Atlantic City Public Schools

ELL Science Curriculum

9th - 12th Grade

Curriculum Guide

Atlantic City Schools

Atlantic City, NJ

Atlantic City Board of Education

2018-2019

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Introduction to the Guide

One of the critical goals in developing the Next Gen Science Standards was to "create a set of research-based, up-to-date K–12 science standards. These standards give local educators the flexibility to design classroom learning experiences that stimulate students' interests in science and prepares them for college, careers, and citizenship." The standards reveal the importance of encouraging students to . . .

- *Construct and revise an explanation based on evidence…*
- *Develop and use a model to illustrate…*
- *Use mathematical and/or computational representations to support explanations…*
- *Design, evaluate, and refine a solution.*
- *Communicate scientific information*

The ELL Science curriculum emphasizes the aforementioned concepts and, additionally, underscores the significance of…

- Performance expectations
- Hands on, inquiry based experiments
- Focus on process and skills
- Acquiring academic language
- Demonstrating an understanding of the scientific process

The focus of each week centers on an experiment which is designed to develop an understanding of the critical steps of the scientific method.

- Choose a Hypothesis
- List materials
- Follow Procedure
- Record Data
- Construct Computer Generated Graph
- Choose Correct Conclusion and Report Findings

The ELL Science curriculum incorporates the development of language, literacy and critical thinking skills. Rigor and relevance is introduced in the form of discourse, technological applications, and academic contexts for language use. The ELL Science Teacher utilizes the Sheltered Instruction/SIOP model which addresses the academic needs of English learners. The SIOP Model consists of eight interrelated components:

- Lesson Preparation
- Building Background
- Comprehensible Input
- Strategies
- Interaction
- Practice/Application
- Lesson Delivery
- Review & Assessment

The operational goals of the ELL Science curriculum are to foster higher levels of cognition and deep subject matter understanding, assist in the transference of learning via differentiated strategies, recognize the unique experiences and backgrounds of each student, assist in the process of acculturation, and present relevant performance based projects and experiments that lead to an authentic engagement in Academic English language usage and content area concepts and skills.

Creating a Culture of Thinking

While the academic goals and objectives outlined in the ESL curriculum are critical pieces of a student's education, creating a "culture of thinking" in the classroom is as crucial. Ron Ritchhart, in his book *Creating Cultures of Thinking*, stresses the need to instill such critical applied skills as "professionalism, work ethic, collaboration, communication, ethics, social responsibility, critical thinking, and problem solving." He highlights the observations of Tony Wagner who, through interviews with business leaders, has constructed a list of seven survival skills, vital to success in the world of employment. These skills include critical thinking and problem solving, collaboration, agility and adaptability, initiative and entrepreneurialism, communication skills, the ability to analyze information, curiosity and imagination.

Ron Ritchart outlines eight forces that he believes are crucial to transforming our schools: Expectations, Language, Time, Modeling, Opportunities, Routines, Interactions, and Environment. Mr. Ritchart makes a key distinction in his analysis of teacher expectations. We, as teachers, should not have expectations *of* students, but rather *for* students. It is important to focus our expectations on learning rather than the mere completion of work, student independence rather than dependence, and teaching that empowers rather than controls students.

The importance of language is illustrated by noted psychologist Lev Vygotsky who wrote, "*The child begins to perceive the world not only through its eyes but also through its speech. An later it is not just seeing but acting that becomes informed by words*." Ron Ritchart, in his explanation of "thinking moves" explains that when teachers "begin to notice and name students' thinking and positive learning moves, their students begin to exhibit more of those behaviors."

Time is one of the most precious commodities in education. Teachers often feel constrained by the dreaded "Scope and Sequence" section of the curriculum document, lamenting the need for additional time. On the topic of student thinking, time becomes a key component. If teachers are truly motivated to develop a culture of thinking in their classroom, they need to provide sufficient time and structure to gather their thoughts.

Modeling should go beyond the familiar "I will demonstrate and then you repeat." The type of modeling that creates culture is much more subtle and ambient. It is necessary for teachers to show their passion for a topic, interest in ideas and to model what it means to be engaged as a reflective and deliberate learner.

Focus on creating opportunities for deep learning rather than mere work. "Powerful learning opportunities invite all students to the learning, having a low threshold for entry and a high ceiling so that learners can take themselves as far as they wish. Such opportunities provide students with the chance to apply their skills and knowledge in novel contexts even as they acquire new understanding."

Routines are a critical element to effective and efficient classroom management. However, the creation and implementation of behavioral and managerial routines renders the creation of a culture of thinking incomplete. It is essential to "establish learning and thinking routines in our classrooms that offer students known structures within which to operate and tools that they can take control of and use for their own learning."

"Perhaps nothing speaks louder about the culture of a classroom than the interactions that take place within it." Mr. Ritchhart emphasizes the importance of listening and questioning as the basis for positive classroom interactions. These skills shape meaningful collaboration, which can then build a culture of thinking. It is

important to note that before such interaction between and among students can occur, the teacher must explicitly teach these skills through example.

"Walk into any classroom or learning space, even in the absence of students or teachers, and you can tell something about the learning that happens in that space." If we as teachers value the importance of communication, discussing, and debating then our classroom environment should readily promotes this ideology. "Thinking about the messages an environment communicates and the needs it facilitates can help us construct environments that better support students' learning"

The following pages provide an overview of our ELL Science Curiculum - its aims and objectives, format and procedures, grading policies and lists of instructional materials. However important this information may be, the key to a "thorough and efficient" education does not lie within these pages. It lies within the ability of each teacher to develop, deliver, and assess lessons, activities, and opportunities for our students to actively engage in a collaborative effort to create a vibrant, purposeful and enduring culture of thinking.

