

Kingsway Regional School District



Committed to Excellence

Course Name: Survey of Biological Sciences	Grade Level(s): 10 – 12
Department: Science	Credits:
BOE Adoption Date: October 2016	Revision Date(s): October 2019

ABSTRACT

This course will introduce students to a survey of topics in the biological sciences. The year will begin with an overview of diversity among marine and land animals. Students will then concentrate on human biology and nutritional needs. They will also experience the field of forensics through hands-on interpretation of evidence. The year will conclude with a detailed study of environmental sciences and the repercussions of human impact.

TABLE OF CONTENTS

Mission Statement	Page 3
Curriculum and Instruction Goals	Page 3
How to Read this Document	Page 3
Terms to Know	Page 3
Pacing Guide	Page 6
Curriculum Units	Page 11

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 (NJSLS).

Curriculum & Instruction Goals

To ensure the District continues to work toward its mission of excellence in G.R.E.A.T. Instruction, the following curriculum and instruction goals direct the conversation:

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 ongoing progress monitoring.

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): Accommodations** are adaptations that do not alter the learning goal or standards being measured; accommodations can be for all students.
2. **Differentiated Instruction (DI):** The idea of differentiating instruction to accommodate the different ways that students learn involves a hefty dose of

common sense, as well as sturdy support in the theory and research of education (Tomlinson & Allan, 2000). It is an approach to teaching that advocates active planning for student differences in classrooms. Teachers can differentiate content, process, product, or environment. DI can be done according to students' readiness, interest, or learning profile.

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 NJSLs 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. **Modification(s):** *Modifications* are adaptations that alter the learning goals and grade-level standards. Modifications are warranted when the learner has significant needs that impede his or her ability to access grade-level concepts. They are most appropriate for appropriate some students with IEPs and some English Language Learners.
11. **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.).
12. **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 (NJSLs) 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*

- 13. 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.
- 14. 21st Century Skills & Themes:** These elements emphasize the growing need to focus on skills that prepare students to successfully compete in a global environment by focusing on the following: 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: Survey of Biological Sciences

Prerequisite(s): None

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
<p>Unit 1: Diversity of Life in Marine and Land Ecosystems</p>	<p>2 months September – October</p>	<p>Subject Area: <u>NJSLS-S</u> NJSLS-S.HS-LS1-2 NJSLS-S.HS-LS2-4 NJSLS-S.HS-LS2-6 NJSLS-S.HS-LS2-7 NJSLS-S.HS.LS4-1 NJSLS-S.HS.LS4-3 NJSLS-S.HS-LS4-4 NJSLS-S.HS-ESS2-7</p> <p>Interdisciplinary: <u>Technology</u> NJSLS.8.1.12.A.3</p> <p><u>Career Ready Practices</u> CRP2 CRP4</p> <p><u>Career and Technical Education</u> NJSLS.9.3.ST.2 NJSLS.9.3.ST-SM.4 NJSLS.9.3.ST.6</p> <p><u>E/LA</u> W.9-10.8 RI.9-10.2</p>	<p>Students will understand the diversity of life on Earth and its importance in maintaining the stability of an ecosystem. Students will also understand how human activity impacts biodiversity. (2 weeks)</p> <p>Students will understand how the physical characteristics of an environment influence the traits that make an organism more successful thus driving evolution. (2 weeks)</p> <p>Students will understand how the complex diversity of life requires a system of organization referred to as taxonomy. (2 weeks)</p> <p>Students will understand the characteristics of specific classes of animals and how those characteristics affect their role in the environment. (2 weeks)</p>	<ol style="list-style-type: none"> 1. Explain the enormous magnitude of the marine world and our dependency on it. 2. Describe the physical forces that created the ocean and continue to change it. 3. Connect the interdependence of the marine animals on each other and land ecosystems. 4. Analyze human impact on ecosystems around the world. 5. Explain evolution in terms of Darwin's observations and studies. 6. Discuss natural selection in terms of variation, speciation, and fitness. 7. Identify the taxonomic groups that animals belong to. 8. Discuss characteristics of protists and their role in the world. 9. Explain how sponges are different from other multicellular animals. 10. Identify cnidarians and ctenophores and their ecological importance. 11. Describe the major anatomical characteristics of worms, mollusks and annelids. 12. Discuss the ecological importance of worms and mollusks.

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
				13. Compare and contrast marine and land invertebrates.
Unit 2: Human Anatomy and Nutrition	2.5 months November – January	<p>Subject Area: <u>NJSLS-S</u> NJSLS-S.HS-LS1-2 NJSLS-S.HS-LS1-3 NJSLS-S.HS-LS1-6 NJSLS-S.HS-LS1-7</p> <p>Interdisciplinary: <u>Technology</u> NJSLS.8.1.12.A.3 NJSLS.8.1.12.A.4</p> <p><u>Career Ready Practices</u> CRP2 CRP3</p> <p><u>Career and Technical Education</u> NJSLS.9.3.ST.6 NJSLS.9.3.ST-ET.5 NJSLS.9.3.ST-ET.1</p> <p><u>E/LA</u> RI.9-10.8 RI.9-10.2</p>	<p>Students will understand the complementarity of structure and function in human anatomy. Students will also understand the basic anatomy and physiology of the skeletal, muscular, nervous, and digestive system. (4 weeks)</p> <p>Students will understand the characteristics of the major macromolecules and their role in human nutrition and metabolism. (3 weeks)</p> <p>Students will understand the concepts of homeostasis and metabolism and their connection to each other. (2 weeks)</p> <p>Students will be able to utilize concepts learned to examine an individual’s diet and determine its health benefits and deficits. (1 week)</p>	<ol style="list-style-type: none"> 1. Define and classify joints structurally and functionally. 2. Identify and describe the three basic types of muscle. 3. Explain the structural and functional divisions of the nervous system. 4. Name the five special senses, their major organs, and parts. 5. Identify and describe the organs of the digestive system. 6. Define nutrition basics and terminology. 7. Identify the function and major sources of carbohydrates. 8. Identify the function and major sources of proteins. 9. Identify the function and major sources of fat/lipids. 10. Identify the function and major sources of vitamins, minerals, and water. 11. Describe the biological processes of homeostasis and metabolism, i.e. cellular respiration and photosynthesis. 12. Identify the six major nutrients, their functions in the human body, dietary sources, and their importance in health. 13. Develop skills to discern reliable

