<table>
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<th>Week</th>
<th>Marking Period 1</th>
<th>Week</th>
<th>Marking Period 3</th>
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<tr>
<td>1</td>
<td>What is Biology? Safety Techniques. Scientific Processes. Characteristics of Life.</td>
<td>9</td>
<td>Cell Specialization &amp; Homeostasis</td>
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<tr>
<td>2</td>
<td>Matter &amp; Energy Transformations in Ecosystems</td>
<td>10</td>
<td>DNA &amp; Inheritance</td>
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<td>DNA &amp; Inheritance</td>
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<td>Interdependent Relationships in Ecosystem</td>
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<td>Marking Period 2</td>
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<td>Marking Period 4</td>
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<tr>
<td>5</td>
<td>Human Activity &amp; Climate</td>
<td>13</td>
<td>Natural Selection</td>
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<tr>
<td>6</td>
<td>Human Activity &amp; Biodiversity</td>
<td>14</td>
<td>Evolution</td>
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<td>7</td>
<td>Biochemistry</td>
<td>15</td>
<td>Evolution</td>
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<tr>
<td>8</td>
<td>Cell Specialization &amp; Homeostasis with a focus on structure and function</td>
<td>16</td>
<td>Cell Specialization &amp; Homeostasis with a focus on Human Body Systems</td>
</tr>
</tbody>
</table>
### Time Frame
2 Weeks

### Topic
Intro to Biology

### Essential Questions
- What is biology?
- What are the characteristics of life?
- What are scientific processes?
- What is the importance of laboratory safety?
- What is the proper care and procedures for use of a microscope?

### Enduring Understandings

### Alignment to NGSS
- HS-LS1-2

### Key Concepts and Skills
- Distinguish between characteristics of life.
- Interpret scientific investigations using scientific practices.
- Relate science to current events
- Demonstrate proper and safe lab techniques.
- Demonstrate proper use and care of a microscope

### Learning Activities
- Scientific Method – Dish Soap and the Environment
- Microscope – care and use
- Exercise and Pulse Rate
- Tums Lab

### Assessments
- Topic worksheets
- Quizzes and Tests
- Observation Assessment/Lab Activities
- Projects/Performing Assessment

### 21st Century Skills
- Creativity
- Critical Thinking
- Communication
- Collaboration
- Life and Career Skills
- Information Literacy
- Media Literacy

### Interdisciplinary Connections
- Math: Calculate Heart Rate and Graph
- Language Arts: Short answer questions

### Technology Integration
- Elmo Incorporation
- DVD/VHS/Disc Demonstration
- YouTube Content Shorts
- Each Student has Access to Their Own Chromebook
- Google Drive / Classroom
- Lecture/Discussions/Lab
- All Laboratory Equipment is Technology
<table>
<thead>
<tr>
<th><strong>Time Frame</strong></th>
<th>3 Weeks</th>
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</table>

**Topic**
Matter & Energy Transformation in Ecosystems

**Essential Questions**
- What are the various trophic levels in an ecosystem?
- How does matter cycle through an ecosystem?
- What happens to energy in an ecosystem?
- Relate a food chain to a food web?
- What would happen if an organism was removed from a food web?

**Enduring Understandings**

**Alignment to NGSS**
- HS-LS1-5
- HS-LS1-6
- HS-LS1-7
- HS-LS2-3
- HS-LS2-4
- HS-LS2-5

**Key Concepts and Skills**
- Create a food web
- Identify trophic levels in a food web
- Diagram and explain the process of photosynthesis

**Learning Activities**
- Building a food web
- Photosynthesis Lab

**Assessments**
- Topic worksheets
- Quizzes and Tests
- Observation Assessment/Lab Activities
- Projects/Performing Assessment

**21st Century Skills**

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**Interdisciplinary Connections**
- Math: Calculating simple equations
- Social Studies: All Lecture/Discussions Require the Historical Development of the Specific Topic Being Studied.
- Language Arts: There is a writing component to each unit in the form of lab reports. Additionally, each test includes an essay section.