"Children grow into the intellectual life of those around them." - Lev Vygotsky

"A chief goal of instruction, right alongside the development of content understanding, is the advancement of thinking." - Ron Ritchhart

Mission and Vision of the Atlantic City School District

Mission Statement

In order to meet the needs of all students, the District is committed to increasing student learning and improving teaching in the core academic subjects by using instructional strategies aligned with the Common Core State Standards and based on Scientifically Based Research. Parents will be active partners and key stakeholders with the Atlantic City School District to support their student's intellectual, emotional, physical and social growth.

Vision Statement

The Atlantic City District recognizes the urgency to provide resources to improve instruction through exemplary and diverse practices which are monitored and analyzed through student achievement data. The District has the expectation that all students will achieve the Common Core State Standards at all grade levels.

WIDA Standards

The Role of Standards in Instruction

WIDA understands that your instructional context is unique. For example, you might be teaching academic subjects with multilingual learners integrated into your classroom, or you might be collaborating as a content or language expert for your shared multilingual students. Regardless, the WIDA Language Development Standards can help you integrate language development and content learning appropriate to the grade level and proficiencies of your students.

The WIDA Standards

WIDA has established language development standards for English and Spanish. These standards represent the language students need to be successful in early childhood programs and Grades K-12.

The first standard, **Social and Instructional Language,** reflects the ways in which students interact socially to build community and establish working relationships with peers and teachers in ways that support learning.

The remaining four standards present ways multilingual learners can communicate information, ideas and concepts necessary for academic success in **Language Arts, Math, Science** and **Social Studies**. (Note that these are different for the early English and early Spanish standards.)

Standard 1 – Social and Instructional Language
English language learners communicate for social and instructional purposes within the school setting.

Standard 2 – Language of Language Arts
English language learners communicate information, ideas and concepts necessary for academic success in the content area of language arts.

Standard 3 – Language of Mathematics
English language learners communicate information, ideas and concepts necessary for academic success in the content area of mathematics.

Standard 4 – Language of Science
English language learners communicate information, ideas and concepts necessary for academic success in the content area of science.

Standard 5 – Language of Social Studies
English language learners communicate information, ideas and concepts necessary for academic success in the content area of social studies.

Graduation Requirements

New Jersey's minimum graduation requirements by content area total 120 credits (N.J.A.C. 6A:8-5.1)

15 of those credits emanate from the content area of science. Within this program of study, at least 5 credits in each:

- Laboratory biology/life science or the content equivalent
- Laboratory/inquiry-based science course (i.e., chemistry, environmental science, or physics)
- Laboratory/inquiry-based science course

The ELL Science curriculum offers the 5 credit courses of:

- Newcomer Science
- Sheltered Environmental Science
- Sheltered Biology

Modifications and Accommodations

The following outlines ways in which teachers can make modifications and accommodations for students who are working on, below, and above grade level.

504 Plans	Special Education	At-Risk	Gifted	English Language Learners
**All teachers of students with special needs must review each student's 504 Plan. Teachers must then select the appropriate modifications and/or accommodations necessary to enable the student to appropriately progress in the general curriculum.* • Collaborate with after-school programs or clubs to extend learning opportunities. • Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). • Provide opportunities for students to connect with people of similar backgrounds (e.g.	**All teachers of students with special needs must review each student's IEP. Teachers must then select the appropriate modifications and/or accommodations necessary to enable the student to appropriately progress in the general curriculum.* • Collaborate with after-school programs or clubs to extend learning opportunities. • Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).	The possible list of modifications/accommodations identified for Special Education students can be utilized for At- Risk students as well. Teachers should utilize ongoing methods to provide instruction, assess student needs, and utilize modifications specific to the needs of individual students. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Use project-based learning	• Enrichment projects • Higher-level cooperative learning activities • Provide higher-order questioning and discussion opportunities • Tiered centers • Tiered assignments **Accommodations for Gifted Students in the General Education Classroom**	• Provide ELL students with multiple literacy strategies. • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies). • Use project-based learning • Structure the learning around explaining or solving a social or community-based issue. • Allow extended time for assignment completion. • Students can utilize technology such as text to

conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies). ● Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). ● Use project-based learning ● Structure the learning around explaining or solving a social or community-based issue. ● Restructure lesson using UDL principles (http://www.cast.org/our-work/about-udl.html#.VXmoXcfD_UA). ● Allow extended time for assignment completion. ● Preferential seating	● Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies). ● Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). ● Use project-based learning ● Structure the learning around explaining or solving a social or community-based issue. ● Restructure lesson using UDL principles (http://www.cast.org/our-work/about-udl.html#.VXmoXcfD_UA). ● Allow extended time for assignment completion.	● Structure the learning around explaining or solving a social or community-based issue. ● Restructure lesson using UDL principles (http://www.cast.org/our-work/about-udl.html#.VXmoXcfD_UA). ● Allow extended time for assignment completion.		speech software or Google drive to complete assignments ● Allow time for peer consultation/editing ● Restructure lesson using UDL principles (http://www.cast.org/our-work/about-udl.html#.VXmoXcfD_UA). ● **Supporting ELL During Content Instruction** ● **Modifications for ELLs** ● **Accommodations for ELLs**

Assessments

ACCESS for ELLs 2.0, a secure large-scale English language proficiency assessment, is administered annually to every ESL student in the program. Results are evaluated to monitor students' progress in acquiring academic English. ACCESS for ELLs 2.0 is aligned with the WIDA English Language Development Standards and assesses each of the four language domains of Listening, Speaking, Reading, and Writing.