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
				nutrition information, i.e. fact vs. fallacy. 14. Design a personalized healthy meal plan that can be utilized daily. 15. Recognize and improve unhealthy meal plans.
Unit 3: Forensics	2.5 months February – April	<p>Subject Area: <u>NJSLS-S</u> NJSLS-S.HS-LS3-1</p> <p>Interdisciplinary: <u>Technology</u> NJSLS.8.1.12.A.3 NJSLS.8.1.12.D.4 NJSLS.8.1.12.F.1 NJSLS.8.2.12.B.4</p> <p><u>Career Ready Practices</u> CRP2 CRP3 CRP7</p> <p><u>Career and Technical Education</u> NJSLS.9.3.LW.5 NJSLS.9.3.LW-ENF.12 NJSLS.9.3.ST-ET.1 NJSLS.9.3.ST-ET.3 NJSLS.9.3.ST.5 NJSLS.9.3.ST-SM.3 NJSLS.9.3.ST-SM.4</p> <p><u>Social Studies</u> 6.1.12.D.14.d</p>	<p>Students will understand the field of forensic science and its development over the past several hundred years. (2 weeks)</p> <p>Students will understand the importance of crime scene preservation and proper procedures for evidence collection. (1 week)</p> <p>Students will understand various types of evidence and how they are classified as either class or individual evidence. (1 week)</p> <p>Students will understand how bloodstain pattern analysis and blood typing can help determine the location of individuals in the crime scene. (1 week)</p> <p>Students will understand how skeletal structure can be used to help determine age, race, height, and gender. (1 week)</p> <p>Students will understand various factors (ex. lividity, core body</p>	1. Describe the various branches of forensic science and the development of forensic science. 2. Identify and follow proper procedure for the collection and preservation of evidence. 3. Classify various types of physical evidence and determine their significance. 4. Identify different types of hair and fibers using a microscope. 5. Determine the direction and speed of blood spatter. 6. Compare and describe blood staining patterns. 7. Use blood typing and inheritance to identify suspects and relationships. 8. Identify differences in bone structure between genders. 9. Examine skull structure to distinguish among three races. 10. Examine pelvis, skull, and femur to determine height. 11. Determine age, race, and gender from skeletal remains. 12. Determine the time of death using lividity, core body

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
		<u>E/LA</u> W.9-10.8 RI.9-10.2	temperature, rigor mortis, entomology) that can be used to determine time of death. (1 week) Students will understand why fingerprints are individual to each person and how they can be used in forensics. (1 week)	temperature, decay, and rigor mortis. 13. Determine the time of death using succession and life cycle of insects (basic entomology). 14. Locate and develop latent fingerprints using several techniques. 15. Evaluate fingerprints for patterns.
Unit 4: Environmental Science and Ecology	2 months May – June	Subject Area: <u>NJSLS-S</u> NJSLS-S.HS-LS2-5 NJSLS-S.HS-LS2-6 NJSLS-S.HS-LS2-7 NJSLS-S.HS-LS4-6 NJSLS-S.HS-ESS2-6 NJSLS-S.HS-ESS3-6 Interdisciplinary: <u>Technology</u> NJSLS.8.1.12.A.3 NJSLS.8.2.12.A.1 NJSLS.8.2.12.B.2 NJSLS.8.2.12.D.6 <u>Career Ready Practices</u> CRP1 CRP2 CRP4 CRP5 CRP8 <u>Career and Technical</u>	Students will understand the focus of the field of environmental science and how it applies to human behavior and consumption. (1 week) Students will understand the Earth’s atmospheric and geographic organization as it applies to biogeochemical cycling. (1 week) Students will understand the ecological levels of organization and the interdependence of living and nonliving components of an ecosystem. (1 week) Students will understand population dynamics and apply concepts to human population growth. (1 week) Students will be able to analyze human population growth and the contribution technology has played in the exponential growth of the human population. (2 weeks)	1. Explain the focus of environmental science. 2. Describe the recent trends in human population and resource consumption. 3. Explain the study of environmental ethics. 4. Describe the Earth’s geosphere, lithosphere, biosphere, atmosphere, and hydrosphere. 5. Discuss the various biogeochemical cycles. 6. Explain how the law of the conservation of matter applies to the behavior of nutrients in the environment. 7. Describe the levels of organization in ecology. 8. Explain the difference between biotic and abiotic factors and how they are interrelated in an ecosystem. 9. Define population density and explain why population size is useful

Unit Title:	Duration/ Month(s)	Related Standards:	Learning Goals:	Topics and Skills:
		<u>Education</u> NJSLS.9.3.ST-ET.1 NJSLS.9.3.ST-ET.3 NJSLS.9.3.ST-SM.4 <u>Social Studies</u> 6.1.12.A.16.b <u>E/LA</u> W.9-10.8 RI.9-10.2	Students will understand the concept of sustainability and how human consumption, waste, and energy sources affect one's impact on Earth. (2 weeks)	data. 10. Describe three ways in which populations may be distributed. 11. Explain trends in human population growth. 12. Describe factors, including technological advances, that contribute to human population growth. 13. Describe total fertility rate, replacement fertility, and demographic transition. 14. Predict population growth using data and trends in an area from recent years. 15. Discuss how technological advancements can be both beneficial and harmful to the environment. 16. Describe the causes and consequences of global climate change. 17. Evaluate the advantages and disadvantages of various nonrenewable energy sources. 18. Evaluate the advantages and disadvantages of various renewable energy sources. 19. Describe categories of waste and how each may be managed.

Unit 1: Diversity of Life in Marine and Land Ecosystems	Recommended Duration: 2 months (September and October)
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Unit Description:

In this unit, students explore the diversity of life on Earth and the interdependency of all living things and their environment. Students will present information on an oceanic or coastal ecosystem and analyze the biotic and abiotic factors that affect that biome. Students will relate these concepts to evolution and the acquisition of adaptations in populations over time and will further use this information to explore evolutionary relationships and organization of their classification. Furthermore, students will explore the unique characteristics of various classes of protists and animals and analyze anatomical and physiological similarities and difference. Students will examine specimens microscopically and through dissections.

Essential Questions:	Enduring Understandings:
How does the physical environment influence the adaptations and evolution of species?	<p>The physical environment shapes which adaptations are most beneficial and therefore, more likely to allow an individual to survive and reproduce. Species are highly adapted to the environment in which they live.</p> <p>All living things share similarities and differences evident through comparative anatomy. These similarities and differences can be used to effectively classifying them.</p>

Relevant Standards:	Learning Goals:	Learning Objectives:
<p>Subject Area: <u>NJSLS-S</u> NJSLS-S.HS-LS1-2 NJSLS-S.HS-LS2-4 NJSLS-S.HS-LS2-6 NJSLS-S.HS-LS2-7 NJSLS-S.HS.LS4-1 NJSLS-S.HS.LS4-3 NJSLS-S.HS-LS4-4 NJSLS-S.HS-ESS2-7</p> <p>Interdisciplinary: <u>Technology</u> NJSLS.8.1.12.A.3</p>	<p>Students will understand the diversity of life on Earth and its importance in maintaining the stability of an ecosystem. Students will also understand how human activity impacts biodiversity. (2 weeks)</p> <p>Students will understand how the physical characteristics of an environment influence the traits that make an organism more successful thus driving evolution. (2 weeks)</p> <p>Students will understand how the complex diversity of life requires a system of organization referred to as taxonomy. (2 weeks)</p>	<ol style="list-style-type: none"> 1. Explain the enormous magnitude of the marine world and our dependency on it. 2. Describe the physical forces that created the ocean and continue to change it. 3. Connect the interdependence of the marine animals on each other and land ecosystems. 4. Analyze human impact on ecosystems around the world. 5. Explain evolution in terms of Darwin's observations and studies. 6. Discuss natural selection in terms of variation, speciation, and fitness. 7. Identify the taxonomic groups that animals belong to. 8. Discuss characteristics of protists and their role in the

