

**FIRST QUARTER TOPICS:**

1. Introduction to Biology
2. Chemistry
3. Cell Structure & Function
4. Biochemistry
5. Digestive System

Topic	INTRODUCTION TO BIOLOGY	
MA Standards	<ul style="list-style-type: none"> <li>▶ <a href="#">Scientific Inquiry Skills 1-4</a></li> <li>▶ <a href="#">Mathematical Skills</a></li> </ul>	
Concepts	<ul style="list-style-type: none"> <li>▶ THEMES OF BIOLOGY</li> <li>▶ CHARACTERISTICS OF LIFE</li> <li>▶ SCIENTIFIC METHOD LAB SAFETY</li> </ul>	<ul style="list-style-type: none"> <li>▶ SI MEASUREMENT</li> <li>▶ USE OF MICROSCOPE</li> </ul>
Essential Questions	<ul style="list-style-type: none"> <li>▶ What do biologists study?</li> <li>▶ What are the necessary characteristics of life?</li> <li>▶ What are the themes of biology?</li> </ul>	
Performance Objectives	<p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>List</b> six unifying themes of biology.</li> <li><input type="checkbox"/> <b>Explain</b> how organisms get the energy they need to survive.</li> <li><input type="checkbox"/> <b>Describe</b> the main difference between the structure of a living thing and that of a nonliving thing.</li> <li><input type="checkbox"/> <b>List</b> six characteristics of life</li> <li><input type="checkbox"/> Describe the hierarchy in nature from atoms <input type="checkbox"/> biome</li> <li><input type="checkbox"/> Define and give examples of observing, measuring, organizing, and analyzing data, inferring, and modeling.</li> <li><input type="checkbox"/> Explain the relationship between hypothesizing, predicting, and experimenting.</li> <li><input type="checkbox"/> Compare light microscopes with electron microscopes in terms of magnification and resolution.</li> <li><input type="checkbox"/> Explain the advantages of the Système International d'Unités.</li> </ul> <p>*Modified from <i>Modern Biology</i>(2002)</p>	
Resources	<p><b>Textbook:</b> <i>Modern Biology</i>(2002)</p> <p><a href="#">Scientific Method Graphic Organizer</a></p> <p><b>Reading:</b> Chapter 1: <i>The Science of Life</i></p>	
Lecture Notes	<p><a href="#">Study of Life Notes-Massengale</a></p> <p><a href="#">Identifying Controls and Variables</a></p> <p><a href="#">Chapter 1 Powerpoint</a></p> <p><a href="#">The Levels of Organization.</a></p>	
Labs/Activities	<ul style="list-style-type: none"> <li>▶ A2: Comparing living and nonliving things</li> <li>▶ Characteristics of Life Concept Map-GROUCH</li> <li>▶ Lab C1: Microscope</li> <li>▶ Safety Contract and Quiz</li> <li>▶ <a href="#">SI Measurement Lab</a></li> <li>▶ <a href="#">Characteristics of Life Concept Map</a></li> <li>▶ <a href="#">Identifying Controls and Variables</a></li> </ul>	<ul style="list-style-type: none"> <li>▶ <a href="#">The Language of Science</a></li> <li>▶ <a href="#">Parts of the Microscope</a></li> <li>▶ <a href="#">Microscope Lab</a></li> <li>▶ <a href="#">Metric Measurement Lab</a></li> <li>▶ <a href="#">Making Inferences</a></li> <li>▶ <a href="#">The Martian and the Car</a></li> </ul>
Homework	<ul style="list-style-type: none"> <li><input type="checkbox"/> Sections Review Questions</li> <li><input type="checkbox"/> Vocabulary</li> <li><input type="checkbox"/> Chapter Review Questions</li> <li><input type="checkbox"/> <a href="#">Directed Reading Questions</a></li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Study Guide Worksheets</li> <li><a href="#">1-1 Worksheet</a></li> <li><a href="#">1-2 Worksheet</a></li> <li><a href="#">1-3 Worksheet</a></li> <li><a href="#">1-4 Worksheet</a></li> </ul>
Assessment	<ul style="list-style-type: none"> <li><input type="checkbox"/> Chapter 1 Test</li> <li><input type="checkbox"/> Exam Pro Test Questions</li> <li><input type="checkbox"/> Lab Safety Pretest</li> <li><input type="checkbox"/> Lab Practical on Lab Safety and Equipment</li> </ul>	



