportation, regulation, and protection.</li> <li>Describe the blood components in terms of structure and function.</li> <li>Contrast the four blood types in terms of structure and potential reactions with other types.</li> <li>Identify the factors that affect clotting and healing after an injury.</li> <li>Explain how the body utilizes physical barriers, temperature, lymph and white blood cells to respond to infections.</li> <li>Compare and contrast cellular and bodily respiration.</li> <li>Describe the role of each respiratory organ in the task of delivering oxygen to the blood.</li> <li>Describe the causes and symptoms of respiratory distress.</li> </ul>	

	<ul style="list-style-type: none"> <li>• Identify the structures and functions of the cardiovascular system.</li> <li>• Diagram the flow of blood through the blood vessels and heart chambers.</li> <li>• Explain how the conduction system of the heart results in the heartbeat.</li> <li>• Differentiate between arteries, veins, and capillaries.</li> <li>• Explain how respiratory and cardiovascular health are measured.</li> </ul>
<b>Assessments/ Products</b>	<ul style="list-style-type: none"> <li>• Students will demonstrate understanding of facts and concepts through tests and quizzes that ask them to apply their knowledge of the body to real-life situations.</li> <li>• Students will demonstrate their ability to use vocabulary correctly through laboratory reports, writing assignments, and class discussions.</li> <li>• Students will demonstrate their ability to use microscopes and dissection tools through extended laboratory investigations.</li> <li>• Students will demonstrate their ability to perform research and present it using technology through a case study of a patient.</li> </ul> <p><b>Notebooks:</b></p> <ul style="list-style-type: none"> <li>➤ <b>Content Notes (every day or close to it):</b> Students will identify topics; identify the main ideas and most important details and examples associated with each topic; include summaries as well as student-generated follow-up questions and answers, reflections, visualizations, and responses to the content, using higher order thinking skills (e.g., predict, connect, infer, analyze, evaluate, categorize, synthesize).</li> <li>➤ <b>Vocabulary:</b> Students will highlight additional, key vocabulary in their notebooks; they will build an understanding of the vocabulary using vocabulary-development exercises (e.g., word webs, Frayer Model), as well as use the vocabulary in their daily work and conversations.</li> <li>➤ <b>Narrative and Explanatory Essay (in response to one or more Essential and Guiding Questions)/Investigation Reports:</b> Student work will include evidence of planning: graphic organizers, brainstorming lists; editing of language, vocabulary, grammar, structure; organized and developed ideas utilizing precise and domain specific language; student sharing, student and teacher feedback, and revisions based on these conversations. Argumentative essays/investigation reports will include an explicit claim, scientific evidence in support of the claim (from reports, data, observations, etc.), and an explanation of how the evidence connects to and verifies the claim.</li> </ul>

**Texts, Materials, and Resources**

**Laboratory Investigations:**

Virtual [bacteriology laboratory](#).

Virtual [microbiology lab](#).

Virtual [sheep heart dissection](#).

**Websites:**

[Microbiology animations](#) (techniques, viruses, antibiotics)

[Animations](#) of bacterial motility, division, etc.

The [Immune System Game](#).

Animated video of the [Immune Response](#).

[Blood Groups](#) Interactive.

The [Blood Typing Game](#).

Review [the respiratory organs](#).

[Respiratory system](#) labeling interactive.

[Heart](#) labeling interactive.

Interactive "[Map](#)" of the [Human Heart](#).

Interactive [Cardiovascular Library](#).

**Videos:**

[Blood](#) (20:22) – older video but the information is accurate – comes with [resources](#) and [handouts](#).

[The Circulatory System](#) (23:00) with [resources](#).

[The Circulatory System](#) (24:41) – detailed, with lots of captions for note-taking.

[The Respiratory System](#) (23:00) with [resources](#).

[Investigation Human Biology](#): especially segments on Flu Virus (7:40), Circulatory System (9:30) and Respiration (7:49).

[The Human Condition/Heart Health](#) (29:18)

[Bleeding and Soft Tissue Injuries](#) (26:16) with [discussion guide](#).

[First Aid](#) and Disease Transmission (5:10), Respiratory Diseases (4:43) with [discussion guide](#).

[Health: When Sex, Race, and Location Matter](#) – segments on Asthma (8:08), Heart Disease (5:47) and HIV (7:15)