Relevant Standards:	Learning Goals:	Learning Objectives:
<u>Career Ready Practices</u> CRP2 CRP4 <u>Career and Technical Education</u> NJSLS.9.3.ST.2 NJSLS.9.3.ST-SM.4 NJSLS.9.3.ST.6 <u>E/LA</u> W.9-10.8 RI.9-10.2	Students will understand the characteristics of specific classes of animals and how those characteristics affect their role in the environment. (2 weeks)	world. 9. Explain how sponges are different from other multicellular animals. 10. Identify cnidarians and ctenophores and their ecological importance. 11. Describe the major anatomical characteristics of worms, mollusks and annelids. 12. Discuss the ecological importance of worms and mollusks. 13. Compare and contrast marine and land invertebrates.

Formative Assessments	Summative Assessments:	Performance Assessments:	Major Activities/ Assignments (required):
Marine Biology Quiz Nature of the Sea Quiz Classification Quiz Protist Quiz Cnidarian and Ctenophore Quiz Worm Quiz Mollusk Quiz	Marine Biology and Classification Test Protist, Cnidarian, and Ctenophore Test Worm and Mollusk Test CSA2 (Benchmark 1)	Biome Project Protist Taxonomy Debate Worm Practical Clam Practical Squid Practical	Taxonomy Lab Protist Graphic Organizer Protist Lab Worm Dissection Clam Dissection Squid Dissection

Possible Assessment Adjustments (Modifications /Accommodations/ Differentiation):			
Special Education	ELL	Struggling Learners	Advanced Learners
Provide study guide Extended time Administer assessment in several sessions; specifying the duration of each session Clarify and repeat directions as needed Read aloud sections of the directions	Provide study guide Extended time Administer assessment in several sessions; specifying the duration of each session Clarify and repeat directions as needed Read aloud sections of the directions	Provide study guide Extended time Administer assessment in several sessions; specifying the duration of each session Clarify and repeat directions as needed Pace long-term projects	Provide higher level choice question

Possible Assessment Adjustments (Modifications /Accommodations/ Differentiation):			
and/or questions as needed	and/or questions as needed	Chunk long-term assignments	
Reduce superfluous words	Reduce superfluous words within	On-task and focusing prompts	
Rephrase test directions and/or	questions and responses		
questions	Rephrase test directions and/or		
Highlight key ideas	questions		
Provide visual cues such as arrows	Chunking Information		
Scaffolding questions	Highlight key ideas		
On-task and focusing prompts	Provide visual cues such as arrows		
Allow for retakes	Scaffolding questions		
Pace long-term projects	On-task and focusing prompts		
Chunk long-term assignments	Allow for retakes		
	Pace long-term projects		
	Chunk long-term assignments		
	Oral testing		
	Picture prompts		
	No penalty for spelling errors		

Instructional Strategies (Marzano's 41 Elements)
Provide clear learning goals and scales
Provide resources and guidance
Identifying critical information
Organizing students to interact with new knowledge
Previewing new content
Modeling
Direct Instruction
Chunking content into "digestible bites"
Guided note-taking
Processing of new information
Graphic Organizers
Elaborating on new information
Academic Games
Recording and representing knowledge
Reflecting on learning
Reviewing content

Instructional Strategies (Marzano’s 41 Elements)

Scaffold information
 Organizing students to practice and deepen knowledge
 Use homework
 Examining similarities and differences
 Examining errors in reasoning
 Practicing skills, strategies, and processes within mini-lessons
 Revising knowledge
 Probe incorrect answers with low expectancy student
 Organizing students for cognitively complex tasks
 Engaging students in cognitively complex tasks involving hypothesis generation and testing
 Guided/Independent Practice (explanation and citing evidence as to why phenomena happens)
 Design and conduct an investigation
 Provide specific examples of each step of research
 Provide opportunities for students to talk about themselves
 Maintain an engaging pace

Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):

Special Education	ELL	Struggling Learners	Advanced Learners
Preferential seating	Preferential seating	Scaffolding questions	Enrichment opportunities
Teacher modeling	Teacher modeling	Highlight key ideas	Cooperative learning
One-to-one instruction	One-to-one instruction	Teacher notes	Flexible grouping
Direct explanation or instruction	Cueing and/or prompting questions	Provide small group and/or individualized instruction when needed	Higher level choice questions
Cueing and prompting questions	Teacher clarification of assignment objectives	Cueing strategies to promote on task behavior	Scaffolding
Teacher clarification of assignment objectives	Highlight key points for students to focus on	Clarify and repeat directions as needed	
Highlight key points for students to focus on	Chunking writing tasks in to more manageable pieces	Use visual cues	
Chunking writing tasks into more manageable pieces	Cooperative learning	Activity breaks	
Cooperative learning	Flexible grouping	Physical proximity	
Flexible grouping	Summarizing and Note taking	Model expectations and/or provide additional examples	
Summarizing and note taking	Choice menus	Alternatives to writing	
Scaffolding questions	Scaffolding questions		
Highlight key ideas	Highlight key ideas		

Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):

<p>Teacher notes Provide small group and/or individualized instruction when needed Cueing strategies to promote on task behavior Clarify and repeat directions as needed Use visual cues Activity breaks Physical proximity Model expectations and/or provide additional examples Limit number of oral instructions Alternatives to writing One-to-one conferencing on topics of need for individual students Construction of peer review of groups based on flexible grouping Reinforcing effort and providing recognition Immediate feedback Learning stations Timer Extended time Create a flexible timetable for deadlines Additional tutoring time during enrichment</p>	<p>Teacher notes Provide small group and/or individualized instruction when needed Cueing strategies to promote on task behavior Clarify and repeat directions as needed Use visual cues Activity breaks Physical proximity Model expectations and/or provided additional examples Limit number of oral instructions Alternatives to writing One-to-one conferencing on topics of need for individual students Construction of peer review of groups based on flexible grouping Reinforcing effort and providing recognition Immediate feedback Learning stations Timer Extended time Create a flexible timetable for deadlines Additional tutoring time during enrichment</p>	<p>One-to-one conferencing on topics of need for individual students Reinforcing effort and providing recognition Immediate feedback Learning stations Timer Extended time Creating a flexible timetable for deadlines Additional tutoring time during SMART periods</p>	
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Unit Vocabulary:

Essential: interdependence, evolution, natural selection, plate tectonics, Pangea, tide, current, biomes, biotic, abiotic, classification, protist, sponge, cnidarian, ctenophore, mollusk, annelid