<b>Topic</b>	<b>CHEMISTRY</b>
<b>MA Standards</b>	<b>The Chemistry of Life</b> <b>1.1: BASIC CHEMISTRY</b> <ul style="list-style-type: none"> <li>▶ Recognize that biological organisms are composed primarily of very few elements.</li> <li>▶ The six most common are C, H, N, O, P, S.</li> </ul> <b>SIS1-2</b>
<b>Concept</b>	<b>Chemical elements form organic molecules that interact to perform the basic functions of life</b>
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>▶ How do elements combine to form organic molecules?</li> <li>▶ Why are organic molecules the chemistry of life?</li> <li>▶ How is all life affected by chemical reactions?</li> </ul>
<b>Performance Objectives</b>	<b>Students will be able to:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Define</b> <i>element, atom, compound, and molecule.</i></li> <li><input type="checkbox"/> <b>Explain</b> models of the atomic structure of the six most common elements-C, H, O, N, P, and S, found in living organisms.</li> <li><input type="checkbox"/> <b>Explain</b> what determines an atom's stability.</li> <li><input type="checkbox"/> <b>Contrast</b> ionic and covalent bonds.</li> <li><input type="checkbox"/> <b>Define</b> reaction and be able to identify reactants and products in a chemical equation.</li> <li><input type="checkbox"/> <b>Describe</b> how energy changes are involved in chemical reactions. (activation energy)</li> <li><input type="checkbox"/> <b>Explain</b> how enzymes affect chemical reactions in organisms.</li> <li><input type="checkbox"/> <b>Define</b> <i>solution, solute, solvent, and concentration.</i></li> <li><input type="checkbox"/> <b>Understand</b> the role of pH and buffers in living things.</li> </ul>
<b>Resources</b>	<b>Textbook:</b> <i>Modern Biology(2002)</i> <b>Reading:</b> Chapter 2-Chemistry
<b>Lecture Notes</b>	<ul style="list-style-type: none"> <li>▶ <a href="#">Chapter 2 Notes.</a></li> <li>▶ <a href="#">Chemistry PPT</a></li> <li>▶ <a href="#">Periodic Table of Elements.</a></li> </ul>
<b>Labs/Activities</b>	<ul style="list-style-type: none"> <li>▶ Making Models</li> <li>▶ Lab: Solutions</li> <li>▶ Lab: ph</li> <li>▶ Adopt an Element</li> <li>▶ Giant Periodic Table</li> </ul>
<b>Homework</b>	<ul style="list-style-type: none"> <li>▶ Sections Review 2-1-3</li> <li>▶ Study Guide Worksheets</li> <li>▶ <a href="#">2-1 Worksheet</a></li> <li>▶ <a href="#">2-2 Worksheet</a></li> <li>▶ <a href="#">2-3 Worksheet</a></li> <li>▶ Chapter Review Questions</li> </ul>
<b>Assessment</b>	<ul style="list-style-type: none"> <li>▶ <b>Warm-ups:</b> <i>help to check for prior knowledge or understanding of previous day's lesson</i></li> <li>▶ Chapter 2 Test</li> <li>▶ Exam Pro Test Questions</li> <li>▶ Lab reports</li> <li>▶ Lab rubric</li> <li>▶ Homework Rubric</li> <li>▶ School Wide Rubric</li> </ul>



Topic	BIOCHEMISTRY
MA Standards	<b>1.2 ORGANIC MOLECULES</b> Describe the basic molecular structures and primary functions of the four major categories of organic molecules: <ul style="list-style-type: none"> <li>▶ carbohydrates</li> <li>▶ lipids</li> <li>▶ proteins</li> <li>▶ nucleic acids</li> </ul>
Concepts	<b>Chemical elements form organic molecules that interact to perform the basic functions of life</b>
Essential Questions	<ul style="list-style-type: none"> <li>▶ Why is carbon an important element to all living organisms</li> <li>▶ How are organic molecules and their structure the basis of living organisms</li> </ul>
Performance Objectives	<b>Students will be able to:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Describe</b> the polar nature of water and how this property of water affects its ability to dissolve substances.</li> <li><input type="checkbox"/> <b>Define</b> <i>organic compounds</i> and name six elements often found in organic compounds.</li> <li><input type="checkbox"/> <b>Explain</b> why carbon forms so many different compounds.</li> <li><input type="checkbox"/> Give <b>examples</b> of and <b>describe</b> the basic molecular structure and function of:               <ul style="list-style-type: none"> <li>• carbohydrates</li> <li>• lipids</li> <li>• proteins</li> <li>• nucleic acids</li> </ul> </li> <li><input type="checkbox"/> Explain how different processes need a constant supply</li> </ul>
Resources	<b>Textbook:</b> <i>Modern Biology(2002)</i> <b>Reading:</b> Chapter 3-Biochemistry
Lecture Notes	<a href="#">PPT: Properties of Water</a> <a href="#">Carbon Compounds PPT</a> <a href="#">Carbohydrates PPT</a> <a href="#">Proteins PPT</a> <a href="#">Lipids PPT</a> <a href="#">Nucleic Acids PPT</a>
Labs/Activities	<ul style="list-style-type: none"> <li>▶ Organic Molecules Concept Map</li> <li>▶ Food Chemistry</li> <li>▶ Constructing Organic Molecules</li> <li>Collins Brainstorm</li> </ul>
Homework	<ul style="list-style-type: none"> <li><input type="checkbox"/> Keywords</li> <li><input type="checkbox"/> Section Reviews: 1-3</li> <li><input type="checkbox"/> Chapter Review Questions</li> <li><input type="checkbox"/> <a href="#">3-1 Worksheet</a></li> <li><input type="checkbox"/> <a href="#">3-2 Worksheet</a></li> <li><input type="checkbox"/> <a href="#">3-3 Worksheet</a></li> </ul>
Assessment	<ul style="list-style-type: none"> <li><input type="checkbox"/> Collins: Organic Molecules</li> <li><input type="checkbox"/> Chapter 4 Test</li> <li><input type="checkbox"/> Exam Pro Test Questions with Essays &amp; Problems</li> <li><input type="checkbox"/> Lab reports</li> <li><input type="checkbox"/> Lab rubric</li> <li><input type="checkbox"/> Homework Rubric</li> <li><input type="checkbox"/> School Wide Rubric</li> </ul>



