

# Kingsway Regional School District

*Committed to Excellence*



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<b>Course Name: Science 7</b>	<b>Grade Level(s): 7</b>
<b>Department: MS Science</b>	<b>Credits: NA</b>
<b>BOE Adoption Date: October 2016</b>	<b>Revision Date(s): October 2019</b>

## ABSTRACT

The goal of seventh grade science is to produce students who have gained sufficient knowledge of the practices, crosscutting concepts, and core ideas of science and engineering to engage in public discussions on science-related issues, to be critical consumers of scientific information related to their everyday lives, and to continue to learn about science throughout their lives. They should come to appreciate that science and the current scientific understanding of the world are the result of many hundreds of years of creative human endeavor. It is especially important to note that the above goals are for all students, not just those who pursue careers in science, engineering, or technology or those who continue on to higher education (p. 9, NRC, 2012). Given this goal, the curriculum with focus on the nature of science is complex and multidisciplinary, learning theory research in science shows expert knowledge base develops better through interdisciplinary connections and not through isolated content, and effective research-based practices for curriculum and instruction in science and engineering are supported through this approach.

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## Mission Statement

The **Kingsway Regional School District** believes that this school district is responsible for developing and maintaining a comprehensive educational program that will foster the academic, social, and personal growth of all students. The Kingsway Regional School District provides a secure, supportive environment. It also provides high quality resources to challenge and empower each individual to pursue his/her potential, to develop a passion for learning in a diverse and challenging world, to encourage active citizenship, and to reach a high standard of achievement at all grade levels as defined by the New Jersey Student Learning Standards (NJ SLS).

## Curriculum & Instruction Goals

### Goal(s):

1. To ensure students are college and career ready upon graduation
2. To vertically and horizontally align curriculum K-12 to ensure successful transition of students at each grade level
3. To identify individual student strengths and weaknesses utilizing various assessment measures (formative, summative, alternative, etc.) so as to differentiate instruction while meeting the rigor of the applicable content standards
4. To improve student achievement as assessed through multiple measures including, but not limited to, state testing, local assessments, and intermediate benchmarking

## Philosophy of the Shared Curriculum Service with South Harrison Township Elementary

The ultimate goal of the newly established shared curriculum service with South Harrison Township Elementary is to provide clearly coherent curriculum for grades K-12 to enhance student growth and achievement and provide learning experiences that assist in providing an inherent love of learning. With true vertical and horizontal curricular alignment all students will be effectively prepared for their arrival onto the campus of Kingsway Regional Middle School. Through this shared vision, both school districts are able to work earlier and more productively with students to ensure they are properly equipped with the knowledge and skills necessary to be successful in college and career upon graduation from high school. The alignment of curriculum K-12 safeguards countless benefits for our children; it is the very foundation for the improved teaching and learning that is our goal as educators, parents, and community members. Most notably, an aligned curriculum K-12 creates a common ownership and understanding of what must be taught and learned at each grade level for each subject area. No matter where a student attends, the curriculum requirements are the same across buildings, grade levels and teachers. Additionally, an aligned curriculum serves to provide valuable information to parents who will know what each child is expected to learn while in the classroom.

## How to Read this Document

This curricular document contains both *pacing guides* and *curriculum units*. The pacing guides serve to communicate an estimated timeframe as to *when* skills and topics will be taught throughout the year. The pacing, however, may differ slightly depending upon the unique needs of each learner. The *curriculum units* contain more detailed information as to the content, goals, and objectives of the course well as how students will be assessed. The terms and definitions below will assist the reader to better understand the sections and components of this curriculum document.

## Terms to Know

- 1. Accommodation(s):** The term "accommodation" may be used to describe an *alteration* of environment, curriculum format, or equipment that allows an individual with a disability to gain access to content and/or complete assigned tasks. They allow students with disabilities to pursue a regular course of study. The term accommodation is often used interchangeable with the term modification. However, it is important to remember that modifications change or modify the intended learning goal while accommodations result in the same learning goal being expected but with added assistance in that achievement. Since accommodations do not alter what is being taught, instructors should be able to implement the same grading scale for students with disabilities as they do for students without disabilities.
- 2. Differentiated Instruction:** Differentiation of instruction relies on the idea that instructional approaches should be tailored to each individual student's learning needs. It provides students an array of options during the learning process that allows them make sense of ideas as it relates to them. The integration of differentiated instructional techniques is a curriculum design approach to increase flexibility in teaching and decrease the barriers that frequently limit student access to materials and learning in classrooms.
- 3. Enduring Understanding:** Enduring understandings (aka big ideas) are statements of understanding that articulate deep conceptual understandings at the heart of each content area. Enduring understandings are noted in the alongside essential questions within each unit in this document.
- 4. Essential Question:** These are questions whose purpose is to stimulate thought, to provoke inquiry, and to spark more questions. They extend beyond a single lesson or unit. Essential questions are noted in the beginning of each unit in this document.
- 5. Formative Assessments:** Formative assessments monitor student learning to provide ongoing feedback that can be used by (1) instructors to improve teaching and (2) by students to improve their learning. Formative assessments help identify students' strengths and weaknesses and address problems immediately.
- 6. Learning Activity(s):** Learning activities are those activities that take place in the classroom for which the teacher facilitates and the students participate in to ensure active engagement in the learning process. (Robert J. Marzano, *The Art and Science of Teaching*)
- 7. Learning Assignment(s):** Learning assignments are those activities that take place independently by the student inside the classroom or outside the classroom (i.e. homework) to extend concepts and skills within a lesson.

8. **Learning Goal(s):** Learning goals are broad statements that note what students “should know” and/or “be able to do” as they progress through a unit. Learning goals correlate specifically to the NJ SLS are noted within each unit.
9. **Learning Objective(s):** Learning objectives are more specific skills and concepts that students must achieve as they progress towards the broader learning goal. These are included within each unit and are assessed frequently by the teacher to ensure students are progressing appropriately.
10. **Model Assessment:** Within the model curriculum, model assessments are provided that included assessments that allow for measuring student proficiency of those target skills as the year of instruction progresses.
11. **Model Curriculum:** The model curriculum has been provided by the state of New Jersey to provide a “model” for which districts can properly implement the Common Core State Standards and New Jersey Core Curriculum Content Standards by providing an example from which to work and/or a product for implementation.
12. **Modification(s):** The term "modification" may be used to describe a *change* in the curriculum. Modifications are typically made for students with disabilities who are unable to comprehend all of the content an instructor is teaching. The term modification is often used interchangeable with the term accommodations. However, it is important to remember that modifications change or modify the intended learning goal while accommodations result in the same learning goal being expected but with assistance in that achievement.
13. **Performance Assessments:** (aka alternative or authentic assessments) Performance assessments are a form of assessment that requires students to perform tasks that generate a more authentic evaluation of a student’s knowledge, skills, and abilities. Performance assessments stress the application of knowledge and extend beyond traditional assessments (i.e. multiple-choice question, matching, true & false, etc.).
14. **Standards:** Academic standards, from which the curriculum is built, are statements that of what students “should know” or “be able to do” upon completion of a grade-level or course of study. Educational standards help teachers ensure their students have the skills and knowledge they need to be successful by providing clear goals for student learning.
  - **State:** The New Jersey Student Learning Standards (NJ SLS) include Preschool Teaching and Learning Standards as well as K-12 standards for: *Visual and Performing Arts; Comprehensive Health and Physical Education; Science; Social Studies; World Languages; Technology; 21st-Century Life and Careers; Language Arts Literacy; and, Mathematics*
15. **Summative Assessments:** Summative assessments evaluate student learning at the end of an instructional time period by comparing it against some standard or benchmark. Information from summative assessments can be used formatively when students or faculty use it to guide their efforts and activities in subsequent courses.
16. **21<sup>st</sup> Century Skills:** These skills emphasis the growing need to focus on those skills that prepare students successfully by focusing on core subjects and 21<sup>st</sup> century themes; learning and innovation skills; information, media and technology skills; and life and career skills. These concepts are embedded in each unit of the curriculum.

**Proficiencies and Pacing Guide:**

**Course Title: Science 7**

**Prerequisite(s): Science 6**

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
<p><b>Unit 1: Structure and Function</b></p>	<p><b>8 weeks</b>  <b>Sept - Nov</b></p>	<p><b>Subject Area:</b> <u>NJ Student Learning Standards:</u> <i>Science-</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.MS-LS1-1</li> <li>● NJSLS-S.MS-LS1-2</li> </ul> <p><b>Interdisciplinary:</b> <u>NJSLS:</u> <i>Literacy -</i></p> <ul style="list-style-type: none"> <li>● NJSLSRI.7.1</li> <li>● NJSLSRI.7.2</li> <li>● NJSLSA.R1</li> <li>● NJSLSA.R2</li> <li>● NJSLSA.W1</li> <li>● NJSLSA.W2</li> <li>● NJSLSA.W4</li> <li>● NJSLSA.W5</li> <li>● NJSLSA.W6</li> </ul> <p><i>Mathematics -</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.6.EE.C.9</li> </ul> <p><i>Career Ready Practices</i></p> <ul style="list-style-type: none"> <li>● CRP1</li> <li>● CRP2</li> <li>● CRP4</li> </ul> <p><i>Technology</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.8.1.8.D.5</li> </ul>	<p>1. Students will understand all living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular). (MS-LS1-1) (4 weeks)</p> <p>2. Students will understand within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2) (4 weeks)</p>	<p><b>MS-LS1-1:</b> Students will be able to Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.</p> <p><b>MS-LS1-2:</b> Students will be able to Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.</p>

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
		<ul style="list-style-type: none"> <li>NJSLS-S.8.1.8.D.1</li> </ul> <p><i>Career and Technical Education</i></p> <ul style="list-style-type: none"> <li>NJSLS-S.9.3.ST.3</li> <li>NJSLS-S.9.3.ST.4</li> <li>NJSLS-S.9.3.ST-SM.2</li> <li>NJSLS-S.9.3.ST-SM.4</li> </ul>		

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
<b>Unit 2: Body Systems</b>	<b>2 weeks November</b>	<p><b>Subject Area:</b> <u>NJ Student Learning Standards:</u> <i>Science-</i></p> <ul style="list-style-type: none"> <li>NJSLS-S.MS-LS1-3</li> <li>NJSLS-S.MS-LS1-8</li> </ul> <p><b>Interdisciplinary:</b> <u>NJSLS:</u> <i>Literacy -</i></p> <ul style="list-style-type: none"> <li>NJSLSRI.7.1</li> <li>NJSLSRI.7.2</li> <li>NJSLSA.R1</li> <li>NJSLSA.R2</li> <li>NJSLSA.W1</li> <li>NJSLSA.W2</li> <li>NJSLSA.W4</li> <li>NJSLSA.W5</li> <li>NJSLSA.W6</li> </ul> <p><i>Mathematics -</i></p> <ul style="list-style-type: none"> <li>NJSLS-S.6.EE.C.9</li> </ul>	<p>1. Students will understand in multicellular organisms; the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. (MS-LS1-3) (1 week)</p> <p>2. Students will understand each sense receptor responds to different inputs (electromagnetic, mechanical, chemical), transmitting them as signals that travel along nerve cells to the brain. The signals are then processed in the brain, resulting in immediate behaviors or memories. (MS-LS1-8) (1 week)</p>	<p><b>MS-LS1-3:</b> Students will be able to Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells</p> <p><b>MS-LS1-8:</b> Students will be able to Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.</p>

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
		<p><i>Career Ready Practices</i></p> <ul style="list-style-type: none"> <li>● CRP1</li> <li>● CRP2</li> <li>● CRP4</li> <li>● CRP6</li> </ul> <p><i>Career and Technical Education</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.9.3.ST.4</li> <li>● NJSLS-S.9.3.ST-SM.2</li> <li>● NJSLS-S.9.3.ST-SM.4</li> </ul>		

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
<p><b>Unit 3: Organization for Matter and Energy Flow in Organisms</b></p>	<p><b>2 weeks</b></p> <p><b>December</b></p>	<p><b>Subject Area:</b> <u>NJ Student Learning Standards:</u> <i>Science-</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.MS-LS1-6</li> <li>● NJSLS-S.MS-LS1-7</li> </ul> <p><b>Interdisciplinary:</b> <u>NJSLS:</u> <i>Literacy -</i></p> <ul style="list-style-type: none"> <li>● NJSLSRI.7.1</li> <li>● NJSLSRI.7.2</li> <li>● NJSLSA.R1</li> <li>● NJSLSA.R2</li> <li>● NJSLSA.W1</li> <li>● NJSLSA.W2</li> <li>● NJSLSA.W4</li> <li>● NJSLSA.W5</li> <li>● NJSLSA.W6</li> </ul>	<ol style="list-style-type: none"> <li>1. Students will understand plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use. (MS-LS1-6) (1 week)</li> <li>2. Students will understand within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy. (MS-LS1-7) (1 week)</li> <li>3. Students will understand the chemical</li> </ol>	<p><b>MS-LS1-6:</b> Students will be able to Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.</p> <p><b>MS-LS1-7:</b> Students will be able to Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.</p>

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
		<p><i>Mathematics -</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.6.EE.C.9</li> </ul> <p><i>Career Ready Practices</i></p> <ul style="list-style-type: none"> <li>● CRP1</li> <li>● CRP2</li> <li>● CRP4</li> <li>● CRP8</li> </ul> <p><i>Career and Technical Education</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.9.3.ST.4</li> <li>● NJSLS-S.9.3.ST-SM.2</li> <li>● NJSLS-S.9.3.ST-SM.4</li> </ul>	<p>reaction by which plants produce complex food molecules (sugars) requires an energy input (i.e., from sunlight) to occur. In this reaction, carbon dioxide and water combine to form carbon-based organic molecules and release oxygen. (secondary to MS-LS1-6) (1 week)</p> <p>4. Students will understand cellular respiration in plants and animals involve chemical reactions with oxygen that release stored energy. In these processes, complex molecules containing carbon react with oxygen to produce carbon dioxide and other materials. (secondary to MS-LS1-7) (1 week)</p>	

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
<b>Unit 4: Inheritance and Variation of Traits</b>	<b>7-10 weeks</b>  Jan - Feb	<p><b>Subject Area:</b> <u>NJ Student Learning Standards:</u> <i>Science-</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.MS-LS3-1</li> <li>● NJSLS-S.MS-LS3-2</li> </ul> <p><b>Interdisciplinary:</b> <u>NJSLS:</u> <i>Literacy -</i></p> <ul style="list-style-type: none"> <li>● NJSLSRI.7.1</li> <li>● NJSLSRI.7.2</li> <li>● NJSLSA.R1</li> <li>● NJSLSA.R2</li> <li>● NJSLSA.W1</li> </ul>	<ol style="list-style-type: none"> <li>1. Students will understand organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring. (secondary to MS-LS3-2) (1 week)</li> <li>2. Students will understand genes are located in the chromosomes of cells, with each chromosome pair containing two variants of each of many distinct genes. Each distinct gene chiefly controls the production of specific proteins, which in turn affects the traits of the individual. Changes (mutations) to genes can result in changes to proteins, which can affect the structures and functions</li> </ol>	<p><b>MS-LS3-1:</b> Students will be able to Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.</p> <p><b>MS-LS3-2:</b> Students will be able to Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.</p>