**Technology Integration**
- Data Projector
- Elmo Incorporation
- YouTube Content Shorts
- Each Student has Access to Their Own Chromebook
- Google Drive / Classroom
### Time Frame
3 Weeks

### Topic
Interdependent Relationships in Ecosystems

### Essential Questions
- What are abiotic and biotic factors?
- What affects organisms interactions with each other
- How does community and ecosystem homeostasis dependent on a complex set of interactions among biologically-diverse individuals?
- What are limiting factors and how do they affect organisms in the biosphere?

### Enduring Understandings
**Alignment to NGSS**
- HS-LS2-1
- HS-LS2-2
- HS-LS2-6

### Key Concepts and Skills
- Identify cause and effect of natural and human caused fluctuations in populations
- Demonstrate and provide evidence of limiting factors for various organisms.
- Evaluate the claims that interactions amongst organisms in ecosystems account for changes in conditions resulting in a new ecosystem (ex. succession)

### Learning Activities
- Identifying relationships
- Cycles of matter
- Change in population of frogs
- Succession in Mt. St. Helen

### Assessments
- Topic worksheets
- Quizzes and Tests
- Lab Activities
- Projects/Performing Assessment

### 21st Century Skills

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<tr>
<th>X</th>
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### Interdisciplinary Connections
- Math: Calculate population changes
- Social Studies: All Lecture/Discussions Require the Historical Development of the Specific Topic Being Studied.
- Language Arts: There is a writing component to each unit

### Technology Integration
- Elmo Incorporation
- YouTube Content Shorts
- Each Student has Access to Their Own Chromebook
**Department:** Special Education  
**Subject:** Biology - MD

- Google Drive / Classroom
- All Laboratory Equipment is Technology

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**Topic**

Human Activity & Climate

**Essential Questions**
- What factors influence the distribution and development of human society?
- How are Earth’s systems and their relationships being modified by human activity?
- How are human activities affecting natural resources?
- What is the interdependence between humans and Earth’s systems?

**Enduring Understandings**

**Alignment to NGSS**

- HS-ESS3-1
- HS-ESS3-4
- HS-ESS3-5
- HS-ESS3-6
- HS-ETS1-3

**Key Concepts and Skills**
- Demonstrate how humans affect organisms both positively and negatively in all biomes.
- Understand the impact of real-world problems on various environments.
- Identify and distinguish examples of succession in an ecosystem that has been affected by primary or secondary succession.

**Learning Activities**

- Biomes
- Succession in Mt. St. Helen

**Assessments**

- Topic worksheets
- Quizzes and Tests
- Observation Assessment/Lab Activities
- Projects/Performing Assessment

**21st Century Skills**

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**Interdisciplinary Connections**

- Math: Graphing
- Social Studies: All Lecture/Discussions Require the Historical Development of the Specific Topic Being Studied.
- Language Arts: Short answer questions

**Technology Integration**

- Elmo Incorporation
- YouTube Content Shorts
- Each Student has Access to Their Own Chromebook
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<td>Topic</td>
<td>Natural Selection</td>
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<tr>
<td>Essential Questions</td>
<td></td>
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<tr>
<td>● Why is oxygen not present in early atmosphere?</td>
<td></td>
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<tr>
<td>● What factors affect natural selection of a species over time?</td>
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<tr>
<td>● How does evidence contribute to the theory of evolution by way of natural selection?</td>
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<td>● What is the relationship between the environment and natural selection?</td>
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<tr>
<td>● What are the four parts of the theory of natural selection?</td>
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<td>Enduring Understandings</td>
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<tr>
<td>● HS-LS4-3</td>
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<td>● HS-LS4-4</td>
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<td>● HS-LS4-5</td>
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<tr>
<td>● HS-LS2-8</td>
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<tr>
<td>Key Concepts and Skills</td>
<td></td>
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<tr>
<td>● Construct explanations and design solutions to investigate the relationship between the environment and natural selection.</td>
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<td>● Explain data that includes evidence to support the theory of natural selection.</td>
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<td>● Develop an understanding of the factors that cause natural selection of a species over time.</td>
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<td>● Understand how multiple lines of evidence contribute to the strength of scientific theories of natural selection.</td>
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<td>● Reflection of specific theories and their contributions to what is accepted today by the scientific community.</td>
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<tr>
<td>Learning Activities</td>
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<tr>
<td>● Peppered moth Lab</td>
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<tr>
<td>● Biochemical Evolution</td>
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<td>Interdisciplinary Connections</td>
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<tr>
<td>● Math: Calculation of change in moth population</td>
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- Each Student has Access to Their Own Chromebook
- Google Drive / Classroom