<b>Topic</b>	<b>ANATOMY &amp; PHYSIOLOGY: DIGESTIVE SYSTEM</b>	
<b>MA Standards</b>	<b>Anatomy and physiology</b> <b>4.1 Digestive System</b> <ul style="list-style-type: none"> <li>▶ 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.</li> </ul>	
<b>Concepts</b>	<ul style="list-style-type: none"> <li>▶ Central Concepts: There is a relationship between the organization of cells into tissues and the organization of tissues into organs. The structures and functions of organs determine their relationships within body systems of an organism. Homeostasis allows the body to perform its normal functions.</li> </ul>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>▶ How does the digestive system break down food into organic molecules and provide energy for living organisms</li> </ul>	
<b>Performance Objectives</b>	<b>Students will be able to:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> List the major organs of the digestive system</li> <li><input type="checkbox"/> Relate the structure of each organ with its function in mechanical digestion</li> <li><input type="checkbox"/> Identify the source of each major digestive enzyme, and describe the function of the enzyme</li> <li><input type="checkbox"/> Summarize the process of absorption in both the small and large intestine</li> </ul>	
<b>Resources</b>	<i>Modern Biology</i> ( 2002) Reading chapter 49-1,2	
<b>Lecture Notes</b>	Digestive PPT	
<b>Labs/Activities</b>	<ul style="list-style-type: none"> <li>▶ <a href="#">Digestive Travel Brochure</a></li> <li>▶ <a href="#">McMush Lab</a></li> </ul>	<ul style="list-style-type: none"> <li>▶ <a href="#">Food Chemistry</a></li> <li>▶ <a href="#">Digestive System Webquest</a></li> </ul>
<b>Homework</b>	<ul style="list-style-type: none"> <li>▶ Section Reviews</li> <li>▶ Keywords</li> <li>▶ Chapter Review</li> </ul>	
<b>Assessment</b>		