In addition to the ACCESS for ELLs 2.0 assessment, the ELL Science Curriculum incorporates diagnostic and benchmark testing, analyzing pre-and post-test scores as a means of identifying student strengths and weaknesses. Evaluation also includes teacher-designed assessments which gauge students' comprehension of subject area content and academic language. Examples of these measurements include open-ended questions, written compositions, oral presentations, projects, experiments, portfolios, observation, essays, interviews, performance tasks, exhibitions and demonstrations, journals, teacher-created tests, rubrics, self- and peer-evaluations. A rubric designed to assess speaking proficiency and writing ability is used across all science courses. These rubrics, based on the three features of academic language from the WIDA Standards, are used for both self-assessment on the part of the student and standardized assessment. Benchmarks are administered on a quarterly basis.

	Writing/Speaking Rubric Date: _____ Name: _____ Assignment: _____ Class: _____		
LVL	***VOCABULARY***	**YES**	**NO**
1	I use common social words and expressions. (*He, she, it, I, they, you, this, is, are)*		
1	I use common classroom words and expressions. *(desk, sit, stand, read, write, listen, repeat)*		
1	I use common content words. *(predict, summarize, compare, define, explain, think)*		
2	I use less common social words and expressions. **Example:**		
2	I use less common classroom words and expressions. **Example:**		
2	I use less common content words and expressions. **Example:**		
3	I use some specific content words and expressions. **Example:**		
3	I use words that try to satisfy the writing purpose. **Example:**		
4	I use some specific and technical content words and expressions. **Example:**		
4	I use words and expressions with multiple meanings. **Example:**		
4	I use words with common collocations. *(Have a good time, do your homework, make money)*		
4	I use idioms. *(Beat around the bush, ball is in your court, best of both worlds, cut corners)*		
5	I use specific and technical content words and expressions. **Example:**		
5	I use words and expressions with precise meaning. **Example:**		
5	I use words that satisfy the writing purpose. **Example:**		
	SENTENCE	**YES**	**NO**
1	I use simple social or classroom words or phrases. **Example:**		
1	I use 1 or 2 conventions. *(punctuation, capitalization, verb tense, pronoun use, subject/verb)*		
2	I use basic sentence structure and grammar.		
2	I use 3 or 4 conventions.		
3	I use simple and compound sentence structures		
3	I use grammar common to the content areas.		
4	I often use appropriate conventions.		

4	I use simple and compound sentences. I usually use a variety of sentence beginnings.		
5	I use simple, compound, complex sentences. I often use a variety of sentence beginnings.		
5	I almost always use appropriate conventions.		
	PARAGRAPH	**YES**	**NO**
1	I don't copy the example.		
1	I use some words in English.		
2	I have a basic organization of my ideas.		
2	I use most words in English.		
3	I have a good organization of my ideas.		
3	I begin to develop perspective, register, and genre.		
4	My sentences or paragraphs are connected.		
4	I have mostly developed perspective, register, and genre.		
5	I have organized, cohesive, and coherent ideas.		
5	I display appropriate perspective, register, and genre.		

WIDA SPEAKING & WRITING RUBRIC

(Highlight the appropriate block from each of the three columns)

	Discourse Level Linguistic Complexity	**Sentence Level** Language Forms & Conventions	**Word/Phrase Level** Vocabulary Usage
Level 5 Bridging	Multiple, complex sentences Organized, cohesive and coherent expression of ideas	A variety of grammatical structures matched to purpose A broad range of sentence patterns	Technical, abstract content area language Words/expressions with shades of meaning across content areas
4.5			
Level 4 Expanding	Short, expanded, and some complex sentences Organized expression of ideas with emerging cohesion	Repetitive grammatical structures Sentence patterns characteristic of particular content areas	Specific and some technical content area language Words/expressions with multiple meanings *(collocations/idioms)*
3.5			
Level 3 Developing	Short and some expanded sentences with emerging complexity Expanded expression of one idea or emerging expression of multiple related ideas	Repetitive grammatical structures with occasional variation Sentence patterns across content areas	Specific content language, including expressions Words and expressions with common collocations and idioms
2.5			
Level 2 Emerging	Phrases or short sentences Emerging expression of ideas	Formulaic grammatical structures Repetitive phrasal and sentence patterns across content areas	General content words and expressions, including cognates Social and instructional words and expressions
1.5			
Level 1 Entering	Words, phrases, or chunks of language Single words used to represent ideas	Phrase level grammatical structures Phrasal patterns associated with common social and instructional situations	General content-related words Everyday social and instructional words and expressions
.0			

Instructional Materials

Sheltered Biology

- Holt, Rinehart, and Winston. Modern Biology. Harcourt. 2002
- Bernstein, Schachter, Winkler, Wolfe. Life Science: Concepts and Challenges.
- Biology Internet Resources: various Virtual Dissections
- Discovery Education

Sheltered Environmental

- Environmental Science, Jay Withgott. Pearson, 2011
- NBC Learn Media center internet reference and data search
- Discovery Education

Newcomer Science

- Environmental Science, Jay Withgott. Pearson, 2011
- Bernstein, Schachter, Winkler, Wolfe. Life Science: Concepts and Challenges.
- Biology Internet Resources: various Virtual Dissections
- NBC Learn Media center internet reference and data search
- Discovery Education

Interdisciplinary Connections

Students enrolled in each of the three courses within the ELL Science program are regularly exposed to texts, skills, and activities from multiple disciplines. Mathematical skills and concepts are interwoven throughout the curricula as students are required to record, review, and analyze data for a variety of experiments. Viewing science through the historical lens of social studies, students understand significant developments in science throughout the modern world. The New Jersey Student Learning Standards in the subject area of Language Arts are infused throughout the ELL Science curricula. English language learners communicate information, ideas and concepts necessary of academic success in the content area of science." (WIDA Standard 4) Academic language is broken down into three components (Vocabulary Usage, Language Forms and Conventions, and Linguistic Complexity) and assessed utilizing the WIDA rubric.