Non-Essential: adaptation, coastal, ecosystem

Interdisciplinary Connections (Applicable Standards):	Integration of Technology:	21 st Century Themes:	21 st Century Skills:
<p><u>E/LA</u> W.9-10.8 RI.9-10.2</p> <p><u>Technology</u> NJSLS.8.1.12.A.3</p> <p>21st Century Life and Careers: <u>Career Ready Practices</u> CRP2 CRP4</p> <p><u>Career and Technical Education</u> NJSLS.9.3.ST.2 NJSLS.9.3.ST-SM.4 NJSLS.9.3.ST.6</p>	<p>Technology:</p> <p>Google Classroom for collaboration and turning in assignments</p> <p>Chromebooks for research and resource searching</p> <p>Promethean Board for understanding checks</p> <p>Promethean Board for use of games</p> <p>Promethean Board for YouTube</p> <p>Khan Academy</p> <p>Bozeman</p> <p>Crash Course</p>	<p><input checked="" type="checkbox"/> Global Awareness</p>	<p><input checked="" type="checkbox"/> Critical Thinking and Problem Solving</p> <p><input checked="" type="checkbox"/> Life and Career Skills</p> <p><input checked="" type="checkbox"/> Communication & Collaboration</p> <p><input checked="" type="checkbox"/> Information Literacy</p>

Resources:
<p>Texts/Materials: Leveled Reading-</p>

Unit 2: Human Anatomy and Nutrition	Recommended Duration: 2.5 months (November – January)
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Unit Description:

In this unit of study, students will explore the anatomy and physiology of major organ systems. Students will use this exploration to examine the complementarity of structure and function in the human body. Students will also understand the role that various macromolecules perform in the human body and the importance of maintaining a balance of these macromolecules in one’s diet. Students will examine their own diet over the course of five days to determine if their diet matches government suggestions.

Essential Questions:	Enduring Understandings:
What evidence supports the complementarity of structure and function in human anatomy?	Specialized structures in human anatomy show that there is a complementarity between structure and function, or rather, that structures are highly adapted for the role they perform in the human body.
How does nutrition and nutrient intake influence human metabolism and homeostasis?	Major macromolecules carry specific roles in the human body. Proper intake of these major macromolecules, along with water, vitamin, and minerals, ensure the body is able to maintain homeostasis and metabolic functions.

Relevant Standards:	Learning Goals:	Learning Objectives:
<p>Subject Area: <u>NJSLS-S</u> NJSLS-S.HS-LS1-2 NJSLS-S.HS-LS1-3 NJSLS-S.HS-LS1-6 NJSLS-S.HS-LS1-7</p> <p>Interdisciplinary: <u>Technology</u> NJSLS.8.1.12.A.3 NJSLS.8.1.12.A.4</p> <p><u>Career Ready Practices</u> CRP2 CRP3</p>	<p>Students will understand the complementarity of structure and function in human anatomy. Students will also understand the basic anatomy and physiology of the skeletal, muscular, nervous, and digestive system. (4 weeks)</p> <p>Students will understand the characteristics of the major macromolecules and their role in human nutrition and metabolism. (3 weeks)</p> <p>Students will understand the concepts of homeostasis and metabolism and their connection to each other. (2 weeks)</p> <p>Students will be able to utilize concepts learned to examine an individual’s diet and determine its</p>	<ol style="list-style-type: none"> 1. Define and classify joints structurally and functionally. 2. Identify and describe the three basic types of muscle. 3. Explain the structural and functional divisions of the nervous system. 4. Name the five special senses, their major organs, and parts. 5. Identify and describe the organs of the digestive system. 6. Define nutrition basics and terminology. 7. Identify the function and major sources of carbohydrates. 8. Identify the function and major sources of proteins. 9. Identify the function and major sources of fat/lipids. 10. Identify the function and major sources of vitamins, minerals, and water.

Relevant Standards:	Learning Goals:	Learning Objectives:
<u>Career and Technical Education</u> NJSLS.9.3.ST.6 NJSLS.9.3.ST-ET.5 NJSLS.9.3.ST-ET.1 <u>E/LA</u> RI.9-10.8 RI.9-10.2	health benefits and deficits. (1 week)	11. Describe the biological processes of homeostasis and metabolism, i.e. cellular respiration and photosynthesis. 12. Identify the six major nutrients, their functions in the human body, dietary sources, and their importance in health. 13. Develop skills to discern reliable nutrition information, i.e. fact vs. fallacy. 14. Design a personalized healthy meal plan that can be utilized daily. 15. Recognize and improve unhealthy meal plans.

Formative Assessments	Summative Assessments:	Performance Assessments:	Major Activities/ Assignments (required):
Joints Quiz Muscle, Nervous, Digestive System Quiz Macromolecule Quiz Homeostasis and Metabolism Quiz Nutrition Quiz	Human Anatomy Test Macromolecule, Metabolism, and Nutrition Test	Body System Concept Map Energy Drink Analysis Paper Nutrition Project	Biological Molecule Graphic Organizer Heart Rate Lab

Possible Assessment Adjustments (Modifications /Accommodations/ Differentiation):			
Special Education	ELL	Struggling Learners	Advanced Learners
Provide study guide Extended time Administer assessment in several sessions; specifying the duration of each session Clarify and repeat directions as needed Read aloud sections of the directions and/or questions as needed Reduce superfluous words	Provide study guide Extended time Administer assessment in several sessions; specifying the duration of each session Clarify and repeat directions as needed Read aloud sections of the directions and/or questions as needed Reduce superfluous words within	Provide study guide Extended time Administer assessment in several sessions; specifying the duration of each session Clarify and repeat directions as needed Pace long-term projects Chunk long-term assignments On-task and focusing prompts	Provide higher level choice question

Possible Assessment Adjustments (Modifications /Accommodations/ Differentiation):			
Rephrase test directions and/or questions	questions and responses		
Highlight key ideas	Rephrase test directions and/or questions		
Provide visual cues such as arrows	Chunking Information		
Scaffolding questions	Highlight key ideas		
On-task and focusing prompts	Provide visual cues such as arrows		
Allow for retakes	Scaffolding questions		
Pace long-term projects	On-task and focusing prompts		
Chunk long-term assignments	Allow for retakes		
	Pace long-term projects		
	Chunk long-term assignments		
	Oral testing		
	Picture prompts		
	No penalty for spelling errors		

Instructional Strategies (Marzano’s 41 Elements)
Provide clear learning goals and scales
Provide resources and guidance
Identifying critical information
Organizing students to interact with new knowledge
Previewing new content
Modeling
Direct Instruction
Chunking content into “digestible bites”
Guided note-taking
Processing of new information
Graphic Organizers
Elaborating on new information
Academic Games
Recording and representing knowledge
Reflecting on learning
Reviewing content
Scaffold information
Organizing students to practice and deepen knowledge

Instructional Strategies (Marzano’s 41 Elements)