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
		<ul style="list-style-type: none"> <li>● NJSLSA.W2</li> <li>● NJSLSA.W4</li> <li>● NJSLSA.W5</li> <li>● NJSLSA.W6</li> <li>● NJSLSA.W7</li> <li>● NJSLSA.W8</li> <li>● NJSLSA.W9</li> </ul> <p><i>Mathematics -</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.MP.4</li> <li>● NJSLS-S.6.SP.A.2</li> <li>● NJSLS-S.6.SP.B.4</li> <li>● NJSLS-S.6.SP.B.5</li> </ul> <p><i>Career Ready Practices</i></p> <ul style="list-style-type: none"> <li>● CRP1</li> <li>● CRP2</li> <li>● CRP4</li> <li>● CRP6</li> <li>● CRP7</li> <li>● CRP11</li> </ul> <p><i>Career and Technical Education</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.9.3.ST.4</li> <li>● NJSLS-S.9.3.ST-SM.2</li> <li>● NJSLS-S.9.3.ST-SM.4</li> <li>● NJSLS-S.9.3.ST-SM.1</li> <li>● NJSLS-S.9.3.SM.3</li> </ul>	<p>of the organism and thereby change traits. (MS-LS3-1) (2 weeks)</p> <p>3. Students will understand variations of inherited traits between parent and offspring arise from genetic differences that result from the subset of chromosomes (and therefore genes) inherited. (MS-LS3-2) (2 weeks)</p> <p>4. Students will understand in sexually reproducing organisms, each parent contributes half of the genes acquired (at random) by the offspring. Individuals have two of each chromosome and hence two alleles of each gene, one acquired from each parent. These versions may be identical or may differ from each other. (MS-LS3-2) (1 week)</p> <p>5. Students will understand in addition to variations that arise from sexual reproduction, genetic information can be altered because of mutations. Though rare, mutations may result in changes to the structure and function of proteins. Some changes are beneficial, others harmful, and some neutral to the organism. (MS-LS3-1) (1 week)</p>	

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
<b>Unit 5: Selection and Adaptation</b>	<b>4-6 weeks</b>  <b>Feb - Mar</b>	<p><b>Subject Area:</b> <u>NJ Student Learning Standards:</u> <i>Science-</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.MS-LS4-4</li> <li>● NJSLS-S.MS-LS4-5</li> <li>● NJSLS-S.MS-LS4-6</li> </ul> <p><b>Interdisciplinary:</b> <u>NJSLS:</u> <i>Literacy -</i></p> <ul style="list-style-type: none"> <li>● NJSLSRI.7.1</li> <li>● NJSLSRI.7.2</li> <li>● NJSLSA.R1</li> <li>● NJSLSA.R2</li> <li>● NJSLSA.W1</li> <li>● NJSLSA.W2</li> <li>● NJSLSA.W4</li> <li>● NJSLSA.W5</li> <li>● NJSLSA.W6</li> </ul> <p><i>Mathematics -</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.MP.4</li> <li>● NJSLS-S.6.RP.A.1</li> <li>● NJSLS-S.6.SP.B.5</li> <li>● NJSLS-S.6.EE.B.6</li> <li>● NJSLS-S.7.RP.A.2</li> </ul> <p><i>Career Ready Practices</i></p> <ul style="list-style-type: none"> <li>● CRP1</li> <li>● CRP2</li> <li>● CRP4</li> <li>● CRP5</li> <li>● CRP7</li> </ul>	<ol style="list-style-type: none"> <li>1. Students will understand natural selection leads to the predominance of certain traits in a population, and the suppression of others. (MS-LS4-4) (2 weeks)</li> <li>2. Students will understand in <i>artificial</i> selection, humans have the capacity to influence certain characteristics of organisms by selective breeding. One can choose desired parental traits determined by genes, which are then passed on to offspring. (MS-LS4-5) (2 weeks)</li> <li>3. Students will understand adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS4-6) (2 weeks)</li> </ol>	<p><b>MS-LS4-4:</b> Students will be able to Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.</p> <p><b>MS-LS4-5:</b> Students will be able to Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.</p> <p><b>MS-LS4-6:</b> Students will be able to Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.</p>

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
		<ul style="list-style-type: none"> <li>● CRP8</li> <li>● CRP11</li> <li>● CRP12</li> </ul> <p><i>Career and Technical Education</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.9.3.ST.4</li> <li>● NJSLS-S.9.3.ST-SM.2</li> <li>● NJSLS-S.9.3.ST-SM.4</li> <li>● NJSLS-S.9.3.SM.3</li> </ul> <p><i>Technology</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.8.8.A.5</li> <li>● NJSLS-S.8.1.8.B.1</li> <li>● NJSLS-S.8.1.D.2</li> <li>● NJSLS-S.8.1.8.D.4</li> <li>● NJSLS-S.8.1.8.E.1</li> <li>● NJSLS-S.8.2.8.B.1</li> <li>● NJSLS-S.8.2.8.B.2</li> <li>● NJSLS-S.8.2.8.B.3</li> <li>● NJSLS-S.8.2.8.B.6</li> <li>● NJSLS-S.8.2.8.B.5</li> </ul> <p><i>Financial Literacy</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.9.1.8.F.1</li> <li>● NJSLS-S.9.1.8.F.2</li> <li>● NJSLS-S.9.1.8.E.1</li> <li>● NJSLS-S.9.1.8.E.7</li> <li>● NJSLS-S.9.1.8.E.8</li> </ul>		

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
<b>Unit 6: Evidence of a Common Ancestry</b>	<b>3-4 weeks</b>  <b>Mar - Apr</b>	<p><b>Subject Area:</b> <u>NJ Student Learning Standards:</u></p> <p><i>Science-</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.MS-LS4-1</li> <li>● NJSLS-S.MS-LS4-2</li> <li>● NJSLS-S.MS-LS4-3</li> </ul> <p><b>Interdisciplinary:</b> <u>NJSLS:</u></p> <p><i>Literacy -</i></p> <ul style="list-style-type: none"> <li>● NJSLSRI.7.1</li> <li>● NJSLSRI.7.2</li> <li>● NJSLSA.R1</li> <li>● NJSLSA.R2</li> <li>● NJSLSA.W1</li> <li>● NJSLSA.W2</li> <li>● NJSLSA.W4</li> <li>● NJSLSA.W5</li> <li>● NJSLSA.W6</li> </ul> <p><i>Mathematics -</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.MP.4</li> <li>● NJSLS-S.6.RP.A.1</li> <li>● NJSLS-S.6.SP.B.5</li> <li>● NJSLS-S.6.EE.B.6</li> <li>● NJSLS-S.7.RP.A.2</li> </ul> <p><i>Career Ready Practices</i></p> <ul style="list-style-type: none"> <li>● CRP1</li> <li>● CRP2</li> <li>● CRP4</li> </ul>	<ol style="list-style-type: none"> <li>1. Students will understand the collection of fossils and their placement in chronological order (e.g., through the location of the sedimentary layers in which they are found or through radioactive dating) is known as the fossil record. It documents the existence, diversity, extinction, and change of many life forms throughout the history of life on Earth. (MS-LS4-1) (2 weeks)</li> <li>2. Students will understand anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record, enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent. (MS-LS4-2) (2 weeks)</li> <li>3. Students will understand comparison of the embryological development of different species also reveals similarities that show relationships not evident in the fully-formed anatomy. (MS-LS4-3) (1 week)</li> </ol>	<p><b>MS-LS4-1:</b> Students will be able to Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.</p> <p><b>MS-LS4-2:</b> Students will be able to Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.</p> <p><b>MS-LS4-3:</b> Students will be able to Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.</p>

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
		<i>Career and Technical Education</i> <ul style="list-style-type: none"> <li>● NJSLS-S.9.3.ST.4</li> <li>● NJSLS-S.9.3.ST-SM.2</li> <li>● NJSLS-S.9.3.ST-SM.4</li> <li>● NJSLS-S.9.3.ST-SM.1</li> <li>● NJSLS-S.9.3.SM.3</li> </ul>		

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
<b>Unit 7: Earth Systems</b>	<b>4-5 weeks May - June</b>	<b>Subject Area:</b> <u>NJ Student Learning Standards:</u> <i>Science-</i> <ul style="list-style-type: none"> <li>● NJSLS-S.MS-ESS1-4</li> <li>● NJSLS-S.MS-ESS2-1</li> <li>● NJSLS-S.MS-ESS2-2</li> <li>● NJSLS-S.MS-ESS2-3</li> </ul> <b>Interdisciplinary:</b> <u>NJSLS:</u> <i>Literacy -</i> <ul style="list-style-type: none"> <li>● NJSLSRI.7.1</li> <li>● NJSLSRI.7.2</li> <li>● NJSLSA.R1</li> <li>● NJSLSA.R2</li> <li>● NJSLSA.W1</li> <li>● NJSLSA.W2</li> <li>● NJSLSA.W4</li> <li>● NJSLSA.W5</li> <li>● NJSLSA.W6</li> </ul>	<p>1. Students will understand the geologic time scale interpreted from rock strata provides a way to organize Earth’s history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. (MS-ESS1-4) (1 week)</p> <p>2. Tectonic processes continually generate new ocean sea floor at ridges and destroy old sea floor at trenches. (secondary to MS-ESS2-3) (1 week)</p> <p>3. Students will understand all Earth processes are the result of energy flowing and matter cycling within and among the planet’s systems. This energy is derived from the sun and Earth’s hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth’s materials and living organisms. (MS-ESS2-1) (1 week)</p>	<p><b>MS-ESS1-4:</b> Students will be able to Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6 -billion-year-old history.</p> <p><b>MS-ESS2-1:</b> Students will be able to develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.</p> <p><b>MS-ESS2-2:</b> Students will be able to construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.</p> <p><b>MS-ESS2-3:</b> Students will be able to analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.</p>

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
		<p><i>Mathematics -</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.MP.2</li> <li>● NJSLS-S.6.EE.B.6</li> <li>● NJSLS-S.7.EE.B.4</li> </ul> <p><i>Career Ready Practices</i></p> <ul style="list-style-type: none"> <li>● CRP1</li> <li>● CRP2</li> <li>● CRP4</li> <li>● CRP5</li> <li>● CRP11</li> </ul> <p><i>Career and Technical Education</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.9.3.ST.4</li> <li>● NJSLS-S.9.3.ST-SM.2</li> <li>● NJSLS-S.9.3.ST-SM.4</li> <li>● NJSLS-S.9.3.ST-SM.1</li> <li>● NJSLS-S.9.3.SM.3</li> </ul> <p><i>Technology</i></p> <ul style="list-style-type: none"> <li>● NJSLS-S.8.2.8.A.2</li> <li>● NJSLS-S.8.2.8.A.3</li> <li>● NJSLS-S.8.2.8.A.4</li> <li>● NJSLS-S.8.2.8.C.1</li> <li>● NJSLS-S.8.2.8.C.2</li> <li>● NJSLS-S.8.2.8.C.5</li> <li>● NJSLS-S.8.2.8.C.6</li> <li>● NJSLS-S.8.2.8.C.8</li> <li>● NJSLS-S.8.2.8.D.1</li> <li>● NJSLS-S.8.1.8.E.1</li> <li>● NJSLS-S.8.1.8.F.1</li> </ul>	<p>4.Students will understand the planet’s systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth’s history and will determine its future. (MS-ESS2-2) (1 week)</p> <p>5.Students will understand maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth’s plates have moved great distances, collided, and spread apart. (MS-ESS2-3) (1 week)</p> <p>6.Water’s movements—both on the land and underground—cause weathering and erosion, which change the land’s surface features and create underground formations. (MS-ESS2-2) (1 week)</p>	

<b>Unit 1: Structure and Function</b>	<b>Recommended Duration: 8 weeks (September – November)</b>
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**Unit Description:**  
 Students demonstrate age appropriate abilities to plan and carry out investigations to develop *evidence* that living organisms are made of cells. Students gather information to support explanations of the relationship between structure and function in cells. They are able to communicate an understanding of cell theory and understand that all organisms are made of cells. Students understand that special structures are responsible for particular functions in organisms. They then are able to use their understanding of cell theory to develop and use physical and conceptual models of cells. The crosscutting concepts of *scale, proportion, and quantity* and *structure and function* provide a framework for understanding the disciplinary core ideas. Students are expected to demonstrate proficiency in *planning and carrying out investigations, analyzing and interpreting data, and developing and using models*. Students are also expected to use these to use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.

<b>Essential Questions:</b>	<b>Enduring Understandings:</b>
<ul style="list-style-type: none"> <li>How will scientists know if they have found life elsewhere in the solar system?</li> <li>How do the functions of cells support an entire organism?</li> </ul>	<ul style="list-style-type: none"> <li>The students will understand the parts of the cell theory which includes how all living things are made of cells.</li> <li>The students will understand the difference in function between a unicellular and multicellular organism.</li> <li>The students will understand there are different types of cells in a multicellular organism.</li> </ul>

<b>Relevant Standards:</b>	<b>Learning Goals:</b>	<b>Learning Objectives:</b>
<p>NJSLS-S.MS-LS1-1: Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.</p> <p>NJSLS-S.MS-LS1-2: Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.</p>	<ul style="list-style-type: none"> <li>Students will understand all living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular). (MS-LS1-1) (4 weeks)</li> <li>Students will understand within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2) (4 weeks)</li> </ul>	<ul style="list-style-type: none"> <li>Students will be able to explain how the invention of the microscope contributed to scientists' understanding of living things.</li> <li>Students will be able to apply the cell theory to an investigation that provides evidence of cells in living things.</li> <li>Students will be able to construct a model to show how the functions of cell organelles contribute to the function of the organism.</li> <li>Students will be able to explain how cells are organized in many-celled organisms.</li> </ul>

		<ul style="list-style-type: none"> <li>Students will be able to compare and contrast bacterial, plant, and animal cells.</li> </ul>
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Formative Assessments	Summative Assessments:	Performance Assessments:	Major Activities/ Assignments (required):
Whiteboard responses and presentations (student examples of multi/unicellular, cell organelle examples) Entrance Ticket or Exit Ticket Drawing/interpretation of models (plant/animal cell diagram) Quizzes (cell theory, organelle function) Questioning/Discussions (Q&A, A&Q) Status Check (sticks, hands, thumbs up) Student/Teacher/Peer Conferences Graphic Organizers (Venn diagram of relationships) prokaryotic/eukaryotic Four Corners (review organelle function) Think/Pair/Share (prokaryotic/eukaryotic) Gallery Walk (Identify and describe the part of cell and importance of cell function)	Unit Test CSA	'E' Lab, organelle model activity Comparing cells lab  IQWST – Intro microscope, types of cells  Gizmo Lab – Types of Cells	<b>Major Assignments (required):</b> Choice of writing assignment related to the cell (rubric) Microscopic organism creative writing  <b>Major Activities (required):</b> 'E' Lab, organelle model activity City cell analogy (or student created)  Tic- Tac Toe Assessment board