Topic	<b>CELL STRUCTURE &amp; FUNCTION</b>	
<b>MA Standards</b>	<ul style="list-style-type: none"> <li>▶ <b>2.1: CELL ORGANELLES</b> <ul style="list-style-type: none"> <li>▶ <u>Relate cell parts/organelles</u> –(plasma membrane, nuclear envelope, nucleus, nucleolus, cytoplasm, mitochondrion, endoplasmic reticulum, Golgi apparatus, lysosome, ribosome, vacuole, cell wall, chloroplast, cytoskeleton, centriole, cilium, flagellum, pseudopod) <u>to their functions.</u></li> <li>▶ Explain the role of cell membranes as a highly selective barrier (diffusion, osmosis, facilitated diffusion, and active transport).</li> </ul> </li> <li>▶ <b>2.2: PROKARYOTES/EUKARYOTES</b> <ul style="list-style-type: none"> <li>▶ Compare and contrast, at the cellular level, prokaryotes and eukaryotes (general structures and degrees of complexity).</li> </ul> </li> </ul>	
<b>Concept</b>	<b>Cells have specific structures and functions that make them distinctive. Processes in a cell can be classified broadly as growth, maintenance, and reproduction</b>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>▶ Why are cells considered the basic unit of structure of life?</li> <li>▶ How does life at the cellular level affect life at levels further up in the hierarchy of life?</li> </ul>	
<b>Performance Objectives</b>	<p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>State</b> the cell theory.</li> <li><input type="checkbox"/> <b>Describe</b> the relationship between cell shape and cell function.</li> <li><input type="checkbox"/> <b>Distinguish</b> between prokaryotes and eukaryotes.</li> <li><input type="checkbox"/> <b>Describe</b> the structure, composition, and function of the cell membrane.</li> <li><input type="checkbox"/> <b>Name</b> the major organelles found in a eukaryotic cell, and describe their structure functions.</li> <li><input type="checkbox"/> <b>Explain</b> how chloroplasts and mitochondria are related.</li> <li><input type="checkbox"/> <b>Describe</b> additional three structures characteristic of plant cells.</li> <li><input type="checkbox"/> <b>Distinguish</b> between tissues, organs, and organ systems.</li> </ul>	
<b>Resources</b>	<p><b>Textbook:</b> <i>Modern Biology</i>(2002)</p> <p><b>Reading:</b> Chapter 4: Structure and Function of the Cell</p>	
<b>Lecture Notes</b>	<p><a href="#">Chapter 4: The Cell Notes</a></p> <p><a href="#">Cells Alive WEBSITE</a></p> <p><a href="#">Amazing Cell Video</a></p>	<p><a href="#">Cell Overview PPT</a></p> <p><a href="#">Tour of The Cell PPT</a></p>
<b>Labs/Activities</b>	<ul style="list-style-type: none"> <li>▶ Cell Web Quest GO</li> <li>▶ Cell Analogy Project</li> <li>▶ Cell Analogy Collage</li> </ul>	<ul style="list-style-type: none"> <li>▶ Cell Model</li> <li>▶ Lab: Observing Specialized Cells</li> </ul>
<b>Homework</b>	<ul style="list-style-type: none"> <li>▶ Sections Review 4-1-2</li> <li>▶ Chapter Review Questions</li> <li>▶ Keywords</li> </ul>	<ul style="list-style-type: none"> <li>▶ Study Guide Worksheets</li> <li>▶ <a href="#">4-1 Worksheet</a></li> <li>▶ <a href="#">4-2 Worksheet</a></li> </ul>
<b>Assessment</b>	<ul style="list-style-type: none"> <li>▶ <b>Warm-ups:</b> <i>help to check for prior knowledge or understanding of previous day's lesson</i></li> <li>▶ <b>Collins:</b> Comparing and Contrasting Prokaryotic and Eukaryotic Cells</li> <li>▶ <b>Collins:</b> Comparing and Contrasting Plant and Animal Cells</li> <li>▶ <b>Collins:</b> Compare and Contrast 2 cell organelles</li> </ul>	<ul style="list-style-type: none"> <li>▶ Lab reports</li> <li>▶ Lab rubric</li> <li>▶ Homework Rubric</li> <li>▶ School Wide Rubric</li> <li>▶ Chapter 4 Test</li> <li>▶ Exam Pro Test Questions</li> </ul>



<b>Topic</b>	<b>CELL TRANSPORT</b>	
<b>MA Standards</b>	<ul style="list-style-type: none"> <li>▶ <b>2.1: CELL TRANSPORT</b> <ul style="list-style-type: none"> <li>▶ Explain the role of cell membranes as a highly selective barrier (diffusion, osmosis, facilitated diffusion, and active transport).</li> </ul> </li> </ul>	
<b>Concepts</b>	<b>Cells have specific structures and functions that make them distinctive. Processes in a cell can be classified broadly as growth, maintenance, and reproduction</b>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>▶ How is the structure of the cell membrane related to its function?</li> <li>▶ Explain two important functions of the cell membrane</li> </ul>	
<b>Performance Objectives</b>	<p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Explain</b> how equilibrium is established as a result of diffusion</li> <li><input type="checkbox"/> <b>Distinguish</b> between diffusion and osmosis</li> <li><input type="checkbox"/> <b>Explain</b> how substances cross the cell membrane through facilitated diffusion.</li> <li><input type="checkbox"/> <b>Explain</b> how ion channels assist the diffusion of ions across the cell membrane.</li> <li><input type="checkbox"/> <b>Distinguish</b> between passive and active transport.</li> <li><input type="checkbox"/> <b>Describe</b> the sodium-potassium pump.</li> <li><input type="checkbox"/> <b>Compare</b> and contrast endocytosis and exocytosis.</li> <li><input type="checkbox"/> <b>List</b> types of active and passive transport with examples.</li> </ul>	
<b>Resources</b>	<p><b>Textbook:</b> <i>Modern Biology (2002)</i>  <b>Reading:</b> Chapter 5: Homeostasis and Transport</p>	
<b>Lecture Notes</b>	<p><a href="#">Homeostatis and Cell Transport Notes</a>  <a href="#">Cell Membranes and Transport PPT</a>  <a href="#">Osmosis and Diffusion Notes</a></p>	
<b>Labs/Activities</b>	<p>Lab: Diffusion and Osmosis</p>	▶
<b>Homework</b>	<ul style="list-style-type: none"> <li>▶ Read Chapter 5</li> <li>▶ Section Review Questions</li> <li>▶ Keywords</li> </ul>	<ul style="list-style-type: none"> <li>▶ <a href="#">5.1 Worksheet</a></li> <li>▶ <a href="#">5.2 Worksheet</a></li> <li>▶ <a href="#">Transport Graphic Organizer</a></li> </ul>
<b>Assessment</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Collins: Diffusion and Osmosis Lab Report</li> <li><input type="checkbox"/> Chapter 5 Test</li> <li><input type="checkbox"/> Exam Pro Test Questions</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Lab rubric</li> <li><input type="checkbox"/> Homework Rubric</li> <li><input type="checkbox"/> School Wide Rubric</li> <li><input type="checkbox"/> Lab reports</li> </ul>