Integration of 21st Century Life and Career Skills

Standard 9 of the New Jersey Student Learning Standards emphasizes the need for students "t*o be lifelong learners who have the knowledge and skills to adapt to an evolving workplace and world*." These skills, as iterated in the following ten practices, are infused throughout the ELL Science curriculum. Such career ready practices as goal setting, clear and effective communication skills, critical thinking and problem solving, working in teams, effective use of technology, and ethical decision-making and social responsibility are emphasized throughout each of the units.

Students are encouraged to set goals for their learning. One example of this is the overview of individual student ACCESS scores conducted by all ESL and content area instructors at the beginning of the year. Students are provided with a breakdown of their previous year's reading, writing, listening, and speaking scores, identify strengths and areas in need of improvement, and formulate a goal to increase their academic language proficiency.

Throughout each unit, in all science classes, students are provided multiple opportunities to practice effective communication skills within the four domains of reading, writing, listening, and speaking. Both summative and formative assessments provide useful feedback and allow our students to recognize and evaluate their progress towards individual achievement goals.

As previously noted, the ELL Science curriculum emphasizes the importance of “creating a culture of thinking” among our students. Listening, speaking and questioning skills provide the basis for positive, analytical classroom discourse. This curriculum provides teachers with a framework to develop lessons and activities which challenge our students to critically and respectfully examine their world view as well as the opinions of others.

Students’ technological skills and abilities are refined through regular access and interaction with technology. Google Classroom is utilized throughout the program. Students become proficient in the use of Google Docs through the creation of a variety of assignments as well as Google Forms, as assessments transition to this online platform, and Google Slides, through the creation and presentation of a variety of student reports.

Integration of Technology

Integration of 21st Century Life Skills and Technology	
Technology Content Standards	**21st Century Life and Careers**
8.1 Educational Technology: All students will use digital tools to assess, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge. **A. Technology Operations and Concepts:** **8.1.2.A.1** Identify the basic features of a digital device and explain its purpose. **8.1.2.A.2** Create a document using a word processing application. **8.1.2.A.3** Compare the common uses of at least two different digital applications and identify the advantages and disadvantages of each. **8.1.2.A.4** Demonstrate developmentally appropriate navigation skills in virtual Environments (i.e. games, museums) **8.1.2.A.5** Enter information into a spreadsheet and sort the information.	**CRP1.** Act as a responsible and contributing citizen and employee. **CRP2.** Apply appropriate academic and technical skills. **CRP3.** Attend to personal health and financial well-being. **CRP4.** Communicate clearly and effectively and with reason. **CRP5.** Consider the environment, social and economic impacts of decisions. **CRP6.** Demonstrate creativity and innovation. **CRP7.** Employ valid and reliable research strategies. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them. **CRP9.** Model integrity, ethical leadership and effective management.

8.1.2.A.6 Identify the structure and components of a database.

8.1.2.A.7 Enter information into a database or spreadsheet and filter the information.

B. Creativity and Innovation

8.1.2.B.1 Illustrate and communicate original ideas and stories using multiple digital tools and resources.

C. Communication and Collaboration:

8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.

D. Digital Citizenship

8.1.2.D.1 Develop an understanding of ownership of print and non-print information.

E: Research and Information Fluency:

8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.

F. Critical thinking, problem solving, and decision making:

8.1.2.F.1 Use geographic mapping tools to plan and solve problems.

8.2 Technology, Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the

CRP10. Plan education and career paths aligned to personal goals.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

Strand B. Money Management

9.1.4.B.1 Differentiate between financial wants and needs.

9.1.4.B.2 Identify age-appropriate financial goals

9.1.4.B.3 Explain what a budget is and why it is important.

9.1.4.B.4 Identify common household expense categories and sources of income.

9.1.4.B.5 Identify ways to earn and save.

Strand C. Credit and Debt Management

9.1.4.C.1 Explain why people borrow money and the relationship between credit and debt.

Strand D. Planning, Saving, and Investing

9.1.4.D.1 Determine various ways to save.

9.1.4.D.2 Explain what it means to “invest.”

9.1.4.D.3 Distinguish between saving and investing.

Strand E. Becoming a Critical Consumer

9.1.4.E.1 Determine factors that influence consumer decisions related to money.

individual, global society, and the environment. **A. The Nature of Technology: Creativity and Innovation** **8.2.2.A.1** Define products produced as a result of the technology or of nature. **8.2.2.A.2** Describe how designed products and systems are useful at school, home or work. **8.2.2.A.3** Identify a system and the components that work together to accomplish its purpose. **8.2.2.A.4** Choose a product to make and plan the tools and material needed. **8.2.2.A.5** Collaborate to design a solution to a problem affecting the community. **B. Technology and Society:** **8.2.2.B.1** Identify how technology impacts or improves life. **8.2.2.B.2** Demonstrate how reusing a product affects the local and global environment. **8.2.2.B.3** Identify products or systems that are designed to meet human needs. **8.2.2.B.4** Identify how the ways people live and work has changed because of technology. **C. Design:** **8.2.2.C.1** Brainstorm ideas on how to solve a problem or build a product. **8.2.2.C.2** Create a drawing of a product or device that communicates its function to peers and discuss. **8.2.2.C.3** Explain why we need to make new products. **8.2.2.C.4** Identify designed products and	**9.1.4.E.2** Apply comparison shopping skills to purchasing decisions. **Strand F. Civic Financial Responsibility** **9.1.4.F.1** Demonstrate an understanding of individual financial obligations and community financial obligations. **9.1.4.F.2** Explain the roles of philanthropy, volunteer service, and charitable contributions, and analyze their impact on community development and quality of living. **9.2 Career Awareness, Exploration, and Preparation** **9.2.4.A.1** Identify reasons why people work, different types of work, and how you can help a person achieve personal and professional goals. **9.2.4.A.2**. Identify various life roles and civic and work-related activities in the school, home and community. **9.2.4.A.3** Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes. **9.2.4.A.4** Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