Possible Assessment Modifications /Accommodations/ Differentiation:			
<u>Advanced Learners</u>	<u>Special Education Students</u>	<u>English Language Learners (ELL)</u>	<u>At Risk Learners</u>
Topic list overview  Varied question format (open ended instead of multiple choice) <ul style="list-style-type: none"> <li>Cell theory</li> <li>Prokaryotic vs. Eukaryotic</li> <li>Organelle function</li> </ul> Optional individual procedure/data	Study guide for unit test  Scaffolding directions <ul style="list-style-type: none"> <li>Chunking</li> </ul> Scaffolding questions for writing with prompts <ul style="list-style-type: none"> <li>Fill in the blank with word bank</li> </ul>	Study guide for unit test with pictures  Scaffolding and simplifying directions <ul style="list-style-type: none"> <li>All directions should be single step</li> </ul> Scaffolding questions for writing with visuals /prompts <ul style="list-style-type: none"> <li>Fill in the blank with word</li> </ul>	Study guide for unit test  Scaffolding directions <ul style="list-style-type: none"> <li>Chunking</li> </ul> Scaffolding questions for writing with prompts <ul style="list-style-type: none"> <li>Fill in the blank with word bank</li> </ul>

**Possible Assessment Modifications /Accommodations/ Differentiation:**

<p>for lab report</p>	<ul style="list-style-type: none"> <li>Utilize vocab sheet with picture</li> </ul> <p>Frequent checks for understanding during labs</p> <ul style="list-style-type: none"> <li>Cell theory</li> <li>Prokaryotic vs. Eukaryotic</li> <li>Organelle function</li> </ul> <p>Oral responses in place of written extended response</p> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>Cell theory</li> <li>Prokaryotic vs. Eukaryotic</li> <li>Organelle function</li> <li>Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>Chunk directions</li> <li>Highlight key vocabulary</li> <li>Modified response rubric</li> <li>Report template</li> </ul> <p>Extended time (quizzes, tests)</p>	<p>bank</p> <ul style="list-style-type: none"> <li>Utilize vocab sheet with English/native language and picture</li> </ul> <p>Frequent checks for understanding (1-1)</p> <ul style="list-style-type: none"> <li>Cell theory</li> <li>Prokaryotic vs. Eukaryotic</li> <li>Organ cell function</li> </ul> <p>Oral responses in place of written extended response</p> <ul style="list-style-type: none"> <li>Use of diagrams/pictures</li> </ul> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>Cell theory</li> <li>Prokaryotic vs. Eukaryotic</li> <li>Organ cell function</li> <li>Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>Single step directions</li> <li>Partner with classmate/assistance from teacher</li> <li>Highlight key vocabulary</li> <li>Modified response (oral explanation, simplified answer with vocab or picture)</li> </ul> <p>Extended time (quizzes, tests, labs, projects)</p>	<ul style="list-style-type: none"> <li>Utilize vocab sheet with picture</li> </ul> <p>Frequent checks for understanding during labs</p> <ul style="list-style-type: none"> <li>Cell theory</li> <li>Prokaryotic vs. Eukaryotic</li> <li>Organ cell function</li> </ul> <p>Oral responses in place of written extended response</p> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>Cell theory</li> <li>Prokaryotic vs. Eukaryotic</li> <li>Organ cell function</li> <li>Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>Chunk directions</li> <li>Highlight key vocabulary</li> <li>Modified response rubric</li> <li>Report template</li> </ul> <p>Extended time (quizzes and tests)</p>
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**Instructional Strategies:**

Modeling  
 Scaffolding  
 Direct Instruction  
 Graphic Organizers  
 Homework  
 Note-taking  
 Interactive notebooks  
 Guided/Independent Practice (explanation and citing evidence as to why a phenomenon happens)  
 Academic Games  
 Investigation (Design and conduct an investigation)

**Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):**

<u>Advanced Learners</u>	<u>Special Education Students</u>	<u>English Language Learners (ELL)</u>	<u>At Risk Learners</u>
<p>Vocab</p> <ul style="list-style-type: none"> <li>• Frayer model for key terms</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>• Student created diagrams</li> </ul> <p>Leveled reading</p> <ul style="list-style-type: none"> <li>• Higher level for current event and class articles</li> </ul> <p>Flexible grouping</p> <ul style="list-style-type: none"> <li>• Homogeneous grouping</li> </ul>	<p>Vocab</p> <ul style="list-style-type: none"> <li>• Key words/ Picture</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>• Notes (fill in, copy of teacher notes, additional examples)</li> <li>• Diagrams (plant/animal cell)</li> </ul> <p>Leveled reading</p> <ul style="list-style-type: none"> <li>• Cell theory read and color</li> <li>• Prokaryotic vs. Eukaryotic read and color</li> </ul> <p>Flexible grouping</p> <ul style="list-style-type: none"> <li>• Station/lab partner</li> </ul>	<p>Vocab</p> <ul style="list-style-type: none"> <li>• English/Native Language/ Picture</li> <li>• Key words</li> <li>• Simplify words</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>• Notes (fill in, copy of teacher notes)</li> <li>• Diagrams (plant/animal cell)</li> </ul> <p>Leveled reading</p> <ul style="list-style-type: none"> <li>• Cell theory read and color</li> <li>• Prokaryotic vs. Eukaryotic read and color</li> </ul>	<p>Vocab</p> <ul style="list-style-type: none"> <li>• Key words/ Picture</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>• Notes (fill in, copy of teacher notes, additional examples)</li> <li>• Diagrams (plant/animal cell)</li> </ul> <p>Leveled reading</p> <ul style="list-style-type: none"> <li>• Cell theory read and color</li> <li>• Prokaryotic vs. Eukaryotic read and color</li> </ul> <p>Flexible grouping</p> <ul style="list-style-type: none"> <li>• Station/lab partner</li> </ul>

Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):			
	Cueing/prompting <ul style="list-style-type: none"> <li>• Cell theory</li> <li>• Prokaryotic vs. Eukaryotic</li> <li>• Organ cell function</li> </ul>	Flexible grouping <ul style="list-style-type: none"> <li>• Station/lab partner</li> </ul> Cueing/prompting <ul style="list-style-type: none"> <li>• Cell theory</li> <li>• Prokaryotic vs. Eukaryotic</li> <li>• Organ cell function</li> </ul>	Cueing/prompting <ul style="list-style-type: none"> <li>• Cell theory</li> <li>• Prokaryotic vs. Eukaryotic</li> <li>• Organ cell function</li> </ul>

Unit Vocabulary:
<b>Essential:</b> microscope, cell theory, organ, cell, cell wall, cell membrane, nucleus, mitochondria, chloroplast, vacuole, DNA  <b>Non-Essential:</b> Hooke, Leeuwenhoek, Schleiden, Schwann, Virchow, cytoplasm, endoplasmic reticulum, Golgi body, ribosome, lysosome

Interdisciplinary Connections (Applicable Standards):	Integration of Technology:	21 <sup>st</sup> Century Themes:	21 <sup>st</sup> Century Skills:
<b>ELA/Literacy:</b> RI.7.1. Cite several pieces of textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text. RI.7.2. Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text. NJLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. NJLSA.R2. Determine central ideas or	<b>Technology:</b> Quizlet(S/A/M) Students use as a memorization tool to assist students' learning and share their work with others  Blendspace(S/A/M) Students will use internet to access information and links, they can then classify, organize and share information  Virtual labs(A/M/R) students are encouraged through active learning, allows students access to labs that would not be possible in a physical lab (Gizmos)  Interactive site(S/A/M) Students will use internet to access	<b>Health Literacy</b> In understanding how cells are an essential part of living organisms, students can better relate to their own bodies and how this will affect their personal health and care.	<b>Critical Thinking and Problem Solving</b> Utilize critical thinking to make sense of problems and persevere in solving them. <b>Communication &amp; Collaboration</b> Communicate clearly and effectively and with reason

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p>themes of a text and analyze their development; summarize the key supporting details and ideas.</p> <p>NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.</p> <p>NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.</p> <p>NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.</p> <p>NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.</p> <p><b>Mathematics:</b></p> <p>6.EE.C.9: Represent and analyze quantitative relationships between dependent and independent variables</p> <p>6.SP.B.5: Summarize numerical data</p>	<p>information and links, they can then classify, organize and share information</p> <p>PowerPoints(S/A) Students will create presentations, use internet to access information and links</p>		

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p>sets in relation to their context, such as by:</p> <ul style="list-style-type: none"> <li>a. Reporting the number of observations.</li> <li>b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.</li> <li>c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered</li> </ul>			

<b>Resources:</b>
<p><b>Texts/Materials:</b> Prentice Hall Science Explorer Series – Cell and Heredity</p>

<b>Unit: 2 Body Systems</b>	<b>Recommended Duration: 2 weeks (November)</b>
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**Unit Description:**  
 Students develop a basic understanding of the role of cell in body systems and how those systems work to support the life functions of the organism. Students will construct explanations for the interactions of systems in cell and organisms. Students understand that special structures are responsible for particular functions in organisms, and that for many organisms, the body is a system of multiple-interacting subsystems that form a hierarchy, from cell to the body. Students construct explanations for the interactions of systems in cell and organisms and for how organisms gather and use information from the environment. The cross cutting concepts of systems and system models and cause and effect provide a framework for understanding the disciplinary core ideas. Students are expected to demonstrate proficiency in engaging in argument from evidence and obtaining, evaluating, and communicating information. Students use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.

<b>Essential Questions:</b>	<b>Enduring Understandings:</b>
<ul style="list-style-type: none"> <li>• What is the evidence that a body is actually a system of interacting subsystems composed of groups of interacting cell</li> <li>• How do organisms receive and respond to information from their environment?</li> </ul>	<ul style="list-style-type: none"> <li>• Students will understand that cells are a part of a larger system including tissues, organs and organ systems.</li> <li>• Students will understand that interactions are limited to the circulatory, excretory, digestive, respiratory, muscular, and nervous systems.</li> <li>• Students will understand the cause-and-effect of sense receptor relationships and that they can be used to predict response to stimuli in natural systems.</li> </ul>

<b>Relevant Standards:</b>	<b>Learning Goals:</b>	<b>Learning Objectives:</b>
<p>NJSLS-S.MS-LS1-3: Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.</p> <p>NJSLS-S.MS-LS1-8: Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.</p>	<ul style="list-style-type: none"> <li>• Students will understand in multicellular organisms; the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. (MS-LS1-3) (1 week)</li> <li>• Students will understand each sense receptor responds to different inputs (electromagnetic, mechanical, chemical), transmitting them as signals that travel along nerve cell to the brain. The signals are then processed in the</li> </ul>	<ul style="list-style-type: none"> <li>• Students will be able to identify evidence of the 4 levels of organization within an organism.</li> <li>• Students will be able to compare different types of sensory receptors and how they transmit and process information to result in behavioral responses.</li> </ul>

Relevant Standards:	Learning Goals:	Learning Objectives:
	brain, resulting in immediate behaviors or memories. (MS-LS1-8) (1 week)	

Formative Assessments	Summative Assessments:	Performance Assessments:	Major Activities/ Assignments (required):
Whiteboard responses and presentations (student examples of OOL) Entrance Ticket or Exit Ticket Drawing/interpretation of models (OOL) Quizzes (OOL, organ systems) Questioning/Discussions (Q&A, A&Q) Status Check (sticks, hands, thumbs up) Student/Teacher/Peer Conferences Graphic Organizers (Venn diagram of relationships) Human Organ Systems Think/Pair/Share	Unit Test CSA	Nervous system lab (touch, hear, sight) Final Writing Piece— (evidence based writing) Lab activity with rubric using the Scientific method. Communicating results of the nervous system lab writing a conclusion citing evidence (data)	<b>Major Assignments (required):</b> Choice of writing assignment (rubric)  <b>Major Activities (required):</b> OOL project (pyramid or wheel) Nervous systems lab

Possible Assessment Modifications /Accommodations/ Differentiation:			
<u>Advanced Learners</u>	<u>Special Education Students</u>	<u>English Language Learners (ELL)</u>	<u>At Risk Learners</u>
Topic list overview  Varied question format (open ended instead of multiple choice) <ul style="list-style-type: none"> <li>organization of life</li> <li>organ systems</li> <li>nervous system</li> </ul> Optional individual procedure/data for lab report	Study guide for unit test  Scaffolding directions <ul style="list-style-type: none"> <li>Chunking</li> </ul> Scaffolding questions for writing with prompts <ul style="list-style-type: none"> <li>Fill in the blank with word bank</li> <li>Utilize vocab sheet with picture</li> </ul>	Study guide for unit test with pictures  Scaffolding and simplifying directions <ul style="list-style-type: none"> <li>All directions should be single step</li> </ul> Scaffolding questions for writing with visuals /prompts <ul style="list-style-type: none"> <li>Fill in the blank with word bank</li> <li>Utilize vocab sheet with</li> </ul>	Study guide for unit test  Scaffolding directions <ul style="list-style-type: none"> <li>Chunking</li> </ul> Scaffolding questions for writing with prompts <ul style="list-style-type: none"> <li>Fill in the blank with word bank</li> <li>Utilize vocab sheet with picture</li> </ul>

**Possible Assessment Modifications /Accommodations/ Differentiation:**

	<p>Frequent checks for understanding during labs</p> <ul style="list-style-type: none"> <li>• organization of life</li> <li>• organ systems</li> <li>• nervous system</li> </ul> <p>Oral responses in place of written extended response</p> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>• organization of life</li> <li>• organ systems</li> <li>• nervous system</li> <li>• Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>• Chunk directions</li> <li>• Highlight key vocabulary</li> <li>• Modified response rubric</li> <li>• Report template</li> </ul> <p>Extended time (quizzes, tests)</p>	<p>English/native language and picture</p> <p>Frequent checks for understanding (1-1)</p> <ul style="list-style-type: none"> <li>• organization of life</li> <li>• organ systems</li> <li>• nervous system</li> </ul> <p>Oral responses in place of written extended response</p> <ul style="list-style-type: none"> <li>• Use of diagrams/pictures</li> </ul> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>• organization of life</li> <li>• organ systems</li> <li>• nervous system</li> <li>• Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>• Single step directions</li> <li>• Partner with classmate/assistance from teacher</li> <li>• Highlight key vocabulary</li> <li>• Modified response (oral explanation, simplified answer with vocab or picture)</li> </ul> <p>Extended time (quizzes, tests, labs, projects)</p>	<p>Frequent checks for understanding during labs</p> <ul style="list-style-type: none"> <li>• organization of life</li> <li>• organ systems</li> <li>• nervous system</li> </ul> <p>Oral responses in place of written extended response</p> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>• organization of life</li> <li>• organ systems</li> <li>• nervous system</li> <li>• Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>• Chunk directions</li> <li>• Highlight key vocabulary</li> <li>• Modified response rubric</li> <li>• Report template</li> </ul> <p>Extended time (quizzes and tests)</p>
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**Instructional Strategies:**