Use homework
 Examining similarities and differences
 Examining errors in reasoning
 Practicing skills, strategies, and processes within mini-lessons
 Revising knowledge
 Probe incorrect answers with low expectancy student
 Organizing students for cognitively complex tasks
 Engaging students in cognitively complex tasks involving hypothesis generation and testing
 Guided/Independent Practice (explanation and citing evidence as to why phenomena happens)
 Design and conduct an investigation
 Provide specific examples of each step of research
 Provide opportunities for students to talk about themselves
 Maintain an engaging pace

Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):

Special Education	ELL	Struggling Learners	Advanced Learners
Preferential seating Teacher modeling One-to-one instruction Direct explanation or instruction Cueing and prompting questions Teacher clarification of assignment objectives Highlight key points for students to focus on Chunking writing tasks into more manageable pieces Cooperative learning Flexible grouping Summarizing and note taking Scaffolding questions Highlight key ideas Teacher notes Provide small group and/or	Preferential seating Teacher modeling One-to-one instruction Cueing and/or prompting questions Teacher clarification of assignment objectives Highlight key points for students to focus on Chunking writing tasks in to more manageable pieces Cooperative learning Flexible grouping Summarizing and Note taking Choice menus Scaffolding questions Highlight key ideas Teacher notes Provide small group and/or	Scaffolding questions Highlight key ideas Teacher notes Provide small group and/or individualized instruction when needed Cueing strategies to promote on task behavior Clarify and repeat directions as needed Use visual cues Activity breaks Physical proximity Model expectations and/or provide additional examples Alternatives to writing One-to-one conferencing on topics of need for individual students	Enrichment opportunities Cooperative learning Flexible grouping Higher level choice questions Scaffolding

Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):

<p>individualized instruction when needed Cueing strategies to promote on task behavior Clarify and repeat directions as needed Use visual cues Activity breaks Physical proximity Model expectations and/or provide additional examples Limit number of oral instructions Alternatives to writing One-to-one conferencing on topics of need for individual students Construction of peer review of groups based on flexible grouping Reinforcing effort and providing recognition Immediate feedback Learning stations Timer Extended time Create a flexible timetable for deadlines Additional tutoring time during enrichment</p>	<p>individualized instruction when needed Cueing strategies to promote on task behavior Clarify and repeat directions as needed Use visual cues Activity breaks Physical proximity Model expectations and/or provided additional examples Limit number of oral instructions Alternatives to writing One-to-one conferencing on topics of need for individual students Construction of peer review of groups based on flexible grouping Reinforcing effort and providing recognition Immediate feedback Learning stations Timer Extended time Create a flexible timetable for deadlines Additional tutoring time during enrichment</p>	<p>Reinforcing effort and providing recognition Immediate feedback Learning stations Timer Extended time Creating a flexible timetable for deadlines Additional tutoring time during SMART periods</p>	
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Unit Vocabulary:

Essential: fibrous, cartilaginous, synovial, synarthrosis, diarthrosis, amphiarthrosis, suture, cardiac, sensory, motor, somatic, autonomic, parasympathetic, retina, rods, cones, peristalsis, gastric, nucleic, monomers, peptide, enzymes, covalent, carbohydrates, polypeptide, wax, lipid, phosphate, amino acid, unsaturated, steroid, carbohydrates, monosaccharide, nucleotide, homeostasis, metabolism, calorie

Non-Essential: complementarity, structurally, functionally, uniaxial, biaxial, multiaxial, excrete, feedback

Interdisciplinary Connections (Applicable Standards):	Integration of Technology:	21 st Century Themes:	21 st Century Skills:
<p><u>E/LA</u> RI.9-10.8 RI.9-10.2</p> <p><u>Technology</u> NJSLS.8.1.12.A.3 NJSLS.8.1.12.A.4</p> <p>21st Century Life and Careers: <u>Career Ready Practices</u> CRP2 CRP3</p> <p><u>Career and Technical Education</u> NJSLS.9.3.ST.6 NJSLS.9.3.ST-ET.5 NJSLS.9.3.ST-ET.1</p>	<p>Technology:</p> <p>Google Classroom for collaboration and turning in assignments</p> <p>Chromebooks for research and resource searching</p> <p>Promethean Board for understanding checks</p> <p>Promethean Board for use of games</p> <p>Promethean Board for YouTube</p> <p>Khan Academy</p> <p>Bozeman</p> <p>Crash Course</p>	<p><input checked="" type="checkbox"/> Health Literacy</p>	<p><input checked="" type="checkbox"/> Critical Thinking and Problem Solving</p> <p><input checked="" type="checkbox"/> Life and Career Skills</p> <p><input checked="" type="checkbox"/> Communication & Collaboration</p> <p><input checked="" type="checkbox"/> Information Literacy</p>

Resources:
<p>Texts/Materials: Leveled Reading-</p>

Unit 3: Forensics	Recommended Duration: 2.5 months (February – April)
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Unit Description:
 In this unit of study, students will explore the science of forensics and its growth over the past century. Students will understand the importance of maintaining the integrity of physical evidence, and potential impacts on criminal cases if it is not maintained. Students will determine differences between class and individual evidence and their impact on criminal investigations. Students will perform labs and hands on activities in blood typing, bloodstain pattern analysis, and fingerprinting. Students will use anatomical features in human remains to determine age, sex, and ethnicity. Students will also explore methods for determining time of death and will complete a case study in entomology.

Essential Questions:	Enduring Understandings:
How can physical and biological evidence at crime scenes be used connect victims and suspects to the crime scene and/or to each other?	Physical and biological evidence found at the crime scene can be analyzed and compared in order to determine original source or identification.
What is the difference between individual and class evidence and how does this contribute to the value of physical evidence?	Individual evidence links back to a specific item or person, whereas class evidence links back to a group of items or people. Individual is highly valuable in criminal cases, while class evidence are circumstantial and usually must be paired with other pieces of evidence to acquire value.

Relevant Standards:	Learning Goals:	Learning Objectives:
<p>Subject Area: <u>NJSLS-S</u> NJSLS-S.HS-LS3-1</p> <p>Interdisciplinary: <u>Technology</u> NJSLS.8.1.12.A.3 NJSLS.8.1.12.D.4 NJSLS.8.1.12.F.1 NJSLS.8.2.12.B.4</p> <p><u>Career Ready Practices</u> CRP2 CRP3 CRP7</p>	<p>Students will understand the field of forensic science and its development over the past several hundred years. (2 weeks)</p> <p>Students will understand the importance of crime scene preservation and proper procedures for evidence collection. (1.5 weeks)</p> <p>Students will understand various types of evidence and how they are classified as either class or individual evidence. (1.5 weeks)</p> <p>Students will understand how bloodstain pattern analysis and blood typing can help determine the location of individuals in the crime scene.</p>	<ol style="list-style-type: none"> 1. Describe the various branches of forensic science and the development of forensic science. 2. Identify and follow proper procedure for the collection and preservation of evidence. 3. Classify various types of physical evidence and determine their significance. 4. Identify different types of hair and fibers using a microscope. 5. Determine the direction and speed of blood spatter. 6. Compare and describe blood staining patterns. 7. Use blood typing and inheritance to identify suspects and relationships. 8. Identify differences in bone structure between genders. 9. Examine skull structure to distinguish among three