brainstorm how to improve one used in the classroom. **8.2.2.C.5** Describe how the parts of a common toy or tool interact and work as part of a system. **8.2.2.C.6** Investigate a product that has stopped working and brainstorm ideas to correct the problem. **D. Abilities for a Technological World:** **8.2.2.D.1** Collaborate and apply a design process to solve a simple problem from everyday experiences. **8.2.2.D.2** Discover how a product works by taking it apart, sketching how parts fit, and putting it back together. **8.2.2.D.3** Identify the strengths and weaknesses in a product or system. **8.2.2.D.4** Identify the resources needed to create technological products or systems. **8.2.2.D.5** Identify how using a tool (such as a bucket or wagon) aids in reducing work. **E. Computational Thinking: Programming** **8.2.2.E.1** List and demonstrate the steps to an everyday task. **8.2.2.E.2** Demonstrate an understanding of how a computer takes input through a series of written commands and then interprets and displays information as output. **8.2.2.E.3** Create algorithms (a set of instructions) using a predefined set of commands (e.g., to move a student or character through a maze).	

8.2.2.E.4 Debug an algorithm (i.e., correct an error). **8.2.2.E.5** Use appropriate terms in conversation (e.g., basic vocabulary words: input, output, the operating system, debug and algorithm).	

Career Ready Practices

Retrieved from: https://www.state.nj.us/education/cccs/2014/career/CareerReadyPractices.pdf

"Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study."

CRP1: Act as a responsible and contributing citizen and employee.

CRP2: Apply appropriate academic and technical skills.

CRP3: Attend to personal health and financial well-being.

CRP4: Communicate clearly and effectively and with reason.

CRP5: Consider the environmental, social and economic impacts of decisions.

CRP6: Demonstrate creativity and innovation.

CRP7: Employ valid and reliable research strategies.

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

CRP9: Model integrity, ethical leadership and effective management.

CRP10: Plan education and career paths aligned to personal goals.

CRP11: Use technology to enhance productivity.

CRP12: Work productively in teams while using cultural global competence

Unit Plans

	Newcomer Science	Sheltered Environmental Science	Sheltered Biology
Unit 1:			
Section	Science Skills 1	Science Skills 1	Science Skills 1
1	Questions, Hypothesis. Find Average	Scientific Method	Scientific Method
2	Measurement: Length and Mass. Conclusions	Scientific Method/ Measurement	Measurement
3	Measurement: Volume and Temperature.	Measurement	Graphing
4	Assessment	Assessment	Assessment
Unit 2:			
Section	Science Skills 2	Science Skills 2	Science Skills 2
1	Procedures, Bar graph	Graphing	Variables
2	Conclusions from Data. Bar graph	Project	Research and sources

3	Line graph, Pie chart	Independent project	Independent project
4	Assessment	Assessment	Assessment
Unit 3:			
Section	**Physical Science 1**	**Intro to ES**	**Characteristics/Organization**
1	Physical: Atoms	Intro, Natural Resources	Characteristics of Life
2	Physical: Molecules	Word Population, graphs	Organization (Top Down)
3	Physical: States of Matter	Agriculture, Industrial Revolution	Organs to Cells
4	Assessment	Assessment	Assessment

Unit 4:			
Section	**Physical Science 2**	**Spheres/Cycles**	**Chemistry**
1	Physical: Chemical Reactions	Basic Chem	Basic Chem
2	Physical: Energy	Earth's Spheres	Organic Chem
3	Physical: Force and Motion	Cycles	Organic Chem
4	Assessment	Assessment	Assessment
Unit 5:			
Section	**Life Science 1**	**Ecology**	**Cells**
1	Life: Characterizes/Categories	Ecology- organization, factors, webs	Cells & Diffusion
2	Life: Plants and Soil	Ecology- energy flow, interactions	Photosynthesis
3	Life: Plants and Soil	Ecology- Evolution	Respiration

4	Assessment	Assessment	Assessment
Unit 6:			
Section	**Life Science 2**	**Plants/Water/Biomes**	**Genetics**
1	Life: Body parts	Plants, Soil, Agriculture	Cell Division
2	Life: Organs	Water	Genetics
3	Life: Cells	Biomes	Genetics
4	Assessment	Assessment	Assessment

Unit 7:			
Section	**Earth Science**	**Air/Climate Change/Disasters**	**Genetics/Evolution**
1	Earth: Space	Air	Molecular Genetics
2	Earth: Geology/Geography	Climate Change	DNA Tech
3	Earth: Climate	Natural Disasters	Evolution
4	Assessment	Assessment	Assessment
Unit 8:			
Section	**Course Review**	**Course Review**	**Earth's History/Ecology**
1	Key Facts	Key Facts	History of Life on Earth
2	Independent Project	Independent Projects	Ecology
3	Review	Review	Review

4	Assessment	Assessment	Assessment

Newcomer Science

Newcomer Science Unit 1: Science Skills 1				
NGSS: Science and Engineering Practices-Planning and Carrying Out Investigations (i.e. working toward HS-LS1-3)				
Section 1: Questions, Hypothesis. Average	**Section 2: Length, Mass. Conclusions**	**Section 3: Volume, Temp. Procedures**	**Section 4: Assessment**	**Interim Assessment**
Content Objectives: 1. Use a pipette to produce drops 2. Choose hypothesis 3. List materials 4. Follow procedure (in language) 5. Find average 6. Choose conclusion	**Content Objectives:** 1. Measure length using ruler 2. Measure mass using balance. 3. Complete conclusion (determined)	**Content Objectives:** 1. Measure volume using graduated cylinder 2. Measure temperature using thermometer 3. Put procedure in order 4. Match procedure sentences to picture	**Content Objectives:** 1. Continue all previous objectives	**Benchmark:** 1. Distinguish question, hypothesis, procedure and conclusion sentences. 2. Measure length, volume, mass and temperature (cm, mL, g, C) 3. Find average