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**Topic**

**Evolution**

**Essential Questions**
- What are the pieces of evidence that supports the theory of evolution?
- How does genetic variation play a role in evolution of a species?
- How can probability explain inheritable traits in specific environments?
- How have humans contributed to the expansion or depletion of certain species?
- How are population trends formed in regards to environmental factors?
- Why does evolution affect an entire population versus an individual organism?
- What are various adaptations used by species?

**Enduring Understandings**

**Alignment to NGSS**
- HS-LS4-1
- HS-LS4-2

**Key Concepts and Skills**
- Evaluate and describe the four pieces of evidence that support the theory of evolution.
- Reflect on specific adaptations that have made humans a successful species on Earth.
- Compare and contrast Darwin’s theories of evolution to that of previous scientists.
- Analyze how two organisms can adapt to similar environments without a common ancestor.

**Learning Activities**
- Evidence of Evolution Lab
- Evolution WebQuest
- Human Adaptation Lab

**Assessments**
- Topic worksheets
- Quizzes and Tests
- Lab Activities
- Projects

**21st Century Skills**

<table>
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<tr>
<th></th>
<th>X Creativity</th>
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**Interdisciplinary Connections**
- Math: Construct Graph / Collection of measurements
- Social Studies: All Lecture/Discussions Require the Historical Development of the Specific Topic Being Studied.
- Language Arts: Short answer questions
### Technology Integration
- Elmo Incorporation
- YouTube Content Shorts
- Each Student has Access to Their Own Chromebook
- Google Drive / Classroom

### Time Frame
- 3 Weeks

### Topic
**Cell Specialization & Homeostasis - The Human Body**

#### Essential Questions
- How is homeostasis a continuous theme among all the body systems?
- What are the major structures and functions of the skeletal and muscular systems?
- How are the systems interconnected with one another?
- What are the major parts of the nervous system?
- What is the flow of blood through the body and heart?
- What is the path of air through the respiratory system?
- What is the function of the kidney?
- What is the main functions of the digestive system?
- How does the number of calories eaten relate to the need of the body?
- What are the functions of the glands that make up the endocrine system?
- How does the immune system work to protect against various pathogens?

#### Enduring Understandings
Discuss and demonstrate the functioning of each of the following systems:
- Integumentary
- Skeletal / Muscular
- Nervous
- Cardiovascular
- Respiratory
- Digestive
- Endocrine
- Immune

### Alignment to NGSS
**HS-LS1-2**

#### Key Concepts and Skills
Describe the structure and function of the following systems:
- Integumentary
- Skeletal
- Muscular
- Nervous
- Circulatory
- Respiratory
- Digestive
- Endocrine
## Learning Activities

- The Body System Project

## Assessments

- Topic worksheets
- Quizzes and Tests
- Lab Activities
- Projects/Performing Assessment

## 21st Century Skills

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## Interdisciplinary Connections

- Math: Calculation of calories consumed
- Social Studies: All Lecture/Discussions Require the Historical Development of the Specific Topic Being Studied.
- Language Arts: Short answer questions

## Technology Integration

- Elmo Incorporation
- YouTube Content Shorts
- Each Student has Access to Their Own Chromebook
- Google Drive / Classroom