<p><b>Anatomy &amp; Physiology</b> Curriculum Map</p> <p><b>Unit 4</b> <b>Digestion &amp; Reproduction</b></p> <p><b>Timeline: Quarter 4</b></p>	<p><b>Course Description:</b></p> <p>The purpose of this course is to help students gain a better understanding of their own bodies and the constant need to maintain balance in living things. Investigations and assessments will require students to apply their knowledge to real-world situations. Students will develop laboratory techniques, study skills, and presentation abilities that will help them in college and beyond.</p> <p><b>Length of Course:</b> One Year/Two Semesters</p>	
<p><b>Essential Questions</b></p>	<p><i>Why food is so essential for life?</i></p> <p><i>How our body so efficiently is able to select nutrients from food and get rid of their residue?</i></p> <p><i>What would happen if your blood did not pass through the kidneys?</i></p> <p><i>Why is dialysis necessary for some people?</i></p>	
<p><b>Standards</b></p>	<p>4.1 Explain generally how the digestive system (mouth, pharynx, esophagus, stomach, small and large intestines, rectum) converts macromolecules from food into smaller molecules that can be used by cells for energy and for repair and growth</p> <p>4.2. Describe how the kidneys and the liver are closely associated with the circulatory system as they perform the excretory function of removing waste from the blood. Recognize that kidneys remove nitrogenous wastes, and the liver removes many toxic compounds from blood</p>	
<p><b>Concepts and Skills</b></p>	<ul style="list-style-type: none"> <li>• The digestive system is a long muscular tube in motion</li> <li>• It is through the digestive system that the body receives energy and raw materials.</li> <li>• The steps of the digestive process</li> <li>• The names and location of main and accessory organs of the digestive system</li> <li>• Role of enzymes in the digestive process</li> <li>• Kidneys are vital organs that contribute to homeostasis.</li> <li>• The lungs, the liver and the kidneys are involved in the exchange of materials with blood.</li> <li>• Without the kidneys our bodies will be full of cellular waste products</li> </ul>	<p>SIS1. Make observations, raise questions, and formulate hypotheses.</p> <p>SIS2. Design and conduct scientific investigations.</p> <p>SIS3. Analyze and interpret results of scientific investigations.</p> <p>SIS4. Communicate and apply the results of scientific investigations.</p> <p style="text-align: center;"><b>CCR Reading Standards</b></p> <p>CCRSL.2 Determine the central ideas or conclusions of a text; trace the text’s explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.</p> <p>CCRSL.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.</p> <p style="text-align: center;"><b>CCR Writing Standards</b></p> <p>CCWSL.4 Produce clear and coherent writing in which development, organization, and style are appropriate to task, purpose, and audience.</p> <p style="text-align: center;"><b>CCR Math Standards</b></p> <p>CCSS.Math.Content.7.SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.</p> <p>CCSS.Math.Content.7.SP.C.6 approximate the probability of a chance event by collecting data on</p>

	<ul style="list-style-type: none"> <li>Metabolic wastes are removed from the body through the formation and excretion of urine.</li> </ul>	<p>the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.</p> <p>CCSS.Math.Content.8.SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.</p> <p>CCSS.Math.Content.8.SP.A.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.</p>
<p><b>Content Objectives</b></p>	<ul style="list-style-type: none"> <li><i>Identify components in the oral cavity</i></li> <li><i>Contrast chemical digestion and mechanical digestion</i></li> <li><i>Describe each functions of accessory organs and main organs of the digestive system</i></li> <li><i>Compare and contrast chemical digestion in the mouth and the stomach</i></li> <li><i>Identify all organs in the alimentary canal and describe their functions</i></li> <li><i>Create a simple digestive system model</i></li> <li><i>Identify the digestive enzymes</i></li> <li><i>Create a digestive enzymes chart (organ- enzyme-substrate)</i></li> <li><i>Analyze and interpret results of scientific investigations</i></li> <li><i>Identify the nutrition content found in different food using nutrient indicators</i></li> <li>Describe the anatomy of the kidneys</li> <li>Identify and describe the functions for each of the major organs of the urinary system</li> <li>State several ways that the kidneys contribute to homeostasis</li> <li>Predict which substances will normally be in the urine and explain</li> <li>Explain how are the metabolic wastes removed from the body</li> <li>Trace the path of urine in the male and female</li> <li>Create a kidney filtration model</li> <li>Predict how kidney damage affect the body</li> </ul>	
<p><b>Assessments/ Products</b></p>	<p>Inquiry Lab: Let's Diagnose Them – Digestive By-Products and Body Mass Index Analysis</p> <p>Inquiry Lab: Yeast Cells and Digestion of Nutrients</p> <p>Inquiry Lab: Modeling the Digestive System</p> <p>A Sweet Indigestion: A Directed Case Study on Carbohydrates – Activity</p> <p>Quick Lab: Kidney Filtration Model</p> <p>Inquiry Lab: Let's Diagnose Them – Urinalysis</p> <p>Stolen Kidneys Activity</p> <p><b>Notebooks:</b></p>	

	<p>Content Notes (every day or close to it): Students will identify topics; identify the main ideas and most important details and examples associated with each topic; include summaries as well as student-generated follow-up questions and answers, reflections, visualizations, and responses to the content, using higher order thinking skills (e.g., predict, connect, infer, analyze, evaluate, categorize, synthesize).</p> <p><b>Vocabulary:</b> Students will highlight additional, key vocabulary in their notebooks; they will build an understanding of the vocabulary using vocabulary-development exercises (e.g., word webs, Frayer Model), as well as use the vocabulary in their daily work and conversations.</p> <p><b>Narrative and Explanatory Essay</b> (in response to one or more Essential and Guiding Questions)/Investigation Reports: Student work will include evidence of planning: graphic organizers, brainstorming lists; editing of language, vocabulary, grammar, structure; organized and developed ideas utilizing precise and domain specific language; student sharing, student and teacher feedback, and revisions based on these conversations. Argumentative essays/investigation reports will include an explicit claim, scientific evidence in support of the claim (from reports, data, observations, etc.), and an explanation of how the evidence connects to and verifies the claim.</p> <p><b>Other Sample Products:</b> KWL Charts. Venn Diagrams, Concept Maps, H.O.T. Boxes.</p>
<p><b>Texts, Materials, and Resources</b></p>	<p><i>Holt Biology</i>  <i>Anatomy and Physiology for Health Professional Textbook</i>  <i>Laying the Foundation – NMS Initiative</i>  <a href="http://www.anatomycorner.com">www.anatomycorner.com</a>  <a href="http://www.haspi.org/curriculum-anatomy-physiology.html">http://www.haspi.org/curriculum-anatomy-physiology.html</a>  <i>Diagnosis for Classroom Success – Making Anatomy and Physiology Come Alive</i>  <a href="http://www.biologycorner.com">www.biologycorner.com</a></p>