

<b>DEPARTMENT: SCIENCE</b>	<b>COURSE TITLE: BIOLOGY</b> <b>COURSE NUMBER: 222</b>
<b>GRADE(S): 10</b>	<b>PRE-REQUISITES (IF ANY): NONE</b>

<b>UNIT</b>	<b>LENGTH</b>	<b>CONTENT</b>	<b>SKILLS</b>	<b>METHODS OF ASSESSMENT</b>	<b>FRAMEWORK STRAND(S) &amp; STANDARD(S)</b>
Introduction	20 days	<ul style="list-style-type: none"> <li>• Definition of life</li> <li>• Microscopy</li> <li>• Measurement</li> <li>• Descriptive chemistry</li> </ul>	Students will: <ul style="list-style-type: none"> <li>• Formulate and write a clear definition of life based on observation and discussion</li> <li>• Understand proper care and use of microscopes and microscope techniques</li> <li>• Use metric system to measure length in macro and micro worlds</li> <li>• Construct and interpret chemical formulas and models.</li> </ul>	<ul style="list-style-type: none"> <li>• Unit exam</li> <li>• Microscope labs</li> <li>• Enzyme lab</li> <li>• Daily homework</li> <li>• Notebook</li> <li>• Essay</li> <li>• Molecular model building</li> </ul>	Inquiry LS 1,6,7,9  Domains LS 4, 11, 16, 17
The Cell	25 days	<ul style="list-style-type: none"> <li>• Cell theory</li> <li>• Eukaryotic versus prokaryotic cells</li> <li>• Cell organelles</li> <li>• Plants and animals</li> <li>• Membranes</li> <li>• Transport</li> </ul>	Students will: <ul style="list-style-type: none"> <li>• Demonstrate understanding of use of microscopes and techniques.</li> <li>• Measuring correctly.</li> <li>• Make volume and surface area calculations</li> <li>• Identify organelles.</li> <li>• Make drawings.</li> <li>• Gather, organize, and interpret data.</li> </ul>	<ul style="list-style-type: none"> <li>• Unit exam</li> <li>• Microscope labs: cell types, size comparison lab, diffusion rate lab, osmosis lab</li> <li>• Daily homework</li> <li>• Notebook</li> </ul>	Inquiry LS 1, 2, 6, 7, 9  Domains LS 1, 2, 3, 4, 7, 17
Digestion	20 days	<ul style="list-style-type: none"> <li>• Multicellular organization</li> <li>• Nutrients</li> <li>• Mechanical versus chemical digestion</li> <li>• Human digestion</li> </ul>	Students will: <ul style="list-style-type: none"> <li>• Measure/calculate number of cells in human body.</li> <li>• Use correct dissection techniques.</li> <li>• Do extensive essay writing.</li> <li>• Conduct literature research on digestive system and comparative systems.</li> </ul>	<ul style="list-style-type: none"> <li>• Unit exam</li> <li>• Notebook</li> <li>• Earthworm dissection</li> <li>• Problem solving take home exercise</li> <li>• Booklet</li> <li>• Daily homework</li> </ul>	Inquiry LS 1, 2, 7, 8, 9, 10 Domains LS 1, 2, 3, 4, 17
Circulation, Respiration, and Excretion	20 days	<ul style="list-style-type: none"> <li>• Function of a circulatory system</li> <li>• Parts and functions of human circulatory system</li> <li>• Blood, its components and function</li> <li>• Function of a respiratory system</li> </ul>	Students will: <ul style="list-style-type: none"> <li>• Demonstrate correct microscope use.</li> <li>• Perform measurement and calculation.</li> </ul>	<ul style="list-style-type: none"> <li>• Unit exam</li> <li>• Notebook</li> <li>• Daily homework</li> <li>• Circulation lab</li> <li>• Respiration lab</li> </ul>	Inquiry LS 6, 7, 8, 9, 11 Domains LS 1, 2, 3, 17