Modeling  
 Scaffolding  
 Direct Instruction  
 Graphic Organizers  
 Homework  
 Note-taking  
 Interactive notebooks  
 Guided/Independent Practice (explanation and citing evidence as to why a phenomenon happens)  
 Academic Games  
 Investigation (Design and conduct an investigation)

**Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):**

<u>Advanced Learners</u>	<u>Special Education Students</u>	<u>ENGLISH LANGUAGE LEARNERS (ELL)</u>	<u>At Risk Learners</u>
Vocab <ul style="list-style-type: none"> <li>• Frayer model for key terms</li> </ul> Graphic organizers <ul style="list-style-type: none"> <li>• Student created diagrams</li> </ul> Leveled reading <ul style="list-style-type: none"> <li>• Higher level for current event and class articles</li> </ul> Flexible grouping <ul style="list-style-type: none"> <li>• Homogeneous grouping</li> </ul>	Vocab <ul style="list-style-type: none"> <li>• Key words/ Picture</li> </ul> Graphic organizers <ul style="list-style-type: none"> <li>• Notes (fill in, copy of teacher notes, additional examples)</li> <li>• Diagrams (organization of life, organ systems, nervous system)</li> </ul> Leveled reading <ul style="list-style-type: none"> <li>• Organization of life read and color</li> <li>• nervous system read and color</li> </ul> Flexible grouping <ul style="list-style-type: none"> <li>• Station/lab partner</li> </ul> Cueing/prompting <ul style="list-style-type: none"> <li>• Organization of life</li> <li>• Organ systems</li> </ul>	Vocab <ul style="list-style-type: none"> <li>• English/Native Language/ Picture</li> <li>• Key words</li> <li>• Simplify words</li> </ul> Graphic organizers <ul style="list-style-type: none"> <li>• Notes (fill in, copy of teacher notes)</li> <li>• Diagrams (organization of life, organ systems, nervous system)</li> </ul> Leveled reading <ul style="list-style-type: none"> <li>• Organization of life read and color</li> <li>• nervous system read and color</li> </ul> Flexible grouping <ul style="list-style-type: none"> <li>• Station/lab partner</li> </ul> Cueing/prompting <ul style="list-style-type: none"> <li>• Organization of life</li> <li>• Organ systems</li> </ul>	Vocab <ul style="list-style-type: none"> <li>• Key words/ Picture</li> </ul> Graphic organizers <ul style="list-style-type: none"> <li>• Notes (fill in, copy of teacher notes, additional examples)</li> <li>• Diagrams (organization of life, organ systems, nervous system)</li> </ul> Leveled reading <ul style="list-style-type: none"> <li>• Organization of life read and color</li> <li>• nervous system read and color</li> </ul> Flexible grouping <ul style="list-style-type: none"> <li>• Station/lab partner</li> </ul> Cueing/prompting <ul style="list-style-type: none"> <li>• Organization of life</li> <li>• Organ systems</li> </ul>

**Unit Vocabulary:****Essential:** organism, cell, tissue, organ, organ system, stimuli, receptors**Non-Essential:** behaviors, relationship, structure, function, input, output

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p><b>ELA/Literacy:</b>            RI.7.1. Cite several pieces of textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text.</p> <p>RI.7.2. Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.</p> <p>NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.</p> <p>NJSLSA.R2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.</p> <p>NJSLSA.W1. Write arguments to support claims in an analysis of</p>	<p><b>Technology:</b>            Quizlet(S/A/M) Students use as a memorization tool to assist students' learning and share their work with others</p> <p>Blendspace(S/A/M) Students will use internet to access information and links, they can then classify, organize and share information</p> <p>Virtual labs(A/M/R) students are encouraged through active learning, allows students access to labs that would not be possible in a physical lab</p> <p>Interactive site(S/A/M) Students will use internet to access information and links, they can then classify, organize and share information</p> <p>PowerPoints(S/A) Students will create presentations, use internet to access information and links</p>	<p><u>  </u>X<u>  </u> Health Literacy            Students will have a better understanding of how organisms interact with each other and the importance of the parts related to the whole</p>	<p><u>  </u>X<u>  </u> Critical Thinking and Problem Solving            Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems</p> <p><u>  </u>X<u>  </u> Communication &amp; Collaboration            Demonstrate ability to work effectively and respectfully with diverse teams</p>

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p>substantive topics or texts, using valid reasoning and relevant and sufficient evidence.</p> <p>NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.</p> <p>NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.</p> <p>NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.</p> <p><b>Mathematics:</b> 6.EE.C.9: Represent and analyze quantitative relationships between dependent and independent variables</p>			

<b>Resources:</b>
<b>Texts/Materials:</b> Prentice Hall Science Explorer Series – Cell and Heredity

<b>Unit: 3 Organization For Matter and Energy Flow in Organisms</b>	<b>Recommended Duration: 2 weeks (December)</b>
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**Unit Description:**  
 Students provide a mechanistic account for how cells provide a structure for the plant process of photosynthesis in the movement of matter and energy needed for the cell. Students use conceptual and physical models to explain the transfer of energy and cycling of matter as they construct explanations for the role of photosynthesis in cycling matter in ecosystems. They construct scientific explanations for the cycling of matter in organisms and the interactions of organisms to obtain matter and energy from an ecosystem to survive and grow. They understand that sustaining life requires substantial energy and matter inputs, and that the structure and functions of organisms contribute to the capture, transformation, transport, release, and elimination of matter and energy. The crosscutting concepts of matter and energy and structure and function provide a framework for understanding of the cycling of matter and energy flow into and out of organisms. Students are also expected to demonstrate proficiency in developing and using models. Students use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.

<b>Essential Questions:</b>	<b>Enduring Understandings:</b>
<ul style="list-style-type: none"> <li>• What is the role of photosynthesis in the cycling of matter and flow of energy into and out of an organism?</li> <li>• How is food rearranged through chemical reactions to form new molecules that support growth and/or release energy as this matter moves through an organism?</li> </ul>	<ul style="list-style-type: none"> <li>• Students will understand how all organisms are able to benefit from the sun’s energy either directly or indirectly because of photosynthesis.</li> <li>• Students will understand how cellular respiration and photosynthesis create a cycle of energy.</li> </ul>

<b>Relevant Standards:</b>	<b>Learning Goals:</b>	<b>Learning Objectives:</b>
<p>NJSLS-S.MS-LS1-6: Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.</p> <p>NJSLS-S.MS-LS1-7: Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.</p>	<ul style="list-style-type: none"> <li>• Students will understand plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use. (MS-LS1-6) (1 week)</li> <li>• Students will understand within individual organisms, food moves through a series of chemical reactions in which it is broken down</li> </ul>	<ul style="list-style-type: none"> <li>• Students will be able to explain how plants use sunlight to make energy through photosynthesis.</li> <li>• Students will be able to summarize how respiration occurs in organisms.</li> <li>• Students will be able to identify the raw materials and products of photosynthesis and respiration.</li> <li>• Students will be able to create a model to compare the chemical processes of photosynthesis and respiration.</li> </ul>

Relevant Standards:	Learning Goals:	Learning Objectives:
	<p>and rearranged to form new molecules, to support growth, or to release energy. (MS-LS1-7) (1 week)</p> <ul style="list-style-type: none"> <li>• Students will understand the chemical reaction by which plants produce complex food molecules (sugars) requires an energy input (i.e., from sunlight) to occur. In this reaction, carbon dioxide and water combine to form carbon-based organic molecules and release oxygen. (secondary to MS-LS1-6) (1 week)</li> <li>• Students will understand cellular respiration in plants and animals involve chemical reactions with oxygen that release stored energy. In these processes, complex molecules containing carbon react with oxygen to produce carbon dioxide and other materials. (secondary to MS-LS1-7) (1 week)</li> </ul>	

Formative Assessments	Summative Assessments:	Performance Assessments:	Major Activities/ Assignments (required):
Whiteboard responses and presentations (chemical relationships between processes) Entrance Ticket or Exit Ticket Drawing/interpretation of models (photosynthesis, respiration) Quizzes Questioning/Discussions (Q&A, A&Q) Status Check (sticks, hands, thumbs up) Student/Teacher/Peer Conferences Graphic Organizers (Venn diagram)	Unit Test CSA	Comparing processes candy lab	<b>Major Assignments (required):</b> Writing assignment (text pg. 48) and rubric Cartoon strip  <b>Major Activities (required):</b> Chemical interaction lab (yeast) Comparing processes candy lab

Formative Assessments	Summative Assessments:	Performance Assessments:	Major Activities/ Assignments (required):
of relationships)(photosynthesis, respiration)			

<b>Possible Assessment Modifications /Accommodations/ Differentiation:</b>			
<u>Advanced Learners</u>	<u>Special Education Students</u>	<u>ENGLISH LANGUAGE LEARNERS (ELL)</u>	<u>At Risk Learners</u>
Topic list overview	Study guide for unit test	Study guide for unit test with pictures	Study guide for unit test
Varied question format (open ended instead of multiple choice) <ul style="list-style-type: none"> <li>• Photosynthesis</li> <li>• Respiration</li> </ul>	Scaffolding directions <ul style="list-style-type: none"> <li>• Chunking</li> </ul>	Scaffolding and simplifying directions <ul style="list-style-type: none"> <li>• All directions should be single step</li> </ul>	Scaffolding directions <ul style="list-style-type: none"> <li>• Chunking</li> </ul>
Optional individual procedure/data for lab report	Scaffolding questions for writing with prompts <ul style="list-style-type: none"> <li>• Fill in the blank with word bank</li> <li>• Utilize vocab sheet with picture</li> </ul>	Scaffolding questions for writing with visuals /prompts <ul style="list-style-type: none"> <li>• Fill in the blank with word bank</li> <li>• Utilize vocab sheet with English/native language and picture</li> </ul>	Scaffolding questions for writing with prompts <ul style="list-style-type: none"> <li>• Fill in the blank with word bank</li> <li>• Utilize vocab sheet with picture</li> </ul>
	Frequent checks for understanding during labs <ul style="list-style-type: none"> <li>• Photosynthesis</li> <li>• Respiration</li> </ul>	Frequent checks for understanding (1-1) <ul style="list-style-type: none"> <li>• Photosynthesis</li> <li>• Respiration</li> </ul>	Frequent checks for understanding during labs <ul style="list-style-type: none"> <li>• Photosynthesis</li> <li>• Respiration</li> </ul>
	Oral responses in place of written extended response	Oral responses in place of written extended response	Oral responses in place of written extended response
	Limit multiple choice options and provide visuals on assessments <ul style="list-style-type: none"> <li>• Photosynthesis</li> <li>• Respiration</li> <li>• Unit test</li> </ul>	Limit multiple choice options and provide visuals on assessments <ul style="list-style-type: none"> <li>• Use of diagrams/pictures</li> </ul>	Limit multiple choice options and provide visuals on assessments <ul style="list-style-type: none"> <li>• Photosynthesis</li> <li>• Respiration</li> <li>• Unit test</li> </ul>
	Lab format <ul style="list-style-type: none"> <li>• Chunk directions</li> <li>• Highlight key vocabulary</li> </ul>	Lab format <ul style="list-style-type: none"> <li>• Photosynthesis</li> <li>• Respiration</li> <li>• Unit test</li> </ul>	Lab format <ul style="list-style-type: none"> <li>• Chunk directions</li> <li>• Highlight key vocabulary</li> </ul>

Possible Assessment Modifications /Accommodations/ Differentiation:			
	<ul style="list-style-type: none"> <li>Modified response rubric</li> <li>Report template</li> </ul> <p>Extended time (quizzes, tests)</p>	<p>Lab format</p> <ul style="list-style-type: none"> <li>Single step directions</li> <li>Partner with classmate/assistance from teacher</li> <li>Highlight key vocabulary</li> <li>Modified response (oral explanation, simplified answer with vocab or picture)</li> </ul> <p>Extended time (quizzes, tests, labs, projects)</p>	<ul style="list-style-type: none"> <li>Modified response rubric</li> <li>Report template</li> </ul> <p>Extended time (quizzes and tests)</p>

Instructional Strategies:
<p>Modeling</p> <p>Scaffolding</p> <p>Direct Instruction</p> <p>Graphic Organizers</p> <p>Homework</p> <p>Note-taking</p> <p>Interactive notebooks</p> <p>Guided/Independent Practice (explanation and citing evidence as to why a phenomenon happens)</p> <p>Academic Games</p> <p>Investigation (Design and conduct an investigation)</p>

Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):			
<p><b><u>Advanced Learners</u></b></p> <p>Vocab</p> <ul style="list-style-type: none"> <li>Frayer model for key terms</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>Student created diagrams</li> </ul>	<p><b><u>Special Education Students</u></b></p> <p>Vocab</p> <ul style="list-style-type: none"> <li>Key words/ Picture</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>Notes (fill in, copy of teacher notes, additional examples)</li> </ul>	<p><b><u>ENGLISH LANGUAGE LEARNERS (ELL)</u></b></p> <p>Vocab</p> <ul style="list-style-type: none"> <li>English/Native Language/ Picture</li> <li>Key words</li> <li>Simplify words</li> </ul>	<p><b><u>At Risk Learners</u></b></p> <p>Vocab</p> <ul style="list-style-type: none"> <li>Key words/ Picture</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>Notes (fill in, copy of teacher notes, additional examples)</li> </ul>

Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):			
Leveled reading <ul style="list-style-type: none"> <li>Higher level for current event and class articles</li> </ul> Flexible grouping <ul style="list-style-type: none"> <li>Homogeneous grouping</li> </ul>	<ul style="list-style-type: none"> <li>Diagrams (Photosynthesis, respiration)</li> </ul> Leveled reading <ul style="list-style-type: none"> <li>Photosynthesis read and color</li> <li>Respiration read and color</li> </ul> Flexible grouping <ul style="list-style-type: none"> <li>Station/lab partner</li> </ul> Cueing/prompting <ul style="list-style-type: none"> <li>Photosynthesis</li> <li>Respiration</li> </ul>	Graphic organizers <ul style="list-style-type: none"> <li>Notes (fill in, copy of teacher notes)</li> <li>Diagrams (Photosynthesis, respiration)</li> </ul> Leveled reading <ul style="list-style-type: none"> <li>Photosynthesis read and color</li> <li>Respiration read and color</li> </ul> Flexible grouping <ul style="list-style-type: none"> <li>Station/lab partner</li> </ul> Cueing/prompting <ul style="list-style-type: none"> <li>Photosynthesis</li> <li>Respiration</li> </ul>	<ul style="list-style-type: none"> <li>Diagrams (Photosynthesis, respiration)</li> </ul> Leveled reading <ul style="list-style-type: none"> <li>Photosynthesis read and color</li> <li>Respiration read and color</li> </ul> Flexible grouping <ul style="list-style-type: none"> <li>Station/lab partner</li> </ul> Cueing/prompting <ul style="list-style-type: none"> <li>Photosynthesis</li> <li>Respiration</li> </ul>