Relevant Standards:	Learning Goals:	Learning Objectives:
<u>Career and Technical Education</u> NJSLS.9.3.LW.5 NJSLS.9.3.LW-ENF.12 NJSLS.9.3.ST-ET.1 NJSLS.9.3.ST-ET.3 NJSLS.9.3.ST.5 NJSLS.9.3.ST-SM.3 NJSLS.9.3.ST-SM.4 <u>Social Studies</u> 6.1.12.D.14.d <u>E/LA</u> W.9-10.8 RI.9-10.2	(1.5 weeks) Students will understand how skeletal structure can be used to help determine age, race, height, and gender. (1.5 weeks) Students will understand various factors (ex. lividity, core body temperature, rigor mortis, entomology) that can be used to determine time of death. (1 week) Students will understand why fingerprints are individual to each person and how they can be used in forensics. (1 week)	races. 10. Examine pelvis, skull, and femur to determine height. 11. Determine age, race, and gender from skeletal remains. 12. Determine the time of death using lividity, core body temperature, decay, and rigor mortis. 13. Determine the time of death using succession and life cycle of insects (basic entomology). 14. Locate and develop latent fingerprints using several techniques. 15. Evaluate fingerprints for patterns.

Formative Assessments	Summative Assessments:	Performance Assessments:	Major Activities/ Assignments (required):
Introduction to Forensics Quiz CSI and Physical Evidence Quiz Bloodstain Pattern Analysis and Blood Typing Quiz Anthropology Quiz Time of Death and Entomology Quiz Fingerprint Quiz Document Analysis Quiz	Introduction to Forensics, CSI, and Physical Evidence Test Anthropology, Entomology, and Time of Death Test Fingerprint and Document Analysis Test CSA3 (Benchmark 2)	Case Study Analysis Paper Crime Scene Sketch Fingerprint Identification Assignment	Bloodstain Pattern Analysis Lab Blood Typing Lab Anthropology Lab Entomology/Time of Death Case Study Fingerprint Lab

Possible Assessment Adjustments (Modifications /Accommodations/ Differentiation):			
Special Education	ELL	Struggling Learners	Advanced Learners
Provide study guide Extended time Administer assessment in several sessions; specifying the duration of	Provide study guide Extended time Administer assessment in several sessions; specifying the duration of	Provide study guide Extended time Administer assessment in several sessions; specifying the duration of	Provide higher level choice question

Possible Assessment Adjustments (Modifications /Accommodations/ Differentiation):

<p>each session Clarify and repeat directions as needed Read aloud sections of the directions and/or questions as needed Reduce superfluous words Rephrase test directions and/or questions Highlight key ideas Provide visual cues such as arrows Scaffolding questions On-task and focusing prompts Allow for retakes Pace long-term projects Chunk long-term assignments</p>	<p>each session Clarify and repeat directions as needed Read aloud sections of the directions and/or questions as needed Reduce superfluous words within questions and responses Rephrase test directions and/or questions Chunking Information Highlight key ideas Provide visual cues such as arrows Scaffolding questions On-task and focusing prompts Allow for retakes Pace long-term projects Chunk long-term assignments Oral testing Picture prompts No penalty for spelling errors</p>	<p>each session Clarify and repeat directions as needed Pace long-term projects Chunk long-term assignments On-task and focusing prompts</p>	
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Instructional Strategies (Marzano’s 41 Elements)

- Provide clear learning goals and scales
- Provide resources and guidance
- Identifying critical information
- Organizing students to interact with new knowledge
- Previewing new content
- Modeling
- Direct Instruction
- Chunking content into “digestible bites”
- Guided note-taking
- Processing of new information
- Graphic Organizers
- Elaborating on new information

Instructional Strategies (Marzano's 41 Elements)

Academic Games
 Recording and representing knowledge
 Reflecting on learning
 Reviewing content
 Scaffold information
 Organizing students to practice and deepen knowledge
 Use homework
 Examining similarities and differences
 Examining errors in reasoning
 Practicing skills, strategies, and processes within mini-lessons
 Revising knowledge
 Probe incorrect answers with low expectancy student
 Organizing students for cognitively complex tasks
 Engaging students in cognitively complex tasks involving hypothesis generation and testing
 Guided/Independent Practice (explanation and citing evidence as to why phenomena happens)
 Design and conduct an investigation
 Provide specific examples of each step of research
 Provide opportunities for students to talk about themselves
 Maintain an engaging pace

Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):

Special Education	ELL	Struggling Learners	Advanced Learners
Preferential seating Teacher modeling One-to-one instruction Direct explanation or instruction Cueing and prompting questions Teacher clarification of assignment objectives Highlight key points for students to focus on Chunking writing tasks into more manageable pieces Cooperative learning	Preferential seating Teacher modeling One-to-one instruction Cueing and/or prompting questions Teacher clarification of assignment objectives Highlight key points for students to focus on Chunking writing tasks in to more manageable pieces Cooperative learning Flexible grouping	Scaffolding questions Highlight key ideas Teacher notes Provide small group and/or individualized instruction when needed Cueing strategies to promote on task behavior Clarify and repeat directions as needed Use visual cues Activity breaks	Enrichment opportunities Cooperative learning Flexible grouping Higher level choice questions Scaffolding

Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):

<p>Flexible grouping Summarizing and note taking Scaffolding questions Highlight key ideas Teacher notes Provide small group and/or individualized instruction when needed Cueing strategies to promote on task behavior Clarify and repeat directions as needed Use visual cues Activity breaks Physical proximity Model expectations and/or provide additional examples Limit number of oral instructions Alternatives to writing One-to-one conferencing on topics of need for individual students Construction of peer review of groups based on flexible grouping Reinforcing effort and providing recognition Immediate feedback Learning stations Timer Extended time Create a flexible timetable for deadlines Additional tutoring time during enrichment</p>	<p>Summarizing and Note taking Choice menus Scaffolding questions Highlight key ideas Teacher notes Provide small group and/or individualized instruction when needed Cueing strategies to promote on task behavior Clarify and repeat directions as needed Use visual cues Activity breaks Physical proximity Model expectations and/or provided additional examples Limit number of oral instructions Alternatives to writing One-to-one conferencing on topics of need for individual students Construction of peer review of groups based on flexible grouping Reinforcing effort and providing recognition Immediate feedback Learning stations Timer Extended time Create a flexible timetable for deadlines Additional tutoring time during enrichment</p>	<p>Physical proximity Model expectations and/or provide additional examples Alternatives to writing One-to-one conferencing on topics of need for individual students Reinforcing effort and providing recognition Immediate feedback Learning stations Timer Extended time Creating a flexible timetable for deadlines Additional tutoring time during SMART periods</p>	
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Unit Vocabulary:

Unit Vocabulary:

Essential:

forensics, toxicology, anthropometry, DNA, biological, anthropology, entomology, pupal, larvae