<b>Topic</b>	ANATOMY & PHYSIOLOGY: CIRCULATORY AND RESPIRATORY SYSTEM	
<b>MA Standards</b>	<p><b>4.2 Circulatory system</b></p> <ul style="list-style-type: none"> <li>▶ Explain how the circulatory system heart, arteries, veins, capillaries, red blood cells transports nutrients and oxygen to cells and removes wastes.</li> </ul> <p><b>4.3 Respiratory system</b></p> <ul style="list-style-type: none"> <li>▶ Explain how the respiratory system (nose, pharynx, larynx, trachea, lungs, alveoli) provides exchange of oxygen and carbon dioxide</li> </ul>	
<b>Concepts</b>	<ul style="list-style-type: none"> <li>▶ <b>Broad Concept:</b> There is a relationship between the organization of cells into tissues, and tissues into organs. The structure and function of organs determine their relationships within body systems of an organism. Homeostasis allows the body to perform its normal functions.</li> </ul>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>▶ Explain how the circulatory and respiratory systems work together to provide necessary substance to maintain homeostasis</li> </ul>	
<b>Performance Objectives</b>	<p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Describe</b> the structure and function of the human heart.</li> <li><input type="checkbox"/> <b>Trace</b> the flow of blood through the heart and body</li> <li><input type="checkbox"/> <b>Distinguish</b> between arteries, veins, and capillaries in terms of their structure and function.</li> <li><input type="checkbox"/> <b>Distinguish</b> between pulmonary circulation and systemic circulation</li> <li><input type="checkbox"/> <b>List</b> the components of blood</li> <li><input type="checkbox"/> <b>Distinguish</b> between the types of blood cells in terms of their structure and function.</li> <li><input type="checkbox"/> <b>Trace</b> the passage of air from the environment to the bloodstream.</li> <li><input type="checkbox"/> <b>Describe</b> how gases are exchanged in the lungs</li> <li><input type="checkbox"/> <b>Contrast</b> the ways that oxygen and carbon dioxide are transported in the bloodstream</li> <li><input type="checkbox"/> <b>Summarize</b> the skeletal and muscular changes that occur during breathing.</li> </ul>	
<b>Resources</b>	<p><b>Textbook:</b> Modern Biology (2002)</p> <p><b>Reading:</b> Ch 47: Circulatory and Respiratory system</p>	
<b>Lecture Notes</b>	<a href="#">Chapter 46 PPT</a>	
<b>Labs/Activities</b>	▶ <a href="#">Breathing Rate Lab</a>	▶ <a href="#">Circulatory Webquest</a>
<b>Homework</b>	Read Chapter 47 <a href="#">SG 47.1</a> <a href="#">SG 47.2</a>	<a href="#">SG 47.3</a> <a href="#">Vocab Skills Worksheet</a>
<b>Assessment</b>	Collins: Circulatory System Circulatory Assessment Respiratory Assessment	



<b>Topic</b>	<b>PHOTOSYNTHESIS</b>	
<b>MA Standards</b>	<b>2.4 PHOTOSYNTHESIS</b> <ul style="list-style-type: none"> <li>▶ Identify the reactants, products, and basic purposes of photosynthesis and cellular respiration.</li> <li>▶ Explain the interrelated nature of photosynthesis and cellular respiration in the cells of photosynthetic organisms.</li> </ul>	
<b>Concepts</b>	<b>Cells have specific structures and functions that make them distinctive. Processes in a cell can be classified broadly as growth, maintenance, and reproduction</b>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>▶ Why is photosynthesis a process that is essential to all life.</li> <li>▶ How is the sun's energy converted into organic molecules</li> </ul>	
<b>Performance Objectives</b>	<b>Students will be able to:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Explain the purpose of photosynthesis.</li> <li><input type="checkbox"/> Identify the reactants and products of photosynthesis.</li> <li><input type="checkbox"/> Explain the role of the chloroplast in photosynthesis.</li> <li><input type="checkbox"/> Describe the role of chlorophylls and other pigments in photosynthesis.</li> <li><input type="checkbox"/> *Explain how environmental factors influence photosynthesis.</li> </ul> *optional	
<b>Resources</b>	<i>Modern Biology (2002)</i> <b>Reading:</b> Chapter 6: Photosynthesis	
<b>Lecture Notes:</b>	<ul style="list-style-type: none"> <li>▶ <a href="#">Photosynthesis notes from Web</a></li> <li>▶ <a href="#">Photosynthesis PPT</a></li> <li>▶ <a href="#">Photosynthesis Overview</a></li> </ul>	<ul style="list-style-type: none"> <li>▶ <a href="#">Photosynthesis Worksheet</a></li> <li>▶ <a href="#">Campbell Photosynthesis PPT</a></li> <li>▶ <a href="#">Prentice Hall Photosynthesis Tutorial</a></li> </ul>
<b>Labs/Activities</b>	Lab: MB Chromatography Photosynthesis Colorings Photosynthesis Cards	
<b>Homework</b>	<ul style="list-style-type: none"> <li>• Sections Reviews 6-1-2</li> <li>• Chapter Review Questions</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">6-1 Worksheet</a></li> <li>• <a href="#">6-2 Worksheet</a></li> </ul>
<b>Assessment</b>	Chapter 6 Assessment /MCAS Questions	Exam Pro Questions