				4. Match equipment to name 5. Match measurement to unit
Language Objectives: 1. Read/speak hypothesis sentence 2. match name to common laboratory equipment 4. Use keywords (think, how, why, what) and punctuation (?) to distinguish question and hypothesis sentences.	**Language Objectives:** 1. Read/speak conclusion sentence (determined) 2. Read/speak numbers 1-100 and decimals (point) 3. Identify type of measure, unit and equipment (ie. Length, Centimeter, Ruler) 4. Use key words to distinguish question, hypothesis and conclusion sentences	**Language Objectives:** 1. Read/speak procedure sentences (First, next, last) 2. Identify type of measure, unit and equipment 4. Use key words to distinguish question, hypothesis, procedure, and conclusion sentences	**Language Objectives:** 1. Continue all previous objectives	**Performance task:** **Boat Lab**-Complete entire experiment (in language) 1. Choose hypothesis (circle) 2. List Materials 3. Follow procedure (use measurements length, volume and mass) 4. Complete data table 5. Choose conclusion (circle)
Key Vocabulary: Question, Hypothesis, Materials, Procedure, Average, Conclusion, How Why, Where, What, Think	**Key Vocabulary:** Measure, Length, Ruler Meter stick, Meter Centimeter, Mass Balance, Gram Determined, Support	**Key Vocabulary:** Volume Graduated Cylinder Temperature, Thermometer Milliliters, Celsius First, Next, Last		

Unit 1: Science Skills 1
Section 1: Questions, Hypothesis and Average

Content Objectives: 1. Use a pipette to produce drops 2. Choose hypothesis 3. List materials 4. Follow procedure (in language) 5. Find average 6. Choose conclusion (support)		**Language Objectives:** 1. Read/speak hypothesis sentence 2. match name to common laboratory equipment 3. Read/speak conclusion 4. Use keywords (think, how, why, what) and punctuation (?) to distinguish question and hypothesis sentences.		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. Starter: practice medicine dropper 2. **Penny Lab 1** - Speak Hypothesis and conclusion - put answers on board 3. Closer: proper clean up	**Activities:** 1. Starter: Vocab wkst 2. **Penny Lab 1** (repeat) - refer to day before (did they pick a different hypothesis?) - Speak Hypothesis and conclusion -put answers on the board 3. Closer: Did you pick a different hypothesis today? Why?	**Activities:** 1. Starter: measure 3 pencils 2. practice finding Average (wkst) 3. Closer: find average of three pencils	**Activities:** 1. Starter: Find average 2. **Penny lab 2 (average)** - 3 trials, find average - Speak Hypothesis and conclusion -put answers on the board 3. Closer: What is an average?	**Activities:** **Assessment** 1. Distinguish question and hypothesis sentences. 2. Find average

Unit 1: Science Skills 1				
Section 2: Measurement, Length, Mass				
Content Objectives 1. Propose hypothesis (fish) 2. Measure length using ruler 3. Measure mass using balance 4. Complete conclusion (determined)		**Language Objectives:** 1. Read/speak conclusion sentence (determined) 2. Read/speak numbers 1-100 and decimals (point) 3. Identify type of measure, unit and equipment (ie. Length, Centimeter, Ruler) 4. Use key words to distinguish question, hypothesis and conclusion sentences		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. Starter: propose hypothesis (fish) 2. Length and Mass (wksts) - how to use ruler and balance 3. Closer: Read the ruler and balance (practical practice)	**Activities:** 1. Starter: find mass of an object (put on board) 2. **Height Lab** - Choose Hypothesis - Fill out table (on board) - Find Average - Choose Conclusion - Speak Hypothesis and Conclusion 3. Closer: How many cm is 1 m?	**Activities:** 1. Starter: find length and mass of an object 2. **Airplane mass lab** (day 1) - choose hypothesis - find plane mass - fly 5 times, find average - add paper clip - fly 5 times, find average 3. Closer: practical practice	**Activities:** 1. Starter: 2. **Airplane mass lab** (day 2) - complete flights - put data on board - choose conclusion 3. Closer: Practical practice	**Activities:** **Assessment** **Practical** 1. Distinguish question, hypothesis, and conclusion sentences. 2. Find Length 3. Use correct unit for Length 4. Find Mass 5. Use correct unit for length

Unit 1: Science Skills 1				
Section 3: Volume, Temperature, Procedure				
Content Objectives: 1. Measure volume using graduated cylinder 2. Measure temperature using thermometer 3. Put procedure in order 4. Match procedure sentences to picture		**Language Objectives:** 1. Read/speak procedure sentences (First, next, last) 2. Identify type of measure, unit and equipment 4. Use key words to distinguish question, hypothesis, procedure, and conclusion sentences		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. Starter: length and mass review 2. Volume and Temperature wksts - How to use graduated cylinder and thermometer 3. Closer: practical practice	**Activities:** 1. Starter: find volume and temp 2. **Which rock has a greater volume? Lab** 3. Closer: practical practice	**Activities:** 1. Starter: find the volume and temp 2. **Temperature/Alcohol Lab** 3. Closer: practical practice	**Activities:** 1. Starter: match measure, unit and equipment 2. Put procedure in the correct order (sandwich cut outs) 3. Match sentence to picture 4. Closer: Distinguish question, hypothesis, procedure and conclusion sentences	**Activities:** **Assessment** **Practical** 1. Distinguish question, hypothesis, procedure and conclusion sentences. 2. Find volume 3. Use correct unit for volume 4. Find temperature 5. Use correct unit for temperature