Unit Vocabulary:
<b>Essential:</b> photosynthesis, chloroplast, ATP, respiration, mitochondria, energy, autotroph, heterotroph  <b>Non-Essential:</b> equation, raw materials, products, carbon dioxide, oxygen, chlorophyll, sugar, stomata, roots, fermentation

Interdisciplinary Connections (Applicable Standards):	Integration of Technology:	21 <sup>st</sup> Century Themes:	21 <sup>st</sup> Century Skills:
<b>ELA/Literacy:</b> RI.7.1. Cite several pieces of textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text. RI.7.2. Determine two or more central ideas in a text and analyze their development over the course of the	<b>Technology:</b> Quizlet(S/A/M) Students use as a memorization tool to assist students' learning and share their work with others  Blendspace(S/A/M) Students will use internet to access information and links, they can then classify,	<input checked="" type="checkbox"/> Health Literacy Using available information to make appropriate health related decisions  <input checked="" type="checkbox"/> Environmental Literacy Demonstrate knowledge and understanding of the environment and the circumstances affecting it,	<input checked="" type="checkbox"/> Creativity & Innovation Develop, implement, and communicate new ideas to others effectively  <input checked="" type="checkbox"/> Critical Thinking and Problem Solving Use various types of reasoning as appropriate to the situation

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p>text; provide an objective summary of the text.</p> <p>NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.</p> <p>NJSLSA.R2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.</p> <p>NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.</p> <p>NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.</p> <p>NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.</p> <p>NJSLSA.W6. Use technology, including</p>	<p>organize and share information</p> <p>Virtual labs(A/M/R) students are encouraged through active learning, allows students access to labs that would not be possible in a physical lab</p> <p>Interactive site(S/A/M) Students will use internet to access information and links, they can then classify, organize and share information</p> <p>PowerPoints(S/A) Students will create presentations, use internet to access information and links</p>	<p>particularly as relates to air, food, energy, water and ecosystems</p>	

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p>the Internet, to produce and publish writing and to interact and collaborate with others.</p> <p><b>Mathematics:</b> 6.EE.C.9: Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.</p>			

<b>Resources:</b>
<p><b>Texts/Materials:</b> Prentice Hall Science Explorer Series – Cell and Heredity</p>

<b>Unit: 4 Inheritance and Variation of Traits</b>	<b>Recommended Duration: 7-10 weeks (January-February)</b>
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**Unit Description:**  
 Students develop and use models to describe how gene mutations and sexual reproduction contribute to genetic variation. Students understand how genetic factors determine the growth of an individual organism. They also demonstrate understanding of the genetic implications of sexual and asexual reproduction. The crosscutting concepts of cause and effect and structure and function provide a framework for understanding how gene structure determines differences in the functioning of organisms. Students are expected to demonstrate proficiency in developing and using models. Students use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.

<b>Essential Questions:</b>	<b>Enduring Understandings:</b>
<ul style="list-style-type: none"> <li>• How do structural changes to genes (mutations) located on chromosomes affect proteins or affect the structure and function of an organism?</li> <li>• How do asexual reproduction and sexual reproduction affect the genetic variation of offspring?</li> <li>• What factors control the inherited traits of organisms?</li> </ul>	<ul style="list-style-type: none"> <li>• Students will understand how an organism’s DNA is copied through the process of mitosis</li> <li>• Students will understand how mutations are created and then duplicated through the process of mitosis.</li> <li>• Students will understand why variations occur in sexual reproduction and not asexual reproduction.</li> </ul>

<b>Relevant Standards:</b>	<b>Learning Goals:</b>	<b>Learning Objectives:</b>
<p>NJSLS-S.MS-LS3-1: Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.</p> <p>NJSLS-S.MS-LS3-2: Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.</p>	<ul style="list-style-type: none"> <li>• Students will understand organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring. (secondary to MS-LS3-2) (1 week)</li> <li>• Students will understand genes are located in the chromosomes of cells, with each chromosome pair containing two variants of each of many distinct genes. Each distinct gene chiefly controls the production of specific proteins, which in turn affects the traits of the individual. Changes (mutations) to genes can result in changes to proteins,</li> </ul>	<ul style="list-style-type: none"> <li>• Students will be able to compare and contrast asexual reproduction and sexual reproduction to show the results of the genetic information duplicated.</li> <li>• Students will be able to construct a model to show the 3 stages of mitosis.</li> <li>• Students will be able to relate cancer to the cell cycle.</li> <li>• Students will be able to create a model to represent a strand of DNA through replication.</li> <li>• Students will be able to describe what controls the inheritance of traits in organisms.</li> <li>• Students will be able to create and analyze a</li> </ul>

Relevant Standards:	Learning Goals:	Learning Objectives:
	<p>which can affect the structures and functions of the organism and thereby change traits. (MS-LS3-1) (2 weeks)</p> <ul style="list-style-type: none"> <li>● Students will understand variations of inherited traits between parent and offspring arise from genetic differences that result from the subset of chromosomes (and therefore genes) inherited. (MS-LS3-2) (2 weeks)</li> <li>● Students will understand in sexually reproducing organisms, each parent contributes half of the genes acquired (at random) by the offspring. Individuals have two of each chromosome and hence two alleles of each gene, one acquired from each parent. These versions may be identical or may differ from each other. (MS-LS3-2) (2 weeks)</li> <li>● Students will understand in addition to variations that arise from sexual reproduction, genetic information can be altered because of mutations. Though rare, mutations may result in changes to the structure and function of proteins. Some changes are beneficial, others harmful, and some neutral to the organism. (MS-LS3-1) (2 weeks)</li> </ul>	<p>Punnett square to show possible offspring.</p> <ul style="list-style-type: none"> <li>● Students will construct a model to show the structure of chromosomes and where the genes are located.</li> <li>● Students will be able to apply their understanding of meiosis to the contribution of alleles for sexual reproduction.</li> <li>● Students will be able to relate DNA, RNA, and proteins.</li> <li>● Students will be able to compare and contrast genetic disorders.</li> <li>● Students will be able to analyze how mutations can affect an organism.</li> </ul>

Formative Assessments	Summative Assessments:	Performance Assessments:	Major Activities/ Assignments (required):
Whiteboard responses and presentations (cell cycle, comparing DNA/RNA, Punnett practice)	Unit Test CSA	Onion root lab DNA structure lab Snork lab	<b>Major Activities (required):</b> Mitosis lab Monsters Genetics

Formative Assessments	Summative Assessments:	Performance Assessments:	Major Activities/ Assignments (required):
Entrance Ticket or Exit Ticket Drawing/interpretation of models (stages of cell cycle, DNA, mutations) Quizzes (Cell Cycle, Gregor Mendel evidence, Punnett Square, Meiosis/RNA) Questioning/Discussions (Q&A, A&Q) Status Check (sticks, hands, thumbs up) Student/Teacher/Peer Conferences Graphic Organizers (Venn diagram of Think/Pair/Share (Mendel Evidence))		Cancer Research Brochure Final Writing Piece— (evidence based writings) with rubric using research gathered through multiple forms. Communicating results through student chosen medium	Snork lab Onion slides,  <b>Major Assignments (required):</b> Cancer research notes page and rubric, research materials (computer, library books)

Possible Assessment Modifications /Accommodations/ Differentiation:			
<u>Advanced Learners</u>	<u>Special Education Students</u>	<u>ENGLISH LANGUAGE LEARNERS (ELL)</u>	<u>At Risk Learners</u>
Topic list overview  Varied question format (open ended instead of multiple choice) <ul style="list-style-type: none"> <li>• Cell Cycle</li> <li>• Gregor Mendel evidence</li> <li>• Punnett Square</li> <li>• Meiosis/RNA</li> </ul> Optional individual procedure/data for lab report	Study guide for unit test  Scaffolding directions <ul style="list-style-type: none"> <li>• Chunking</li> </ul> Scaffolding questions for writing with prompts <ul style="list-style-type: none"> <li>• Fill in the blank with word bank</li> <li>• Utilize vocab sheet with picture</li> </ul> Frequent checks for understanding during labs <ul style="list-style-type: none"> <li>• Cell Cycle</li> <li>• Gregor Mendel evidence</li> <li>• Punnett Square</li> <li>• Meiosis/RNA</li> </ul>	Study guide for unit test with pictures  Scaffolding and simplifying directions <ul style="list-style-type: none"> <li>• All directions should be single step</li> </ul> Scaffolding questions for writing with visuals /prompts <ul style="list-style-type: none"> <li>• Fill in the blank with word bank</li> <li>• Utilize vocab sheet with English/native language and picture</li> </ul> Frequent checks for understanding (1-1) <ul style="list-style-type: none"> <li>• Cell Cycle</li> <li>• Gregor Mendel evidence</li> <li>• Punnett Square</li> </ul>	Study guide for unit test  Scaffolding directions <ul style="list-style-type: none"> <li>• Chunking</li> </ul> Scaffolding questions for writing with prompts <ul style="list-style-type: none"> <li>• Fill in the blank with word bank</li> <li>• Utilize vocab sheet with picture</li> </ul> Frequent checks for understanding during labs <ul style="list-style-type: none"> <li>• Cell Cycle</li> <li>• Gregor Mendel evidence</li> <li>• Punnett Square</li> <li>• Meiosis/RNA</li> </ul>

**Possible Assessment Modifications /Accommodations/ Differentiation:**

	<p>Oral responses in place of written extended response</p> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>• Cell Cycle</li> <li>• Gregor Mendel evidence</li> <li>• Punnett Square</li> <li>• Meiosis/RNA</li> <li>• Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>• Chunk directions</li> <li>• Highlight key vocabulary</li> <li>• Modified response rubric</li> <li>• Report template</li> </ul> <p>Extended time (quizzes, tests)</p>	<ul style="list-style-type: none"> <li>• Meiosis/RNA</li> </ul> <p>Oral responses in place of written extended response</p> <ul style="list-style-type: none"> <li>• Use of diagrams/pictures</li> </ul> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>• Cell Cycle</li> <li>• Gregor Mendel evidence</li> <li>• Punnett Square</li> <li>• Meiosis/RNA</li> <li>• Unit Test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>• Single step directions</li> <li>• Partner with classmate/assistance from teacher</li> <li>• Highlight key vocabulary</li> <li>• Modified response (oral explanation, simplified answer with vocab or picture)</li> </ul> <p>Extended time (quizzes, tests, labs, projects)</p>	<p>Oral responses in place of written extended response</p> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>• Cell Cycle</li> <li>• Gregor Mendel evidence</li> <li>• Punnett Square</li> <li>• Meiosis/RNA</li> <li>• Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>• Chunk directions</li> <li>• Highlight key vocabulary</li> <li>• Modified response rubric</li> <li>• Report template</li> </ul> <p>Extended time (quizzes and tests)</p>
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**Instructional Strategies:**

Modeling  
 Scaffolding  
 Direct Instruction  
 Graphic Organizers  
 Homework  
 Note-taking

**Instructional Strategies:**

Interactive notebooks  
 Guided/Independent Practice (explanation and citing evidence as to why a phenomenon happens)  
 Academic Games  
 Investigation (Design and conduct an investigation)

**Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):**

<u>Advanced Learners</u>	<u>Special Education Students</u>	<u>ENGLISH LANGUAGE LEARNERS (ELL)</u>	<u>At Risk Learners</u>
<p>Vocab</p> <ul style="list-style-type: none"> <li>Frayer model for key terms</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>Student created diagrams</li> </ul> <p>Leveled reading</p> <ul style="list-style-type: none"> <li>Higher level for current event and class articles</li> </ul> <p>Flexible grouping</p> <ul style="list-style-type: none"> <li>Homogeneous grouping</li> </ul>	<p>Vocab</p> <ul style="list-style-type: none"> <li>Key words/ Picture</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>Notes (fill in, copy of teacher notes, additional examples)</li> <li>Diagrams (DNA/RNA, cell cycle, genetic disorders)</li> </ul> <p>Leveled reading</p> <ul style="list-style-type: none"> <li>Cell Cycle read and color</li> <li>DNA replication read and color</li> </ul> <p>Flexible grouping</p> <ul style="list-style-type: none"> <li>Station/lab partner</li> </ul> <p>Cueing/prompting</p> <ul style="list-style-type: none"> <li>Cell cycle</li> <li>DNA structure</li> <li>Traits</li> <li>Punnett Process</li> </ul>	<p>Vocab</p> <ul style="list-style-type: none"> <li>English/Native Language/ Picture</li> <li>Key words</li> <li>Simplify words</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>Notes (fill in, copy of teacher notes)</li> <li>Diagrams (DNA/RNA, cell cycle, genetic disorders)</li> </ul> <p>Leveled reading</p> <ul style="list-style-type: none"> <li>Cell Cycle read and color</li> <li>DNA replication read and color</li> </ul> <p>Flexible grouping</p> <ul style="list-style-type: none"> <li>Station/lab partner</li> </ul> <p>Cueing/prompting</p> <ul style="list-style-type: none"> <li>Cell cycle</li> <li>DNA structure</li> <li>Traits</li> <li>Punnett Process</li> </ul>	<p>Vocab</p> <ul style="list-style-type: none"> <li>Key words/ Picture</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>Notes (fill in, copy of teacher notes, additional examples)</li> <li>Diagrams (DNA/RNA, cell cycle, genetic disorders)</li> </ul> <p>Leveled reading</p> <ul style="list-style-type: none"> <li>Cell Cycle read and color</li> <li>DNA replication read and color</li> </ul> <p>Flexible grouping</p> <ul style="list-style-type: none"> <li>Station/lab partner</li> </ul> <p>Cueing/prompting</p> <ul style="list-style-type: none"> <li>Cell cycle</li> <li>DNA structure</li> <li>Traits</li> <li>Punnett Process</li> </ul>

**Unit Vocabulary:**

**Essential:** cell cycle, interphase, mitosis, cytokinesis, mutation, cancer, heredity, trait, genetics, allele, gene, probability, Punnett square, genotype, phenotype, homozygous, heterozygous

**Non-Essential:** replication, DNA, chromosome, purebred, hybrid, dominant, recessive, codominance

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p><b>ELA/Literacy:</b>            RI.7.1. Cite several pieces of textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text.            RI.7.2. Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.            NJLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.            NJLSA.R2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.            NJLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient</p>	<p><b>Technology:</b>            Quizlet(S/A/M) Students use as a memorization tool to assist students' learning and share their work with others              Blendspace(S/A/M) Students will use internet to access information and links, they can then classify, organize and share information              Virtual labs(A/M/R) students are encouraged through active learning, allows students access to labs that would not be possible in a physical lab              Interactive site(S/A/M) Students will use internet to access information and links, they can then classify, organize and share information              PowerPoints(S/A) Students will create presentations, use internet to access information and links</p>	<p>___ Global Awareness              ___ Civic Literacy              ___ Financial, Economic, Business, &amp; Entrepreneurial Literacy              __X__ Health Literacy            Using available information to make appropriate health related decisions</p>	<p>___ Creativity &amp; Innovation              ___ Media Literacy              __X__ Critical Thinking and Problem Solving            Effectively analyze and evaluate evidence, arguments, claims, and beliefs              ___ Life and Career Skills              ___ Information &amp; Communication Technologies Literacy              __X__ Communication &amp; Collaboration            Articulate thoughts and ideas effectively using oral, written, and non-verbal communication skills in a variety of forms and context              ___ Information Literacy</p>