<b>Topic</b>	<b>CELL RESPIRATION</b>	
<b>MA Standards</b>	<b>2.4 RESPIRATION</b> <ul style="list-style-type: none"> <li>▶ Identify the reactants, products, and basic purposes of photosynthesis and cellular respiration.</li> <li>▶ Explain the interrelated nature of photosynthesis and cellular respiration in the cells of photosynthetic organisms.</li> </ul>	
<b>Concepts</b>	<b>Cells have specific structures and functions that make them distinctive. Processes in a cell can be classified broadly as growth, maintenance, and reproduction</b>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>▶ Explain the importance of how cell respiration produces energy for living organisms.</li> <li>▶ Explain why photosynthesis and cell respiration are considered biochemical pathways</li> </ul>	
<b>Performance Objectives</b>	<b>Students will be able to:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Explain the purpose of cellular respiration</li> <li><input type="checkbox"/> List the reactants and products of cellular respiration.</li> <li><input type="checkbox"/> Describe the major events in glycolysis and where it occurs.</li> <li><input type="checkbox"/> Distinguish between aerobic and anaerobic respiration.</li> <li><input type="checkbox"/> Identify the role of mitochondria in aerobic respiration.</li> <li><input type="checkbox"/> Compare and contrast photosynthesis and cellular respiration</li> <li><input type="checkbox"/> Explain that the products of photosynthesis become the reactants of cellular respiration. – Biochemical pathways.</li> </ul>	
<b>Resources</b>	<i>Modern Biology (2002)</i> <b>Reading:</b> Chapter 7: Cell Respiration	
<b>Lecture Notes:</b>	<ul style="list-style-type: none"> <li>▶ <a href="#">Cell Respiration Notes from Web</a></li> <li>▶ <a href="#">BiologyZone Cell Respiration PPT</a></li> </ul>	<ul style="list-style-type: none"> <li>▶ <a href="#">PH Cell Respiration Concepts</a></li> <li>▶ <a href="#">Cell Respiration Worksheet</a></li> </ul>
<b>Labs/Activities</b>	<ul style="list-style-type: none"> <li>• Lab: MB Chromatography</li> <li>• Photosynthesis Colorings</li> <li>• Photosynthesis Cards</li> </ul>	
<b>Homework</b>	<ul style="list-style-type: none"> <li>• Sections Reviews -7-1-2</li> <li>• <a href="#">7-1 Worksheet</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">7-2 Worksheet</a></li> <li>• Chapter Review Questions</li> </ul>
<b>Assessment</b>	Chapter 7 Assessment /MCAS Questions	Exam Pro Questions