Unit 1: Science Skills 1				
Section 4: Review and Assessment				
Objectives 1. Continue previous weeks objectives				
Day 1	**Day 2**	**Day 3**	**Day 4**	
Activities: 1. Starter: cutting rectangles to dimension 2. Unit Review	**Activities:** 1. **Kahoot review**	**Activities:** **Assessment** **Unit 1 Benchmark (computer)** 1. Distinguish question, hypothesis, procedure and conclusion sentences. 2. Measure length, volume, mass and temperature 3. Find average 4. Match equipment to name 5. Match measurement to unit	**Activities:** **Performance task:** Complete entire experiment (in language) 1. **Boat Experiment** Choose hypothesis (circle) 2. List Materials 3. Follow procedure (use measurements length, volume and mass) 4. Complete data table 5. Choose conclusion (circle)	

Newcomer Science Unit 2: Science Skills 2				
NGSS: Science and Engineering Practices: -Planning and Carrying Out Investigations (HS-LS1-3) **-Constructing Explanations and Designing Solutions (HS-LS1-1)**				
Section 1: Procedures, Bar Graph	**Section 2: Conclusions from Data, Bar Graph**	**Section 3: Line graph, Pie Chart**	**Section 4: Assessment**	**Interim Assessment**
Content Objectives: 1. Write a procedure (English) from pictures 2. Produce hand drawn bar graph 3. Enter data into Google Sheets 4. Produce computer generated bar graph	**Content Objectives:** 1. Add titles and units to bar graph 2. Complete conclusions from data	**Content Objectives:** 1. Produce hand drawn and computer generated line graph 2. Produce hand drawn and computer generated pie chart	**Content Objectives:** 1. Continue previous weeks objectives	**Practical:** 1. Given data, complete the correct conclusion 2. Measure length, volume, mass and temperature 3. Match procedure pictures to sentences 4. Match equipment to name 5. Match measurement to unit
Language: Objectives: 1. Write (complete) procedure sentences 2. Organize procedure sentences in the correct order (paragraph) 3. Read/Speak procedure sentences 4. Match (write) graph vocabulary	**Language Objectives:** 1. Read/Speak conclusion sentences 2. Match (write) graph vocabulary 3. Speak/Listen survey questions	**Language Objectives:** 1. Match (write) graph vocabulary 2. **Listen** and record data 3. Speak/Listen survey questions	**Language Objectives:** 1. Continue previous weeks objectives	**Performance task:** **Airplane variables** Complete entire experiment 1. State hypothesis 2. List Materials 3. Write procedure from pictures 4. Complete data table 5. Create **bar graph (computer)** 5. State Conclusion 6. Speak question, hypothesis, graph, and conclusion to class 7. **Use all student data to improve design**

Key Vocabulary: Procedure First Next Last Results Data Bar Graph	**Key Vocabulary:** Conclusion Title Axis Support Determine	**Key Vocabulary:** Line Graph Pie Chart Percentage		

NC Unit 2: Science Skills 2				
Section 1: Procedures, Data table, Bar Graph				
Content Objectives: 1. Write (complete) a procedure from pictures 2. Produce hand drawn bar graph 3. Enter data into Google Sheets 4. Produce computer generated bar graph		**Language Objectives:** 1. Write (complete) procedure sentences 2. Organize procedure sentences in the correct order (paragraph) 3. Read/Speak procedure sentences 4. Match (write) graph vocabulary		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. Starter: measurement practice 2. Match procedure pictures to sentences -emphasize **First, Next, Last** 3. Closer: practical practice choose question, hypothesis, procedure, conclusion	**Activities:** 1. Starter: measurement practice 2. **Penny Lab 4** - different liquids - wear goggles - make a hand draw bar graph of data (title, units) 3. Closer: procedure practice	**Activities:** 1. Starter: measurement practice 2. **Penny Lab 4** (day 2) - introduce Google sheets - give template - enter data - make bar graph (title, 3. Closer: extra time for graphs	**Activities:** 1. Starter: procedure practice 2. **Penny Lab 4** (day 3) - present graph to class, speak conclusion 3. Closer: hand drawn graph practice	**Activities:** Assessment 1. Match procedure sentences to pictures 2. Make hand drawn bar graph from data

NC Unit 2: Science Skills 2				
Section 2: Graph Titles and Units, Conclusions				
Content Objectives: 1. Add titles and units to bar graph 2. Complete conclusions from data		**Language Objectives:** 1. Read/Speak conclusion sentences 2. Match (write) graph vocabulary 3. Speak/Listen survey questions		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. Starter: Measurement practice 2. Conclusion from data (wkst) 3. Closer: practical practice (sentences)	**Activities:** 1. Starter: Measurement practice 2. **Survey Question Lab** - show example - think up question - give choices - chose hypothesis - conduct experiment 3. Closer: none	**Activities:** 1. Starter: Measurement practice 2. **Survey Question Lab** (day 2) - complete lab - build computer bar graph - present to class: speak question, choices, hypothesis, and conclusion 3. Closer: none	**Activities:** 1. Starter: Measurement practice 2. Practice Assessment - conclusion from data - create bar graph from data 3. Closer: none	**Activities:** **Assessment** 1. Complete conclusions from given data 2. Create computer generated bar graph with titles and units

NC Unit 2: Science Skills 2				
Section 3: Line graphs and Pie charts				
Content Objectives: 1. Continue previous weeks objectives 2. Produce hand drawn and computer generated line graph 3. Produce hand drawn and computer generated pie chart		**Language Objectives:** 1. Match (write) graph vocabulary 2. **Listen** and record data 3. Speak/Listen survey questions		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. Starter: Measurement practice 2. **Alcohol Lab 2** - temperature/time - hand drawn line graph 3. Closer: practical practice	**Activities:** 1. Starter: Measurement practice 2. **Alcohol Lab 2** (day 2) - computer generated line graph (template) - present 3. Closer: none	**Activities:** 1. Starter: Measurement practice 2. **Survey Lab 2** - question, answers - find percentage - make hand drawn pie chart	**Activities:** 1. Starter: practical practice (sentences) 2. **Survey Lab 2** (day 2) - computer pie chart - present to class 3. Closer: none	**Activities:** **Assessment** 1. Create computer generated line graph with titles and units 2. Create computer generated pie chart with title