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p>evidence.</p> <p>NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.</p> <p>NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.</p> <p>NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.</p> <p>NJSLSA.W7. Conduct short as well as more sustained research projects, utilizing an inquiry-based research process, based on focused questions, demonstrating understanding of the subject under investigation.</p> <p>NJSLSA.W8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.</p> <p>NJSLSA.W9. Draw evidence from literary or informational texts to</p>			

Interdisciplinary Connections (Applicable Standards):	Integration of Technology:	21 <sup>st</sup> Century Themes:	21 <sup>st</sup> Century Skills:
<p>support analysis, reflection, and research.</p> <p><b>Mathematics:</b>  MP.4: Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.</p> <p>6.SP.A.2: Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.</p> <p>6.SP.B.5: Summarize numerical data sets in relation to their context, such as by:</p> <ul style="list-style-type: none"> <li>a. Reporting the number of observations.</li> <li>b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.</li> <li>c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as</li> </ul>			

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p>describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.</p>			

<b>Resources:</b>
<p><b>Texts/Materials:</b> Prentice Hall Science Explorer Series – Cell and Heredity</p>

<b>Unit: 5 Selection and Adaptation</b>	<b>Recommended Duration: 4-6 weeks (February- March)</b>
<p><b>Unit Description:</b> Students construct explanations based on evidence to support fundamental understandings of natural selection and evolution. They will use ideas of genetic variation in a population to make sense of how organisms survive and reproduce, thus passing on the traits of the species. The crosscutting concepts of patterns and structure and function are called out as organizing concepts that students use to describe biological evolution. Students use the practices of constructing explanations, obtaining, evaluating, and communicating information, and using mathematical and computational thinking. Students are also expected to use these practices to demonstrate understanding of the core ideas.</p>	

<b>Essential Questions:</b>	<b>Enduring Understandings:</b>
<ul style="list-style-type: none"> <li>How can changes to the genetic code increase or decrease an individual's chances of survival?</li> <li>How can the environment affect natural selection?</li> <li>Are Genetically Modified Organisms (GMO) safe to eat?</li> </ul>	<ul style="list-style-type: none"> <li>The students will understand how variations lead to adaptations resulting in natural selection.</li> <li>The students will understand how different geographical locations can affect natural selection in a species.</li> <li>The students will understand the benefits and negative side effects of GMOs.</li> </ul>

<b>Relevant Standards:</b>	<b>Learning Goals:</b>	<b>Learning Objectives:</b>
<p>NJSLS-S.MS-LS4-4: Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.</p> <p>NJSLS-S.MS-LS4-5: Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.</p> <p>NJSLS-S.MS-LS4-6: Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.</p>	<ul style="list-style-type: none"> <li>Students will understand in <i>artificial</i> selection, humans have the capacity to influence certain characteristics of organisms by selective breeding. One can choose desired parental traits determined by genes, which are then passed onto offspring. (MS-LS4-5) (2 weeks)</li> <li>Students will understand natural selection leads to the predominance of certain traits in a population, and the suppression of others. (MS-LS4-4) (2 weeks)</li> <li>Students will understand adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support</li> </ul>	<ul style="list-style-type: none"> <li>The students will be able to compare three ways of producing organisms with desired traits.</li> <li>Students will be able to describe how and why organisms are genetically modified.</li> <li>The students will be able to research and debate the benefits and side effects of GMOs.</li> <li>The students will be able to explain the goals of the Human Genome Project.</li> <li>The students will be able to describe important observations Darwin made on his voyage that contributed to the theory of natural selection.</li> <li>The students will be able to compose a hypothesis, using Darwin's research, to explain differences between similar species.</li> <li>The students will be able to explain how variations can lead to adaptations which lead to natural selection in a species over time.</li> </ul>

Relevant Standards:	Learning Goals:	Learning Objectives:
	successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS4-6) (2 weeks)	<ul style="list-style-type: none"> <li>Students will be able to interpret environmental effects on a population.</li> </ul>

Formative Assessments	Summative Assessments:	Performance Assessments:	Major Activities/ Assignments (required):
<p>Whiteboard responses and presentations (Darwin Evidence, GMO)</p> <p>Entrance Ticket or Exit Ticket</p> <p>Drawing/interpretation of models (branching tree)</p> <p>Quizzes (Darwin/theory of natural selection, adaptations and variations)</p> <p>Questioning/Discussions (Q&amp;A, A&amp;Q)</p> <p>Status Check (sticks, hands, thumbs up)</p> <p>Student/Teacher/Peer Conferences</p> <p>Graphic Organizers (Venn diagram of relationships)</p> <p>Think/Pair/Share (Darwin)</p>	<p>Unit Test</p> <p>CSA</p>	<p>Labs:</p> <p>Bird Beak lab</p> <p>Peppered Moth Graphing Lab</p> <p>GMO Debate</p> <p>What Darwin Never Knew extended response questions /rubric</p>	<p><b>Major Assignments (required):</b></p> <p>Squirrel Island picture and explanation</p> <p>Deer/Wolf graph and questions</p> <p>Biodiversity research project (current event)</p> <p>Population graph and questions</p> <p>Computers, books, science article resources, research rubric</p> <p>Squirrel Island characteristics and rubric</p> <p><b>Major Activities (required):</b></p> <p><b>Major Activities (required):</b></p> <p>GMO Debate</p> <p>What Darwin Never Knew reflection notes/responses</p> <p>research material (computers, books, articles), rubric, note sheet</p> <p>movie reflection questions</p>

**Possible Assessment Modifications /Accommodations/ Differentiation:**

<u>Advanced Learners</u>	<u>Special Education Students</u>	<u>ENGLISH LANGUAGE LEARNERS (ELL)</u>	<u>At Risk Learners</u>
<p>Topic list overview</p> <p>Varied question format (open ended instead of multiple choice)</p> <ul style="list-style-type: none"> <li>• Selective breeding/cloning</li> <li>• Natural selection</li> <li>• Adaptations and variations</li> </ul> <p>Optional individual procedure/data for lab report</p>	<p>Study guide for unit test</p> <p>Scaffolding directions</p> <ul style="list-style-type: none"> <li>• Chunking</li> </ul> <p>Scaffolding questions for writing with prompts</p> <ul style="list-style-type: none"> <li>• Fill in the blank with word bank</li> <li>• Utilize vocab sheet with picture</li> <li>• (WDNK) guided questions or adapted rubric</li> </ul> <p>Frequent checks for understanding during labs</p> <ul style="list-style-type: none"> <li>• Selective breeding/cloning</li> <li>• Natural selection</li> <li>• Adaptations and variations</li> </ul> <p>Oral responses in place of written extended response</p> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>• Selective breeding/cloning</li> <li>• Natural selection</li> <li>• Adaptations and variations</li> <li>• Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>• Chunk directions</li> <li>• Highlight key vocabulary</li> </ul>	<p>Study guide for unit test with pictures</p> <p>Scaffolding and simplifying directions</p> <ul style="list-style-type: none"> <li>• All directions should be single step</li> </ul> <p>Scaffolding questions for writing with visuals /prompts</p> <ul style="list-style-type: none"> <li>• Fill in the blank with word bank</li> <li>• Utilize vocab sheet with English/native language and picture</li> </ul> <p>Frequent checks for understanding (1-1)</p> <ul style="list-style-type: none"> <li>• Selective breeding/cloning</li> <li>• Natural selection</li> <li>• Adaptations and variations</li> </ul> <p>Oral responses in place of written extended response</p> <ul style="list-style-type: none"> <li>• Use of diagrams/pictures</li> </ul> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>• Selective breeding/cloning</li> <li>• Natural selection</li> <li>• Adaptations and variations</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>• Single step directions</li> <li>• Partner with classmate/assistance from</li> </ul>	<p>Study guide for unit test</p> <p>Scaffolding directions</p> <ul style="list-style-type: none"> <li>• Chunking</li> </ul> <p>Scaffolding questions for writing with prompts</p> <ul style="list-style-type: none"> <li>• Fill in the blank with word bank</li> <li>• Utilize vocab sheet with picture</li> <li>• (WDNK) guided questions or adapted rubric</li> </ul> <p>Frequent checks for understanding during labs</p> <ul style="list-style-type: none"> <li>• Selective breeding/cloning</li> <li>• Natural selection</li> <li>• Adaptations and variations</li> </ul> <p>Oral responses in place of written extended response</p> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>• Selective breeding/cloning</li> <li>• Natural selection</li> <li>• Adaptations and variations</li> <li>• Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>• Chunk directions</li> <li>• Highlight key vocabulary</li> </ul>

<b>Possible Assessment Modifications /Accommodations/ Differentiation:</b>			
	<ul style="list-style-type: none"> <li>Modified response rubric</li> <li>Report template</li> </ul> <p>Extended time (quizzes, tests)</p>	<p>teacher</p> <ul style="list-style-type: none"> <li>Highlight key vocabulary</li> <li>Modified response (oral explanation, simplified answer with vocab or picture)</li> </ul> <p>Extended time (quizzes, tests, labs, projects)</p>	<ul style="list-style-type: none"> <li>Modified response rubric</li> <li>Report template</li> </ul> <p>Extended time (quizzes and tests)</p>

<b>Instructional Strategies:</b>
<p>Modeling Scaffolding Direct Instruction Graphic Organizers Homework Note-taking Interactive notebooks Guided/Independent Practice (explanation and citing evidence as to why a phenomenon happens) Academic Games Investigation (Design and conduct an investigation)</p>

<b>Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):</b>			
<u><b>Advanced Learners</b></u>	<u><b>Special Education Students</b></u>	<u><b>ENGLISH LANGUAGE LEARNERS (ELL)</b></u>	<u><b>At Risk Learners</b></u>
<p>Vocab</p> <ul style="list-style-type: none"> <li>Frayer model for key terms</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>Student created diagrams</li> </ul> <p>Leveled reading</p> <ul style="list-style-type: none"> <li>Higher level for current event and class articles</li> </ul> <p>Flexible grouping</p>	<p>Vocab</p> <ul style="list-style-type: none"> <li>Key words/ Picture</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>Notes (fill in, copy of teacher notes, additional examples)</li> <li>Diagrams (branching tree)</li> </ul> <p>Leveled reading</p> <ul style="list-style-type: none"> <li>Darwin's Theory read and color</li> </ul>	<p>Vocab</p> <ul style="list-style-type: none"> <li>English/Native Language/ Picture</li> <li>Key words</li> <li>Simplify words</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>Notes (fill in, copy of teacher notes)</li> <li>Diagrams (fossil formation, geologic timescale)</li> </ul>	<p>Vocab</p> <ul style="list-style-type: none"> <li>Key words/ Picture</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>Notes (fill in, copy of teacher notes, additional examples)</li> <li>Diagrams (branching tree)</li> </ul> <p>Leveled reading</p> <ul style="list-style-type: none"> <li>Darwin's Theory read and color</li> </ul>

Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):			
<ul style="list-style-type: none"> <li>Homogeneous grouping</li> </ul>	<ul style="list-style-type: none"> <li>Selective breeding read and color</li> </ul> <p>Flexible grouping</p> <ul style="list-style-type: none"> <li>Station/lab partner</li> </ul> <p>Cueing/prompting</p> <ul style="list-style-type: none"> <li>Selective breeding/cloning</li> <li>Natural selection</li> <li>Adaptations and variations</li> </ul>	<p>Leveled reading</p> <ul style="list-style-type: none"> <li>Fossil formation read and color</li> </ul> <p>Flexible grouping</p> <ul style="list-style-type: none"> <li>Station/lab partner</li> </ul> <p>Cueing/prompting</p> <ul style="list-style-type: none"> <li>Selective breeding/cloning</li> <li>Natural selection</li> <li>Adaptations and variations</li> </ul>	<ul style="list-style-type: none"> <li>Selective breeding read and color</li> </ul> <p>Flexible grouping</p> <ul style="list-style-type: none"> <li>Station/lab partner</li> </ul> <p>Cueing/prompting</p> <ul style="list-style-type: none"> <li>Selective breeding/cloning</li> <li>Natural selection</li> <li>Adaptations and variations</li> </ul>

Unit Vocabulary:
<p><b>Essential:</b> GMO, selective breeding, cloning, species, adaptation, evolution, natural selection, variation</p> <p><b>Non-Essential:</b> characteristics, traits, population, Darwin, scientific theory, branching tree, fossil, ecosystem</p>

Interdisciplinary Connections (Applicable Standards):	Integration of Technology:	21 <sup>st</sup> Century Themes:	21 <sup>st</sup> Century Skills:
<p><b>ELA/Literacy:</b></p> <p>RI.7.1. Cite several pieces of textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text.</p> <p>RI.7.2. Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.</p>	<p><b>Technology:</b></p> <p>Quizlet(S/A/M) Students use as a memorization tool to assist students' learning and share their work with others</p> <p>Blendspace(S/A/M) Students will use internet to access information and links, they can then classify, organize and share information</p> <p>Virtual labs(A/M/R) students are encouraged through active learning, allows students access</p>	<p><input checked="" type="checkbox"/> Global Awareness Understand and address global issues</p> <p><input type="checkbox"/> Civic Literacy</p> <p><input type="checkbox"/> Financial, Economic, Business, &amp; Entrepreneurial Literacy</p> <p><input type="checkbox"/> Health Literacy</p> <p><input checked="" type="checkbox"/> Environmental Literacy</p>	<p><input type="checkbox"/> Creativity &amp; Innovation</p> <p><input type="checkbox"/> Media Literacy</p> <p><input checked="" type="checkbox"/> Critical Thinking and Problem Solving Interpret information and draw conclusions based on the best analysis</p> <p><input type="checkbox"/> Life and Career Skills</p> <p><input type="checkbox"/> Information &amp; Communication Technologies Literacy</p>

Interdisciplinary Connections (Applicable Standards):	Integration of Technology:	21 <sup>st</sup> Century Themes:	21 <sup>st</sup> Century Skills:
<p>NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.</p> <p>NJSLSA.R2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.</p> <p>NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.</p> <p>NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.</p> <p>NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>NJSLSA.W5. Develop and strengthen writing as needed by planning,</p>	<p>to labs that would not be possible in a physical lab</p> <p>Interactive site(S/A/M) Students will use internet to access information and links, they can then classify, organize and share information</p> <p>PowerPoints(S/A) Students will create presentations, use internet to access information and links</p>	<p>Demonstrate knowledge and understanding of society's impact on the natural world</p>	<p>___ Communication &amp; Collaboration</p> <p>__X__ Information Literacy Evaluate information critically and competently for the issue or problem at hand</p>