Topic	STRUCTURE OF DNA AND RNA; PROTEIN SYNTHESIS	
<b>MA Standards</b>	<p><b>1. STRUCTURE OF DNA &amp; RNA</b></p> <ul style="list-style-type: none"> <li>▶ Describe the basic structure (double helix, sugar/phosphate backbone, linked by complementary nucleotide pairs) of DNA</li> <li>▶ Describe its function in genetic inheritance</li> </ul> <p><b>2. REPLICATION, TRANSCRIPTION AND TRANSLATION</b></p> <ul style="list-style-type: none"> <li>▶ Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic code.</li> <li>▶ Explain the basic processes of transcription and translation, and how they result in the expression of genes.</li> <li>▶ Distinguish among the end products of replication, transcription, and translation.</li> </ul>	
<b>Concepts</b>	<ul style="list-style-type: none"> <li>▶ Broad Concept: Genes allow for the storage and transmission of genetic information. They are a set of instructions encoded in the nucleotide sequence of each organism. Genes code for the specific sequences of amino acids that comprise the proteins that are characteristic of that organism.</li> </ul>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>▶ How is the structure of DNA related to its function of storing genetic information and controlling the activities of the cell</li> <li>▶ What is RNA's role in protein synthesis</li> </ul>	
<b>Performance Objectives</b>	<p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Explain</b> the principal function of DNA.</li> <li><input type="checkbox"/> <b>Describe</b> the structure of DNA: <ul style="list-style-type: none"> <li>• double helix</li> <li>• sugar/phosphate backbone</li> <li>• complementary nucleotide pairs</li> </ul> </li> <li><input type="checkbox"/> <b>Explain</b> the role of complementary base pairing in the replication of DNA.</li> <li><input type="checkbox"/> <b>Explain</b> the main process of DNA replication.</li> <li><input type="checkbox"/> <b>Explain</b> the primary function of RNA.</li> <li><input type="checkbox"/> <b>Compare</b> the structure of RNA with that of DNA.</li> <li><input type="checkbox"/> <b>Describe</b> the structure and function of each type of RNA.</li> <li><input type="checkbox"/> <b>Explain</b> the process of transcription.</li> <li><input type="checkbox"/> <b>Describe</b> the genetic code.</li> <li><input type="checkbox"/> <b>Explain</b> the roles of the start codon and stop codon.</li> <li><input type="checkbox"/> <b>Explain</b> the process of translation.</li> </ul>	
<b>Resources</b>	<p>Modern Biology (2002)  Reading: Chapter 10: Nucleic Acids and Protein Synthesis</p>	
<b>Lecture Notes</b>	<p><a href="#">Genetics Notes (Massengale)</a>  <a href="#">Mendel's Genetics PPT</a></p>	
<b>Labs/Activities</b>	<p><a href="#">Lab: Genetic Traits</a>  <b>MB Labs C12, 13,14; E5</b></p>	<ul style="list-style-type: none"> <li>▶ <a href="#">Modeling Genetics: Paper Pets</a></li> <li>▶ <a href="#">Quick Lab p.173 (2002)</a></li> </ul>
<b>Homework</b>	<p>Sections Reviews  Vocabulary  Chapter Review Questions</p>	<p><a href="#">Study Guide Worksheets</a>  <a href="#">10-1 Worksheet</a>  <a href="#">10-2 Worksheet</a></p>
<b>Assessment</b>	<ul style="list-style-type: none"> <li>▶ Collins: Compare and Contrast DNA and RNA</li> <li>▶ Chapter 10 Test</li> <li>▶ Exam Pro Test Questions</li> <li>▶ Lab reports</li> </ul>	<ul style="list-style-type: none"> <li>▶ Lab rubric</li> <li>▶ Homework Rubric</li> <li>▶ School Wide Rubric</li> </ul>



<b>Topic</b>	<b>EVOLUTION-HISTORY OF LIFE</b>	
<b>MA Standards</b>	<b>5. Evolution and Biodiversity</b> <b>Broad Concept:</b> Evolution is the result of genetic changes that occur in constantly changing environments. Over many generations, changes in the genetic make-up of populations may affect biodiversity through speciation and extinction.	
<b>Concepts</b>	<ul style="list-style-type: none"> <li>▶ Origin of life</li> <li>▶ First Cells-Prokaryotes</li> </ul>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>▶ How do scientists give evidence for the origin of life?</li> <li>▶ What is the best theory for the formation of life's first organisms?</li> </ul>	
<b>Performance Objectives</b>	<b>Students will be able to:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Define</b> <i>spontaneous generation</i> and list some of the observations that led people to think that life could arise from nonliving things.</li> <li><input type="checkbox"/> <b>Define</b> <i>biogenesis</i></li> <li><input type="checkbox"/> <b>Briefly describe</b> the modern scientific understanding of the formation of Earth.</li> <li><input type="checkbox"/> <b>Explain</b> the relationship between chloroplasts and mitochondria.</li> <li><input type="checkbox"/> <b>Define</b> <i>endosymbiosis</i>, and explain why it is important in the history of eukaryotes</li> </ul>	
<b>Resources</b>	<i>Modern Biology(2002)</i> <b>Reading:</b> Chapter 14: Origin of Life Sections 14-1 &14-2 PP. 270 & 272	
<b>Lecture Notes</b>	<a href="#">Origin of Life PPT</a> <a href="#">Myths About Evolution</a> <a href="#">Origin of Life-Chapter 14</a>	
<b>Labs/Activities</b>	MB: Making Microspheres PBS Video: <b>Origins I &amp; II</b>	
<b>Homework</b>	Sections Reviews Vocabulary Chapter Review Questions	Study Guide Worksheets <a href="#">14-1 Worksheet</a> <a href="#">14-2 Worksheet</a>
<b>Assessment</b>	<b>Collins:</b> Compare Spallanzani, Redi's and Pasteur's Theories Chapter 14 Test Exam Pro Test Questions Lab reports	Lab rubric Homework Rubric LEHS School Wide Rubric