		<ul style="list-style-type: none"> <li>• Parts and functions of the human respiratory system</li> <li>• Function of an excretory system</li> <li>• Parts and functions of the human excretory system</li> </ul>	<ul style="list-style-type: none"> <li>• Process data.</li> <li>• Construct graphs.</li> </ul>	<ul style="list-style-type: none"> <li>• Microscope lab (lung and kidney)</li> </ul>	
Ecology	20 days	<ul style="list-style-type: none"> <li>• Photosynthesis and respiration</li> <li>• ATP</li> <li>• Food webs</li> <li>• Components of the Biosphere</li> </ul>	<p>Students will:</p> <ul style="list-style-type: none"> <li>• Interpret chemical equations.</li> <li>• Analyze trophic levels and construct food webs.</li> <li>• Calculate energy flow through ecosystems.</li> </ul>	<ul style="list-style-type: none"> <li>• Unit exam</li> <li>• Daily homework</li> <li>• Field experience</li> <li>• Construction of food web</li> <li>• Labs: photosynthesis and solar energy, cell respiration</li> </ul>	<p>Inquiry</p> <p>LS 1, 2, 6, 7, 8, 9, 11</p> <p>Domains</p> <p>LS 14, 15, 16, 17</p>
Evolution and Classification	15 days	<ul style="list-style-type: none"> <li>• Spontaneous generation</li> <li>• Scientific method</li> <li>• Definition of species and evolution</li> <li>• Evidence for evolution</li> <li>• Natural selection</li> <li>• Taxonomy</li> </ul>	<p>Students will:</p> <ul style="list-style-type: none"> <li>• Use the scientific method including interpretation of experimental results. Interpret evidence.</li> <li>• Distinguish Darwinian and Lamarckian evolution.</li> <li>• Construct graphs.</li> <li>• Construct dichotomous keys.</li> <li>• Demonstrate understanding of the logic of classification.</li> </ul>	<ul style="list-style-type: none"> <li>• Unit exam</li> <li>• Notebook</li> <li>• Daily homework</li> <li>• Written key</li> <li>• Oral presentation</li> </ul>	<p>Inquiry</p> <p>LS</p> <p>Domains</p> <p>LS</p>
Reproduction	20 days	<ul style="list-style-type: none"> <li>• Mitosis</li> <li>• Meiosis</li> <li>• Gametogenesis</li> <li>• Fertilization</li> <li>• Human reproductive organs</li> <li>• Development</li> <li>• Frog dissection</li> </ul>	<p>Students will:</p> <ul style="list-style-type: none"> <li>• Use microscopes correctly.</li> <li>• Extrapolate data from observed specimens.</li> <li>• Understand genetic (chromosomal) continuity of life.</li> <li>• Use correct dissection techniques.</li> <li>• Draw from specimens.</li> </ul>	<ul style="list-style-type: none"> <li>• Unit exam</li> <li>• Daily homework</li> <li>• Notebook</li> <li>• Labs: mitotic figures</li> <li>• Extensive dissection lab</li> </ul>	<p>Inquiry</p> <p>LS 1,7</p> <p>Domains</p> <p>LS 1,2,4,7,8,9,12</p>
Introduction to Genetics	25 days	<ul style="list-style-type: none"> <li>• Traits</li> <li>• Heredity</li> <li>• Mendelian Genetics</li> <li>• Dyhybrid cross</li> <li>• Incomplete dominance</li> <li>• Codominance</li> <li>• Multiple alleles</li> <li>• Sex linkage</li> </ul>	<p>Students will:</p> <ul style="list-style-type: none"> <li>• Analyze Punnett squares probability.</li> <li>• Predict offspring of crosses.</li> <li>• Perform calculations using ratios.</li> <li>• Develop and use a general genetics vocabulary.</li> <li>• Understand genetics laws (independent assortment, segregation).</li> </ul>	<ul style="list-style-type: none"> <li>• Unit exam</li> <li>• Daily homework</li> <li>• Notebook</li> <li>• Multiple problem solving sessions</li> <li>• Human face lab</li> </ul>	<p>Inquiry</p> <p>LS 1,2,7,11</p> <p>Domains</p> <p>LS</p> <p>1,7,8,9,10,12,13</p>

			<ul style="list-style-type: none"> <li>Construct a human face from multiple independent traits.</li> </ul>		
Modern Genetics	15 days	<ul style="list-style-type: none"> <li>DNA and RNA</li> <li>Replication</li> <li>Transcription</li> <li>Translation</li> <li>Mutation</li> <li>Evolution</li> </ul>	<p>Students will:</p> <ul style="list-style-type: none"> <li>Analyze structure of DNA and RNA.</li> <li>Build models.</li> <li>Demonstrate familiarity with the genetic code.</li> <li>Understand protein synthesis.</li> <li>Understand mutation as source of variation acted upon by natural selection.</li> <li>Understand DNA and the flow of life.</li> </ul>	<ul style="list-style-type: none"> <li>Unit exam</li> <li>Daily homework</li> <li>Illustration</li> <li>Modeling labs</li> </ul>	<p>Inquiry LS 7 Domains LS 1,2,4,5,6,7,8,9, 10, 11</p>