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p>revising, editing, rewriting, or trying a new approach.</p> <p>NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.</p> <p><b>Mathematics:</b></p> <p>MP.4: Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.</p> <p>6.RP.A.1: Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.</p> <p>6.SP.B.5: Summarize numerical data sets in relation to their context, such as by:</p> <ul style="list-style-type: none"> <li>a. Reporting the number of observations.</li> <li>b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.</li> </ul>			

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p>c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.</p> <p>7.RP.A.2: Recognize and represent proportional relationships between quantities.</p> <p>7.SP.A.1: Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.</p>			

<b>Resources:</b>
<p><b>Texts/Materials:</b> Prentice Hall Science Explorer Series – Cell and Heredity</p>

<b>Unit: 6 Evidence of a Common Ancestry</b>	<b>Recommended Duration: 3-4 weeks (March-April)</b>
<p><b>Unit Description:</b>          In this unit of study, students analyze graphical displays and gather evidence from multiple sources in order to develop an understanding of how fossil records and anatomical similarities of the relationships among organisms and species describe biological evolution. Students search for patterns in the evidence to support their understanding of the fossil record and how those patterns show relationships between modern organisms and their common ancestors. The crosscutting concepts of cause and effect, patterns, and structure and function are called out as organizing concepts for these disciplinary core ideas. Students use the practices of analyzing graphical displays and gathering, reading, and communicating information. Students are also expected to use these practices to demonstrate understanding of the core ideas.</p>	

<b>Essential Questions:</b>	<b>Enduring Understandings:</b>
<ul style="list-style-type: none"> <li>● How do we know when an organism (fossil) was alive?</li> <li>● How do we know that birds and dinosaurs are related?</li> <li>● Other than bones and structures being similar, what other evidence is there that birds and dinosaurs are related?</li> <li>● How do we know that the Earth is approximately 4.6-billion-year-old history?</li> </ul>	<ul style="list-style-type: none"> <li>● The students will understand how fossils are formed and how they are dated.</li> <li>● The students will understand how homologous structures show common ancestry.</li> <li>● The students will understand how DNA and embryonic development are used to show relativity.</li> <li>● The students will understand how to use evidence of fossils to construct a geologic time scale of earth.</li> </ul>

<b>Relevant Standards:</b>	<b>Learning Goals:</b>	<b>Learning Objectives:</b>
<p>NJSLS-S.MS-LS4-1: Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.</p> <p>NJSLS-S.MS-LS4-2: Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.</p>	<ul style="list-style-type: none"> <li>● Students will understand anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record, enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent. (MS-LS4-2) (1 week)</li> <li>● Students will understand comparison of the embryological development of different species also reveals similarities that show relationships not evident in the fully-formed anatomy. (MS-LS4-3) (1 week)</li> </ul>	<ul style="list-style-type: none"> <li>● Students will be able to analyze evidence to support the theory of evolution.</li> <li>● The students will be able to defend evolutionary relationships and patterns of similarities among multiple species.</li> <li>● The students will be able to describe how a new species forms.</li> <li>● The students will be able to compare the three ways most fossils form.</li> <li>● The students will be able to measure a fossil's age through relative dating.</li> <li>● Students will be able to analyze and interpret data for patterns in the fossil record that document the</li> </ul>

Relevant Standards:	Learning Goals:	Learning Objectives:
<p>NJSLS-S.MS-LS4-3: Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.</p> <p>NJSLS-S.MS-ESS1-4: Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.</p>	<ul style="list-style-type: none"> <li>Students will understand the collection of fossils and their placement in chronological order (e.g., through the location of the sedimentary layers in which they are found or through radioactive dating) is known as the fossil record. It documents the existence, diversity, extinction, and change of many life forms throughout the history of life on Earth. (MS-LS4-1) (2 weeks)</li> <li>Students will understand the geologic time scale interpreted from rock strata provides a way to organize Earth's history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. (MS-ESS1-4) (1 week)</li> </ul>	<p>existence, diversity, extinction, and change of life forms throughout the history of life on Earth.</p> <ul style="list-style-type: none"> <li>The students will be able to create a geologic timescale of Earth's history using evidence from fossils.</li> </ul>

Formative Assessments	Summative Assessments:	Performance Assessments:	Major Activities/ Assignments (required):
<p>Whiteboard responses and presentations (evidence of ancestry) Entrance Ticket or Exit Ticket Drawing/interpretation of models (branching tree and geologic timescale, formation of fossils) Quizzes (evidence of ancestry) Questioning/Discussions (Q&amp;A, A&amp;Q) Status Check (sticks, hands, thumbs up) Student/Teacher/Peer Conferences Graphic Organizers (Venn diagram of relationships) Think/Pair/Share (evidence of common ancestry)</p>	<p>Unit Test CSA</p>	<p>Mystery Bones Lab Evidence of common ancestry lab  Geologic Timescale: Writing Piece (evidence based writing) Class activity with rubric using information gathered through research (multiple sources) Presented information on time period to class</p>	<p><b>Major Assignments (required):</b> Archeology writing assignment (using evidence to show existence of life form) Geologic Time Scale Project Writing assignment with rubric  <b>Major Activities (required):</b> Evidence of common ancestry lab Homologous Structure Lab</p>

**Possible Assessment Modifications /Accommodations/ Differentiation:**

<b><u>Advanced Learners</u></b>	<b><u>Special Education Students</u></b>	<b><u>ENGLISH LANGUAGE LEARNERS (ELL)</u></b>	<b><u>At Risk Learners</u></b>
<p>Topic list overview</p> <p>Varied question format (open ended instead of multiple choice)</p> <ul style="list-style-type: none"> <li>Evidence of ancestry vocab quiz</li> </ul> <p>Optional individual procedure/data for lab report</p>	<p>Study guide for unit test</p> <p>Scaffolding directions</p> <ul style="list-style-type: none"> <li>Chunking</li> </ul> <p>Scaffolding questions for writing with prompts</p> <ul style="list-style-type: none"> <li>Fill in the blank with word bank</li> <li>Utilize vocab sheet with picture</li> </ul> <p>Frequent checks for understanding during labs</p> <ul style="list-style-type: none"> <li>Homologous structures</li> <li>Fossil formation</li> <li>Importance of geologic timescale</li> </ul> <p>Oral responses in place of written extended response</p> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>Homologous structures</li> <li>Fossil formation</li> <li>Importance of geologic timescale</li> <li>Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>Chunk directions</li> <li>Highlight key vocabulary</li> </ul>	<p>Study guide for unit test with pictures</p> <p>Scaffolding and simplifying directions</p> <ul style="list-style-type: none"> <li>All directions should be single step</li> </ul> <p>Scaffolding questions for writing with visuals /prompts</p> <ul style="list-style-type: none"> <li>Fill in the blank with word bank</li> <li>Utilize vocab sheet with English/native language and picture</li> </ul> <p>Frequent checks for understanding (1-1)</p> <ul style="list-style-type: none"> <li>Homologous structures</li> <li>Fossil formation</li> <li>Importance of geologic timescale</li> </ul> <p>Oral responses in place of written extended response</p> <ul style="list-style-type: none"> <li>Use of diagrams/pictures</li> </ul> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>Homologous structures</li> <li>Fossil formation</li> <li>Importance of geologic timescale</li> </ul>	<p>Study guide for unit test</p> <p>Scaffolding directions</p> <ul style="list-style-type: none"> <li>Chunking</li> </ul> <p>Scaffolding questions for writing with prompts</p> <ul style="list-style-type: none"> <li>Fill in the blank with word bank</li> <li>Utilize vocab sheet with picture</li> </ul> <p>Frequent checks for understanding during labs</p> <ul style="list-style-type: none"> <li>Homologous structures</li> <li>Fossil formation</li> <li>Importance of geologic timescale</li> </ul> <p>Oral responses in place of written extended response</p> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>Homologous structures</li> <li>Fossil formation</li> <li>Importance of geologic timescale</li> <li>Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>Chunk directions</li> <li>Highlight key vocabulary</li> </ul>

Possible Assessment Modifications /Accommodations/ Differentiation:			
	<ul style="list-style-type: none"> <li>Modified response rubric</li> <li>Report template</li> </ul> <p>Extended time (quizzes, tests)</p>	<p>Lab format</p> <ul style="list-style-type: none"> <li>Single step directions</li> <li>Partner with classmate/assistance from teacher</li> <li>Highlight key vocabulary</li> <li>Modified response (oral explanation, simplified answer with vocab or picture)</li> </ul> <p>Extended time (quizzes, tests, labs, projects)</p>	<ul style="list-style-type: none"> <li>Modified response rubric</li> <li>Report template</li> </ul> <p>Extended time (quizzes and tests)</p>

Instructional Strategies:
<p>Modeling</p> <p>Scaffolding</p> <p>Direct Instruction</p> <p>Graphic Organizers</p> <p>Homework</p> <p>Note-taking</p> <p>Interactive notebooks</p> <p>Guided/Independent Practice (explanation and citing evidence as to why a phenomenon happens)</p> <p>Academic Games</p> <p>Investigation (Design and conduct an investigation)</p>

Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):			
<p><b><u>Advanced Learners</u></b></p> <p>Vocab</p> <ul style="list-style-type: none"> <li>Frayer model for key terms</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>Student created diagrams</li> </ul> <p>Leveled reading</p>	<p><b><u>Special Education Students</u></b></p> <p>Vocab</p> <ul style="list-style-type: none"> <li>Key words/ Picture</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>Notes (fill in, copy of teacher notes)</li> </ul>	<p><b><u>ENGLISH LANGUAGE LEARNERS (ELL)</u></b></p> <p>Vocab</p> <ul style="list-style-type: none"> <li>English/Native Language/ Picture</li> <li>Key words</li> <li>Simplify words</li> </ul> <p>Graphic organizers</p>	<p><b><u>At Risk Learners</u></b></p> <p>Vocab</p> <ul style="list-style-type: none"> <li>Key words/ Picture</li> </ul> <p>Graphic organizers</p> <ul style="list-style-type: none"> <li>Notes (fill in, copy of teacher notes)</li> </ul>

<b>Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):</b>			
<ul style="list-style-type: none"> <li>Higher level for current event and class articles</li> </ul> <p>Flexible grouping</p> <ul style="list-style-type: none"> <li>Homogeneous grouping</li> </ul>	<ul style="list-style-type: none"> <li>Diagrams (fossil formation, geologic timescale)</li> </ul> <p>Leveled reading</p> <ul style="list-style-type: none"> <li>Fossil formation read and color</li> </ul> <p>Flexible grouping</p> <ul style="list-style-type: none"> <li>Station/lab partner</li> </ul> <p>Cueing/prompting</p> <ul style="list-style-type: none"> <li>Comparing embryo, homologous structure, DNA</li> <li>Importance of geologic timescale</li> </ul>	<ul style="list-style-type: none"> <li>Notes (fill in, copy of teacher notes)</li> <li>Diagrams (fossil formation, geologic timescale)</li> </ul> <p>Leveled reading</p> <ul style="list-style-type: none"> <li>Fossil formation read and color</li> </ul> <p>Flexible grouping</p> <ul style="list-style-type: none"> <li>Station/lab partner</li> </ul> <p>Cueing/prompting</p> <ul style="list-style-type: none"> <li>Comparing embryo, homologous structure, DNA</li> <li>Importance of geologic timescale</li> </ul>	<ul style="list-style-type: none"> <li>Diagrams (fossil formation, geologic timescale)</li> </ul> <p>Leveled reading</p> <ul style="list-style-type: none"> <li>Fossil formation read and color</li> </ul> <p>Flexible grouping</p> <ul style="list-style-type: none"> <li>Station/lab partner</li> </ul> <p>Cueing/prompting</p> <ul style="list-style-type: none"> <li>Comparing embryo, homologous structure, DNA</li> <li>Importance of geologic timescale</li> </ul>

<b>Unit Vocabulary:</b>
<p><b>Essential:</b> homologous structures, fossil, radioactive dating, relative dating, fossil record, embryo, geologic timescale</p> <p><b>Non-Essential:</b> branching tree, DNA, species, extinct, mold, cast, petrified fossil, radioactive element</p>

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p><b>ELA/Lit:</b></p> <p>RI.7.1. Cite several pieces of textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text.</p> <p>RI.7.2. Determine two or more central ideas in a text and analyze their</p>	<p>Technology: Quizlet(S/A/M) Students use as a memorization tool to assist students' learning and share their work with others</p> <p>Blendspace(S/A/M) Students will use internet to access information and links, they can then classify,</p>	<p><u>  </u>X<u>  </u> Environmental Literacy Demonstrate knowledge and understanding of the environment and the conditions affecting it, particularly as relates to climate, land, food, water, and ecosystems</p>	<p><u>  </u>X<u>  </u> Creativity &amp; Innovation Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work</p> <p><u>  </u>X<u>  </u> Critical Thinking and Problem Solving Effectively analyze and evaluate evidence,</p>

Interdisciplinary Connections (Applicable Standards):	Integration of Technology:	21 <sup>st</sup> Century Themes:	21 <sup>st</sup> Century Skills:
<p>development over the course of the text; provide an objective summary of the text.</p> <p>NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.</p> <p>NJSLSA.R2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.</p> <p>NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.</p> <p>NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.</p> <p>NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a</p>	<p>organize and share information</p> <p>Virtual labs(A/M/R) students are encouraged through active learning, allows students access to labs that would not be possible in a physical lab</p> <p>Interactive site(S/A/M) Students will use internet to access information and links, they can then classify, organize and share information</p> <p>PowerPoints(S/A) Students will create presentations, use internet to access information and links</p>		<p>arguments, claims and beliefs</p>

Interdisciplinary Connections (Applicable Standards):	Integration of Technology:	21 <sup>st</sup> Century Themes:	21 <sup>st</sup> Century Skills:
<p>new approach.</p> <p>NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.</p> <p><b>Mathematics:</b></p> <p>MP.4: Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.</p> <p>6.SP.B.5: Summarize numerical data sets in relation to their context, such as by:</p> <p>a. Reporting the number of observations.</p> <p>b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.</p> <p>c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context</p>			

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p>in which the data were gathered.</p> <p>7.SP.A.1: Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.</p>			

<b>Resources:</b>
<p><b>Texts/Materials:</b> Prentice Hall Science Explorer Series – Cell and Heredity</p>

<b>Unit: 7 Earth Systems</b>	<b>Recommended Duration: 5-6 weeks (May-June)</b>
<p><b>Unit Description:</b>  Students examine geoscience data in order to understand processes and events in Earth’s history. Important crosscutting concepts in this unit are scale, proportion, and quantity, stability and change, and patterns in relation to the different ways geologic processes operate over geologic time. An important aspect of the history of Earth is that geologic events and conditions have affected the evolution of life, but different life forms have also played important roles in altering Earth’s systems. Students understand how Earth’s geosystems operate by modeling the flow of energy and cycling of matter within and among different systems. Students investigate the controlling properties of important materials and construct explanations based on the analysis of real geoscience data. Students are expected to demonstrate proficiency in analyzing and interpreting data and constructing explanations. They are also expected to use these practices to demonstrate understanding of the core ideas.</p>	