Topic	EVOLUTION AND BIODIVERSITY	
MA Standards	<b>5.1: EVIDENCE FOR EVOLUTION</b> ▶ Explain how evolution is demonstrated by evidence from the fossil record, comparative anatomy, genetics, molecular biology, and examples of natural selection	
Concepts	▶ Natural Selection ▶ Descent with Modification	
Essential Questions	▶ How does the environment influence “survival of the fittest”? ▶ How has Darwin’s theories of evolution changed scientific thought on the diversity of life?	
Performance Objectives	<b>Students will be able to:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Define</b> <i>fossil</i>, and tell how the examination of fossils led to the development of evolutionary theories.</li> <li><input type="checkbox"/> Using the law of superposition <b>explain</b> how biogeographic observations suggest descent with modification</li> <li><input type="checkbox"/> <b>Define</b> <i>evolution</i>.</li> <li><input type="checkbox"/> <b>List</b> some of the evidence that led Darwin to his idea of how species might change over time.</li> <li><input type="checkbox"/> <b>Explain</b> Darwin’s two major theories.</li> <li><input type="checkbox"/> <b>Describe</b> the difference between homologous, analogous, and vestigial structures.</li> <li><input type="checkbox"/> <b>Tell</b> how similarities in macromolecules and embryos of different species provide evidence for evolution.</li> <li><input type="checkbox"/> <b>Describe</b> the four pieces of evidence for evolution.</li> <li><input type="checkbox"/> <b>Explain</b> the difference between coevolution, and divergent and convergent evolution</li> </ul>	
Resources	<i>Modern Biology(2002)</i> <b>Reading:</b> Chapter 15: Evolution Evidence and Theory	
Lecture Notes	<a href="#">Evolution Notes-Massengale</a> <a href="#">Biology Zone Evolution PPT</a> <a href="#">PBS Evolution Videos</a> Chapter 15 PPT <a href="#">Evolution PPT</a>	
Labs/Activities	MB Lab: A9, A11 MB: B8 Fossil Study	Lab: Natural Selection Collins Brainstorm
Homework	Sections Reviews Vocabulary Chapter Review Questions	Study Guide Worksheets <a href="#">15-1 Worksheet</a> <a href="#">15-2 Worksheet</a> <a href="#">15-3 Worksheet</a>
Assessment	<a href="#">Collins: Comparing Darwin and Lamarck</a> Chapter 15 Test Exam Pro Test Questions	Lab rubric Homework Rubric School Wide Rubric



<b>Topic</b>	<b>CLASSIFICATION: BACTERIA</b>	
<b>MA Standards</b>	<p><b>5.2: Evolution and Diversity</b></p> <ul style="list-style-type: none"> <li>▶ Describe species as reproductively distinct groups of organisms.</li> <li>▶ Recognize that species are further classified into a hierarchical taxonomic system (kingdom, phylum, class, order, family, genus, species) based on morphological, behavioral, and molecular similarities.</li> </ul> <p><b>2.3: CELLULAR EVIDENCE FOR 6 KINGDOMS</b></p> <ul style="list-style-type: none"> <li>▶ Use cellular evidence (such as cell structure, cell number, and cell reproduction) and modes of nutrition to describe six kingdoms</li> </ul> <p><b>2.8:</b> Compare and contrast a virus and a cell in terms of genetic material and reproduction</p>	
<b>Concepts</b>	▶ Bacteria	
<b>Essential Questions</b>	▶ Compare and contrast similarities and differences of viruses and bacteria	
<b>Performance Objectives</b>	<p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Define</b> <i>bacteria</i>, <i>eubacteria</i>, and <i>archaebacteria</i>, and note the relationships between them.</li> <li><input type="checkbox"/> <b>Describe</b> the methods used to classify bacteria.</li> <li><input type="checkbox"/> <b>Describe</b> the significance of cyanobacteria in the formation of the Earth's present atmosphere.</li> <li><input type="checkbox"/> <b>Describe</b> the structure of a bacterial cell.</li> <li><input type="checkbox"/> <b>Compare</b> the heterotrophic modes of nutrition in bacteria with the autotrophic modes.</li> <li><input type="checkbox"/> <b>Specify</b> how antibiotic resistance has come about, and describe ways that bacteria resist antibiotics.</li> <li><input type="checkbox"/> <b>Describe</b> bacteria reproduction in the forms of binary fission and conjugation.</li> </ul>	
<b>Resources</b>	<p><i>Modern Biology(2002)</i></p> <p><b>Reading:</b> Chapter 24: Bacteria</p>	
<b>Lecture Notes</b>	<p><a href="#">Bacteria Notes</a></p> <p><a href="#">Bacteria PPT</a></p>	
<b>Labs/Activities</b>	<a href="#">Bacteria Cultures</a>	
<b>Homework</b>	<p>Sections Reviews</p> <p>Vocabulary</p> <p>Chapter Review Questions</p>	<p>Study Guide Worksheets</p> <p><a href="#">24-1 Worksheet</a></p> <p><a href="#">24-2 Worksheet</a></p> <p><a href="#">24-3 Worksheet</a></p>
<b>Assessment</b>	<p>Chapter 24 Test</p> <p>Collins: C/C Bacteria and Viruses</p> <p>Exam Pro Test Questions</p> <p>Lab Report</p> <p>Lab Rubric</p>	<p><a href="#">Collins: Is It Alive?</a></p> <p>Collins: C/C Harmful and Helpful Bacteria</p> <p>Homework Rubric</p> <p>School Wide Rubric</p>