Non-Essential:

angle, crime, justice, analysis, conclusion, expert, documentation, custody, identification, comparison, database, reconstruction, impression

Interdisciplinary Connections (Applicable Standards):	Integration of Technology:	21 st Century Themes:	21 st Century Skills:
<p><u>E/LA</u> W.9-10.8 RI.9-10.2</p> <p><u>Social Studies</u> 6.1.12.D.14.d</p> <p><u>Technology</u> NJSLS.8.1.12.A.3 NJSLS.8.1.12.D.4 NJSLS.8.1.12.F.1 NJSLS.8.2.12.B.4</p> <p>21st Century Life and Careers: <u>Career Ready Practices</u> CRP2 CRP3 CRP7</p> <p><u>Career and Technical Education</u> NJSLS.9.3.LW.5 NJSLS.9.3.LW-ENF.12 NJSLS.9.3.ST-ET.1 NJSLS.9.3.ST-ET.3 NJSLS.9.3.ST.5 NJSLS.9.3.ST-SM.3 NJSLS.9.3.ST-SM.4</p>	<p>Technology:</p> <p>Google Classroom for collaboration and turning in assignments</p> <p>Chromebooks for research and resource searching</p> <p>Promethean Board for understanding checks</p> <p>Promethean Board for use of games</p> <p>Promethean Board for YouTube</p> <p>Khan Academy</p> <p>Bozeman</p> <p>Crash Course</p>	<p><input checked="" type="checkbox"/> Global Awareness</p> <p><input checked="" type="checkbox"/> Civic Literacy</p> <p><input checked="" type="checkbox"/> Health Literacy</p>	<p><input checked="" type="checkbox"/> Media Literacy</p> <p><input checked="" type="checkbox"/> Critical Thinking and Problem Solving</p> <p><input checked="" type="checkbox"/> Life and Career Skills</p> <p><input checked="" type="checkbox"/> Communication & Collaboration</p> <p><input checked="" type="checkbox"/> Information Literacy</p>

Resources:
Texts/Materials: Leveled Reading-

Unit 4: Environmental Science and Ecology	Recommended Duration: 2 months (May- June)
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Unit Description:

In this unit of study, students will explore human population growth, human activities, and the impact these have on the climate and environment. Students will examine how materials and matter cycle throughout Earth’s ecosystems. They will further analyze how human waste and consumption relate to the biogeochemical cycles, resulting in pollution and global climate change. Additionally, students will determine how exponential human population growth has exacerbated negative impacts on the environment. Students will examine factors that have contributed to this exponential growth and make predictions for the future. Students will discuss the ethical issues surrounding human impact on the environment and create potential solutions for lessening human impact on the environment.

Essential Questions:	Enduring Understandings:
<p>How does human activity and population growth impact the environment?</p> <p>What factors have contributed to an exponential human population growth rate?</p>	<p>Human consumption and waste have negative impacts on the environment causing pollution and global climate change. As the human population grows exponentially, the extent to which we effect the environment becomes more severe.</p> <p>Modern advancements in technology, medicine, agriculture, and industry have all increased the average human lifespan, thus causing the exponential growth of the human population.</p>

Relevant Standards:	Learning Goals:	Learning Objectives:
<p>Subject Area: <u>NJSLS-S</u> NJSLS-S.HS-LS2-5 NJSLS-S.HS-LS2-6 NJSLS-S.HS-LS2-7 NJSLS-S.HS-LS4-6 NJSLS-S.HS-ESS2-6 NJSLS-S.HS-ESS3-6</p> <p>Interdisciplinary: <u>Technology</u> NJSLS.8.1.12.A.3 NJSLS.8.2.12.A.1 NJSLS.8.2.12.B.2</p>	<p>Students will understand the focus of the field of environmental science and how it applies to human behavior and consumption. (1 week)</p> <p>Students will understand the Earth’s atmospheric and geographic organization as it applies to biogeochemical cycling. (1 week)</p> <p>Students will understand the ecological levels of organization and the interdependence of living and nonliving components of an ecosystem. (1 week)</p>	<ol style="list-style-type: none"> 1. Explain the focus of environmental science. 2. Describe the recent trends in human population and resource consumption. 3. Explain the study of environmental ethics. 4. Describe the Earth’s geosphere, lithosphere, biosphere, atmosphere, and hydrosphere. 5. Discuss the various biogeochemical cycles. 6. Explain how the law of the conservation of matter applies to the behavior of nutrients in the environment. 7. Describe the levels of organization in ecology. 8. Explain the difference between biotic and abiotic factors and how they are interrelated in an ecosystem. 9. Define population density and explain why population size is useful data.

Relevant Standards:	Learning Goals:	Learning Objectives:
<p>NJSLS.8.2.12.D.6</p> <p><u>Career Ready Practices</u> CRP1 CRP2 CRP4 CRP5 CRP8</p> <p><u>Career and Technical Education</u> NJSLS.9.3.ST-ET.1 NJSLS.9.3.ST-ET.3 NJSLS.9.3.ST-SM.4</p> <p><u>Social Studies</u> 6.1.12.A.16.b</p> <p><u>E/LA</u> W.9-10.8 RI.9-10.2</p>	<p>Students will understand population dynamics and apply concepts to human population growth. (1 week)</p> <p>Students will be able to analyze human population growth and the contribution technology has played in the exponential growth of the human population. (2 weeks)</p> <p>Students will understand the concept of sustainability and how human consumption, waste, and energy sources affect one's impact on Earth. (2 weeks)</p>	<p>10. Describe three ways in which populations may be distributed.</p> <p>11. Explain trends in human population growth.</p> <p>12. Describe factors, including technological advances, that contribute to human population growth.</p> <p>13. Describe total fertility rate, replacement fertility, and demographic transition.</p> <p>14. Predict population growth using data and trends in an area from recent years.</p> <p>15. Discuss how technological advancements can be both beneficial and harmful to the environment.</p> <p>16. Describe the causes and consequences of global climate change.</p> <p>17. Evaluate the advantages and disadvantages of various nonrenewable energy sources.</p> <p>18. Evaluate the advantages and disadvantages of various renewable energy sources.</p> <p>19. Describe categories of waste and how each may be managed.</p>

Formative Assessments	Summative Assessments:	Performance Assessments:	Major Activities/ Assignments (required):
<p>Introduction to Environmental Science Quiz Ecology Quiz Populations Quiz Sustainability Quiz</p>	<p>Environmental Science and Ecology Test Populations and Sustainability Test CSA4 (Benchmark 3)</p>	<p>Biogeochemical Cycle Presentation Energy Sources Debate Individual Footprint Activity</p>	<p>Ecology Concept Map Population Growth Lab Human Population Growth Lab Energy Sources Graphic Organizer</p>