<b>Essential Questions:</b>	<b>Enduring Understandings:</b>
<ul style="list-style-type: none"> <li>● What drives the cycling of Earth’s materials?</li> <li>● What evidence is there to support the theory of plate tectonics?</li> <li>● Do all of the changes to Earth systems occur in similar time scales?</li> <li>● What causes catastrophic geological events?</li> </ul>	<ul style="list-style-type: none"> <li>● The students will understand that all Earth processes are the result of energy flowing and matter cycling within and among the planet’s systems.</li> <li>● The students will understand how the distribution of fossils and rocks, continental shapes, and seafloor structures provide evidence of past plate motions.</li> <li>● The students will understand how processes that change Earth’s surface can be small and usually behave gradually but can be punctuated by catastrophic events.</li> <li>● The Students will understand that earthquakes and volcanoes are the result of Earth’s processes and plate motion.</li> </ul>

<b>Relevant Standards:</b>	<b>Learning Goals:</b>	<b>Learning Objectives:</b>
<p>NJSLS-S.MS-ESS2-1: Develop a model to describe the cycling of Earth’s materials and the flow of energy that drives this process.</p> <p>NJSLS-S.MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth’s surface at varying time and spatial scales.</p> <p>NJSLS-S.MS-ESS2-3: Analyze and interpret data on the distribution of fossils and rocks,</p>	<ul style="list-style-type: none"> <li>● Students will understand maps of ancient land and water patterns, and investigations of rocks and fossils, explain how Earth’s plates have moved great distances, collided, and spread apart. (MS-ESS2-3) (2 weeks)</li> <li>● Tectonic processes continually generate new ocean sea floor at ridges and destroy old sea floor at trenches. (secondary to MS-ESS2-3) (1 week)</li> <li>● Students will understand the planet’s systems interact over scales that range from</li> </ul>	<ul style="list-style-type: none"> <li>● Students will understand the structure of Earth’s interior.</li> <li>● Students will be able to describe how convection currents in the mantle are driving Earth’s processes.</li> <li>● Students will be able to provide evidence that supports continental drift.</li> <li>● Students will be able to compare seafloor structures to provide evidence of past plate motions.</li> <li>● Students will be able to construct a model to show the cycling of Earth’s materials and the flow of energy that drives the process (rock cycle).</li> </ul>

Relevant Standards:	Learning Goals:	Learning Objectives:
<p>continental shapes, and seafloor structures to provide evidence of the past plate motions.</p> <p>NJSLS-S.MS-ESS3-2: Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.</p> <p>NJSLS-S.MS-ESS3-5: Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.</p>	<p>microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. (MS-ESS2-2) (1 week)</p> <ul style="list-style-type: none"> <li>● Students will understand all Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms. (MS-ESS2-1) (1 week)</li> <li>● Students will understand that movements, both on the land and underground, cause weathering and erosion, which change the land's surface features and create underground formations. (MS-ESS2-2) (1 week)</li> <li>● Students will understand catastrophic events, such as earthquakes and volcanoes, can have drastic effects on the ecosystem and create solutions to reduce the impact of these effects.</li> <li>● Students will understand that human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). (MS-ESS3-5) (1 week)</li> </ul>	<ul style="list-style-type: none"> <li>● Students will be able to conduct an investigation to explain how weathering, erosion, and deposition have changed Earth's surface over time.</li> <li>● Students will be able to explain the effects of earthquakes on an area and what makes them susceptible to seismic activity.</li> <li>● Students will be able to understand earthquake engineering and design a building that can withstand a simulated earthquake.</li> <li>● Students will be able to compare and contrast the types of volcanoes and describe the types of destruction they can cause.</li> <li>● Students will be able to analyze data and make inferences about global climate change and sea levels.</li> <li>● Students will be able to create solutions to combat global climate change.</li> </ul>

Formative Assessments	Summative Assessments:	Performance Assessments:	Major Activities/ Assignments (required):
<p>Whiteboard responses and presentations</p> <p>Entrance Ticket or Exit Ticket</p> <p>Drawing/interpretation of models (layers, Pangaea, rock cycle, plate boundaries)</p> <p>Quizzes (Layers of the Earth, convection, plate tectonics)</p> <p>Questioning/Discussions (Q&amp;A, A&amp;Q)</p> <p>Status Check (sticks, hands, thumbs up)</p> <p>Student/Teacher/Peer Conferences</p> <p>Think/Pair/Share (plate tectonics, layers of the Earth)</p>	<p>Unit Test</p> <p>Jurassic Park Writing Assignment</p> <p>CSA</p>	<p>Rock Cycle Lab</p> <p>Earthquake Shake Table Lab</p> <p>Erosion Lab</p> <p>Jurassic Park Writing Assignment</p> <p>Final Writing Piece— (evidence based writing) Lab activity with rubric.</p> <p>Communicating comparison of information depicted in the movie and relating to information learned in class throughout the year.</p>	<p><b>Major Assignments (required):</b></p> <p>Jurassic Park Writing Assignment</p> <p>Wegener Puzzle/Evidence Assignment</p> <p><b>Major Activities (required):</b></p> <p>Plate Boundary Activity</p> <p>Rock Cycle Lab</p> <p>Earthquake Shake Table Lab</p> <p>Erosion Lab</p>

Possible Assessment Modifications /Accommodations/ Differentiation:			
<u>Advanced Learners</u>	<u>Special Education Students</u>	<u>ENGLISH LANGUAGE LEARNERS (ELL)</u>	<u>At Risk Learners</u>
<p>Topic list overview</p> <p>Varied question format (open ended instead of multiple choice)</p> <ul style="list-style-type: none"> <li>• Inside earth quiz</li> <li>• Unit test</li> <li>• Convection quiz</li> <li>• Plate tectonics quiz</li> </ul> <p>Optional individual procedure/data for lab report</p>	<p>Study guide for unit test</p> <p>Scaffolding directions</p> <ul style="list-style-type: none"> <li>• Chunking</li> </ul> <p>Scaffolding questions for writing with prompts</p> <ul style="list-style-type: none"> <li>• Fill in the blank with word bank</li> <li>• Utilize vocab sheet with picture</li> </ul> <p>Frequent checks for understanding during labs</p> <ul style="list-style-type: none"> <li>• Plate tectonics</li> <li>• Rock cycle</li> </ul>	<p>Study guide for unit test with pictures</p> <p>Scaffolding and simplifying directions</p> <ul style="list-style-type: none"> <li>• All directions should be single step</li> </ul> <p>Scaffolding questions for writing with visuals /prompts</p> <ul style="list-style-type: none"> <li>• Fill in the blank with word bank</li> <li>• Utilize vocab sheet with English/native language and picture</li> </ul> <p>Frequent checks for understanding (1-1)</p>	<p>Study guide for unit test</p> <p>Scaffolding directions</p> <ul style="list-style-type: none"> <li>• Chunking</li> </ul> <p>Scaffolding questions for writing with prompts</p> <ul style="list-style-type: none"> <li>• Fill in the blank with word bank</li> <li>• Utilize vocab sheet with picture</li> </ul> <p>Frequent checks for understanding during labs</p> <ul style="list-style-type: none"> <li>• Plate tectonics</li> <li>• Rock cycle</li> </ul>

**Possible Assessment Modifications /Accommodations/ Differentiation:**

	<ul style="list-style-type: none"> <li>• Weathering/erosion</li> </ul> <p>Oral responses in place of written extended response</p> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>• Layers of earth</li> <li>• Plate tectonics</li> <li>• rock cycle</li> <li>• Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>• Chunk directions</li> <li>• Highlight key vocabulary</li> <li>• Modified response rubric</li> <li>• Report template</li> </ul> <p>Extended time (quizzes, tests)</p>	<ul style="list-style-type: none"> <li>• Plate tectonics</li> <li>• Rock cycle</li> <li>• Weathering/erosion</li> </ul> <p>Oral responses in place of written extended response</p> <ul style="list-style-type: none"> <li>• Use of diagrams/pictures</li> </ul> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>• Layers of earth</li> <li>• Plate tectonics</li> <li>• rock cycle</li> <li>• Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>• Single step directions</li> <li>• Partner with classmate/assistance from teacher</li> <li>• Highlight key vocabulary</li> <li>• Modified response (oral explanation, simplified answer with vocab or picture)</li> </ul> <p>Extended time (quizzes, tests, labs, projects)</p>	<ul style="list-style-type: none"> <li>• Weathering/erosion</li> </ul> <p>Limit multiple choice options and provide visuals on assessments</p> <ul style="list-style-type: none"> <li>• Layers of earth</li> <li>• Plate tectonics</li> <li>• rock cycle</li> <li>• Unit test</li> </ul> <p>Lab format</p> <ul style="list-style-type: none"> <li>• Chunk directions</li> <li>• Highlight key vocabulary</li> </ul> <p>Extended time (quizzes, tests)</p>
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**Instructional Strategies:**

Modeling  
 Scaffolding  
 Direct Instruction  
 Graphic Organizers  
 Homework

**Instructional Strategies:**

Note-taking  
 Interactive notebooks  
 Guided/Independent Practice (explanation and citing evidence as to why a phenomenon happens)  
 Academic Games  
 Investigation (Design and conduct an investigation)

**Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):**

<b><u>Advanced Learners</u></b>	<b><u>Special Education Students</u></b>	<b><u>ENGLISH LANGUAGE LEARNERS (ELL)</u></b>	<b><u>At Risk Learners</u></b>
<b>Vocab</b> <ul style="list-style-type: none"> <li>• Frayer model for key terms</li> </ul>	<b>Vocab</b> <ul style="list-style-type: none"> <li>• Key words/ Picture</li> </ul>	<b>Vocab</b> <ul style="list-style-type: none"> <li>• English/Native Language/ Picture</li> <li>• Key words</li> <li>• Simplify words</li> </ul>	<b>Vocab</b> <ul style="list-style-type: none"> <li>• Key words/ Picture</li> </ul>
<b>Graphic organizers</b> <ul style="list-style-type: none"> <li>• Student created diagrams</li> </ul>	<b>Graphic organizers</b> <ul style="list-style-type: none"> <li>• Notes (fill in, copy of teacher notes)</li> <li>• Diagrams (layers of the earth, Pangaea, rock cycle, plate boundaries, volcano)</li> </ul>	<b>Graphic organizers</b> <ul style="list-style-type: none"> <li>• Notes (fill in, copy of teacher notes)</li> <li>• Diagrams (layers of the earth, Pangaea, rock cycle, plate boundaries, volcano)</li> </ul>	<b>Graphic organizers</b> <ul style="list-style-type: none"> <li>• Notes (fill in, copy of teacher notes)</li> <li>• Diagrams (layers of the earth, Pangaea, rock cycle, plate boundaries, volcano)</li> </ul>
<b>Leveled reading</b> <ul style="list-style-type: none"> <li>• Higher level for current event and class articles</li> </ul>	<b>Leveled reading</b> <ul style="list-style-type: none"> <li>• Inside earth read and color</li> <li>• Pangaea read and color</li> <li>• Volcano read and color</li> </ul>	<b>Leveled reading</b> <ul style="list-style-type: none"> <li>• Inside earth read and color</li> <li>• Pangaea read and color</li> <li>• Volcano read and color</li> </ul>	<b>Leveled reading</b> <ul style="list-style-type: none"> <li>• Inside earth read and color</li> <li>• Pangaea read and color</li> <li>• Volcano read and color</li> </ul>
<b>Flexible grouping</b> <ul style="list-style-type: none"> <li>• Homogeneous grouping</li> </ul>	<b>Flexible grouping</b> <ul style="list-style-type: none"> <li>• Station/lab partner</li> </ul>	<b>Flexible grouping</b> <ul style="list-style-type: none"> <li>• Station/lab partner</li> </ul>	<b>Flexible grouping</b> <ul style="list-style-type: none"> <li>• Station/lab partner</li> </ul>
	<b>Cueing/prompting</b> <ul style="list-style-type: none"> <li>• Relating convection movement to earth processes</li> <li>• Theory of Pangaea relating to earth processes</li> </ul>	<b>Flexible grouping</b> <ul style="list-style-type: none"> <li>• Station/lab partner</li> </ul>	<b>Cueing/prompting</b> <ul style="list-style-type: none"> <li>• Relating convection movement to earth processes</li> <li>• Theory of Pangaea relating to earth processes</li> </ul>
		<b>Cueing/prompting</b> <ul style="list-style-type: none"> <li>• Relating convection movement to earth processes</li> <li>• Theory of Pangaea relating to earth processes</li> </ul>	

**Unit Vocabulary:**

**Essential:** seafloor spreading, mid-ocean ridges, deep-ocean trenches, plate tectonics, 3 types of boundaries (convergent, divergent, transform), subduction, rock cycle, earthquakes, volcanoes, weathering, erosion, deposition

**Non-Essential:** fossil, gradualism, punctuated equilibria, continental drift, Pangaea, Wegener, igneous, magma, sedimentary, metamorphic, pressure, San Andreas Fault, water cycle

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p><b>ELA/Lit:</b>            RI.7.1. Cite several pieces of textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text.            RI.7.2. Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.            NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.            NJSLSA.R2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.            NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid</p>	<p><b>Technology:</b>            Quizlet(S/A/M) Students use as a memorization tool to assist students' learning and share their work with others              Blendspace(S/A/M) Students will use internet to access information and links, they can then classify, organize and share information              Virtual labs(A/M/R) students are encouraged through active learning, allows students access to labs that would not be possible in a physical lab              Interactive site(S/A/M) Students will use internet to access information and links, they can then classify, organize and share information              PowerPoints(S/A) Students will create presentations, use internet to access information and links</p>	<p><input checked="" type="checkbox"/> Global Awareness            Understand and address global issues</p>	<p><input checked="" type="checkbox"/> Creativity &amp; Innovation            Develop, implement, and communicate new ideas to others effectively    <input checked="" type="checkbox"/> Critical Thinking and Problem Solving            Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems</p>

Interdisciplinary Connections (Applicable Standards):	Integration of Technology:	21 <sup>st</sup> Century Themes:	21 <sup>st</sup> Century Skills:
<p>reasoning and relevant and sufficient evidence.</p> <p>NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.</p> <p>NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.</p> <p>NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.</p> <p><b>Mathematics:</b></p> <p>MP.4: Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.</p>			

<b>Interdisciplinary Connections (Applicable Standards):</b>	<b>Integration of Technology:</b>	<b>21<sup>st</sup> Century Themes:</b>	<b>21<sup>st</sup> Century Skills:</b>
<p>6.EE.C.9: Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.</p>			

<b>Resources:</b>
<p><b>Texts/Materials:</b>            Prentice Hall Science Explorer Series – Cell and Heredity            Prentice Hall Science Explorer Series - Inside Earth</p>