Possible Assessment Adjustments (Modifications /Accommodations/ Differentiation):			
Special Education	ELL	Struggling Learners	Advanced Learners
Provide study guide Extended time Administer assessment in several sessions; specifying the duration of each session Clarify and repeat directions as needed Read aloud sections of the directions and/or questions as needed Reduce superfluous words Rephrase test directions and/or questions Highlight key ideas Provide visual cues such as arrows Scaffolding questions On-task and focusing prompts Allow for retakes Pace long-term projects Chunk long-term assignments	Provide study guide Extended time Administer assessment in several sessions; specifying the duration of each session Clarify and repeat directions as needed Read aloud sections of the directions and/or questions as needed Reduce superfluous words within questions and responses Rephrase test directions and/or questions Chunking Information Highlight key ideas Provide visual cues such as arrows Scaffolding questions On-task and focusing prompts Allow for retakes Pace long-term projects Chunk long-term assignments Oral testing Picture prompts No penalty for spelling errors	Provide study guide Extended time Administer assessment in several sessions; specifying the duration of each session Clarify and repeat directions as needed Pace long-term projects Chunk long-term assignments On-task and focusing prompts	Provide higher level choice question

Instructional Strategies (Marzano's 41 Elements)
Provide clear learning goals and scales Provide resources and guidance Identifying critical information Organizing students to interact with new knowledge Previewing new content Modeling Direct Instruction

Instructional Strategies (Marzano's 41 Elements)

Chunking content into "digestible bites"
 Guided note-taking
 Processing of new information
 Graphic Organizers
 Elaborating on new information
 Academic Games
 Recording and representing knowledge
 Reflecting on learning
 Reviewing content
 Scaffold information
 Organizing students to practice and deepen knowledge
 Use homework
 Examining similarities and differences
 Examining errors in reasoning
 Practicing skills, strategies, and processes within mini-lessons
 Revising knowledge
 Probe incorrect answers with low expectancy student
 Organizing students for cognitively complex tasks
 Engaging students in cognitively complex tasks involving hypothesis generation and testing
 Guided/Independent Practice (explanation and citing evidence as to why phenomena happens)
 Design and conduct an investigation
 Provide specific examples of each step of research
 Provide opportunities for students to talk about themselves
 Maintain an engaging pace

Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):

Special Education	ELL	Struggling Learners	Advanced Learners
Preferential seating Teacher modeling One-to-one instruction Direct explanation or instruction Cueing and prompting questions Teacher clarification of assignment objectives	Preferential seating Teacher modeling One-to-one instruction Cueing and/or prompting questions Teacher clarification of assignment objectives Highlight key points for students to	Scaffolding questions Highlight key ideas Teacher notes Provide small group and/or individualized instruction when needed Cueing strategies to promote on task	Enrichment opportunities Cooperative learning Flexible grouping Higher level choice questions Scaffolding

Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):

<p>Highlight key points for students to focus on</p> <p>Chunking writing tasks into more manageable pieces</p> <p>Cooperative learning</p> <p>Flexible grouping</p> <p>Summarizing and note taking</p> <p>Scaffolding questions</p> <p>Highlight key ideas</p> <p>Teacher notes</p> <p>Provide small group and/or individualized instruction when needed</p> <p>Cueing strategies to promote on task behavior</p> <p>Clarify and repeat directions as needed</p> <p>Use visual cues</p> <p>Activity breaks</p> <p>Physical proximity</p> <p>Model expectations and/or provide additional examples</p> <p>Limit number of oral instructions</p> <p>Alternatives to writing</p> <p>One-to-one conferencing on topics of need for individual students</p> <p>Construction of peer review of groups based on flexible grouping</p> <p>Reinforcing effort and providing recognition</p> <p>Immediate feedback</p> <p>Learning stations</p> <p>Timer</p> <p>Extended time</p> <p>Create a flexible timetable for</p>	<p>focus on</p> <p>Chunking writing tasks in to more manageable pieces</p> <p>Cooperative learning</p> <p>Flexible grouping</p> <p>Summarizing and Note taking</p> <p>Choice menus</p> <p>Scaffolding questions</p> <p>Highlight key ideas</p> <p>Teacher notes</p> <p>Provide small group and/or individualized instruction when needed</p> <p>Cueing strategies to promote on task behavior</p> <p>Clarify and repeat directions as needed</p> <p>Use visual cues</p> <p>Activity breaks</p> <p>Physical proximity</p> <p>Model expectations and/or provided additional examples</p> <p>Limit number of oral instructions</p> <p>Alternatives to writing</p> <p>One-to-one conferencing on topics of need for individual students</p> <p>Construction of peer review of groups based on flexible grouping</p> <p>Reinforcing effort and providing recognition</p> <p>Immediate feedback</p> <p>Learning stations</p> <p>Timer</p> <p>Extended time</p> <p>Create a flexible timetable for</p>	<p>behavior</p> <p>Clarify and repeat directions as needed</p> <p>Use visual cues</p> <p>Activity breaks</p> <p>Physical proximity</p> <p>Model expectations and/or provide additional examples</p> <p>Alternatives to writing</p> <p>One-to-one conferencing on topics of need for individual students</p> <p>Reinforcing effort and providing recognition</p> <p>Immediate feedback</p> <p>Learning stations</p> <p>Timer</p> <p>Extended time</p> <p>Creating a flexible timetable for deadlines</p> <p>Additional tutoring time during SMART periods</p>	
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Possible Instructional Adjustments (Modifications /Accommodations/ Differentiation):

deadlines Additional tutoring time during enrichment	deadlines Additional tutoring time during enrichment		
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Unit Vocabulary:

Essential:

biome, ecology, sustainability, biome, habitat, niche, symbiotic, trophic, biogeochemical cycle, meteorological, overpopulation

Non-Essential:

exponential, impact, pollution, natural, consumption, disease, energy

Interdisciplinary Connections (Applicable Standards):	Integration of Technology:	21st Century Themes:	21st Century Skills:
<u>E/LA</u> W.9-10.8 RI.9-10.2 <u>Social Studies</u> 6.1.12.A.16.b <u>Technology</u> NJSLS.8.1.12.A.3 NJSLS.8.2.12.A.1 NJSLS.8.2.12.B.2 NJSLS.8.2.12.D.6 21 st Century Life and Careers: <u>Career Ready Practices</u> CRP1 CRP2 CRP4 CRP5 CRP8 <u>Career and Technical Education</u>	Technology: Google Classroom for collaboration and turning in assignments Chromebooks for research and resource searching Promethean Board for understanding checks Promethean Board for use of games Promethean Board for YouTube Khan Academy Bozeman	__X__ Global Awareness __X__ Health Literacy	__X__ Creativity & Innovation __X__ Media Literacy __X__ Critical Thinking and Problem Solving __X__ Life and Career Skills __X__ Communication & Collaboration __X__ Information Literacy

Interdisciplinary Connections (Applicable Standards):	Integration of Technology:	21st Century Themes:	21st Century Skills:
NJSLS.9.3.ST-ET.1 NJSLS.9.3.ST-ET.3 NJSLS.9.3.ST-SM.4	Crash Course		

Resources:
Texts/Materials: Leveled Reading-