NC Unit 2 : Science Skills 2				
Section 4: Review and Assessment				
Objectives 1. Continue previous weeks objectives				
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. **Performance task: airplane variables lab** - each student gets different variable - State hypothesis - List Materials - Write procedure (English) from pictures	**Activities:** 1. **Performance task: airplane variables lab** (day 2) - Perform experiment - Complete data table - Create **computer generated bar graph**	**Activities:** 1. **Performance task: airplane variables lab** (day 3) - State Conclusion - write all parts in Google docs report - presentation - **Use all student data to improve design**	**Activities:** 1. Complete airplane lab 2. Mock practical	**Activities** 1. Practical -Given data, complete the correct conclusion - Measure length, volume, mass and temperature - Match procedure pictures to sentences - Match equipment to name (more equipment) - Match measurement to unit (more units)

NC Unit 3: Physical Science 1				
NGSS: Science and Engineering Practices **- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8)** **- Planning and Carrying Out Investigations (HS-PS1-3)**		**NGSS: Disciplinary Core Ideas** **-PS1.A: Structure and Properties of Matter** **(HS-PS1-1, HS-PS1-2, HS-PS1-3, HS-PS1-3)**		
Section 1: Atoms	**Section 2: Molecules**	**Section 3: State of Matter**	**Section 4: Assessment**	**Interim Assessment**
Content Objectives: 1. Organize matter (images) to size 2. Identify the parts of an atom 3. Draw an atomic model of an atom (1st 20) 4. Identify the number of electrons needed to be complete	**Content Objectives:** 1. Identify how many bonds atoms (C, N, O, H) will make 2. Match simple molecules to their chemical formula 3. Build simple molecules (water, oxygen, methane, co2) using model kit 4. Match Organic Molecule to Food/Function	**Content Objectives:** 1. Identify the 3 states of matter (solid, liquid gas) 2. Match state to particle motion 3. Match state to temperature	**Content Objectives:** 1. Continue all previous objectives	**Benchmark:** 1. Organize matter according to size 2. Draw an atomic model of an atom 3. Identify most common atoms by the number of bonds they make (model kit) 4. Build simple molecules (model kit) 5. Match "particle motion" and temperature to state of matter
Language Objectives:	**Language Objectives:**	**Language Objectives:**	**Language Objectives:** 1. Continue all previous objectives	**Performance task:** Complete entire experiment **Diet vs Regular Soda:** 1. Choose hypothesis 2. List Materials 3. Follow procedure 4. Complete data table 5. Choose conclusion

Key Vocabulary: Matter Atom Nucleus Proton Neutron Electron	**Key Vocabulary:** Molecule Bond Chemical Formula Carbohydrate Sugar Fat Protein	**Key Vocabulary:** Solid Liquid Gas		

NC Unit 3 : Physical Science 1				
Section 1 : Atoms				
Content Objectives: 1. Organize matter (images) to size 2. Identify the parts of an atom 3. Draw an atomic model of an atom (1st 20) 4. Identify the number of electrons needed to be complete		**Language Objective:**		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. Starter: which is larger activity 2. Size cards activity 3. Size relationships wkst 4. Atoms vocabulary (atoms, element, PT)	**Activities:** 1. Starter: PT activity (bingo) 2. Label the parts of an Atom 4. Draw the atom wkst 3. Closer: draw atom (independently, on board)	**Activities:** 1. Starter: 1st 20 atoms wkst 2. Identify how many electrons atoms need to fill circle 3. Closer: draw atom at identify number needed (independently, on board)	**Activities:** 1. **Density Block Lab** - explain each block made of a different element - draw each block element - form hypothesis as to which will be heavier (or float sink) - conduct experiment, complete report	**Activities:** Assessment 1. Label atom 2. draw atom 3. Identify number needed to be complete

NC Unit 3: Physical Science 1				
Section 2 : Molecules				
Content Objectives: 1. Identify how many bonds atoms (C, N, O, H) will make 2. Match simple molecules to their chemical formula 3. Build simple molecules (water, oxygen, methane, co2) using model kit 4. Match Organic Molecule to Foods		**Language Objectives:**		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. Starter: Draw atoms C, N, O, H. State number needed to be complete 2. Introduce bonding (sharing), draw water molecule (with all electrons, and symbol/stick) 3. Closer: form molecule from atoms (cut outs), draw symbol/stick	**Activities:** 1. Molecular model kit - Id each element based on number needed - build molecules	**Activities:** 1. Complete atoms and molecules review 2. Introduce Organic (big) molecules. Match organic molecules to foods 3. Closer: assessment practice	**Activities:** 1. Water/Alcohol mixing lab - draw water and alcohol - Form hypothesis: 500 ml + 500 ml = 1000 ml, more or less - perform experiment, complete report	**Activities:** Assessment 1. ID molecule from chemical formula and picture 2. build simple molecule

NC Unit 3 : Physical Science 1				
Section 3 : States of Matter				
Content Objectives: 1. Identify the 3 states of matter (solid, liquid gas) 2. Match state to particle motion 3. Match state to temperature		**Language Objectives:**		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. Starter: review draw atoms and molecules 2. translate and define vocab 3. Match images: state (ice, water, steam), temp., particle motion	**Activities:** 1. Starter: review weeks vocab 2. **Demo: Ice to vapor** - record temp at different times, record 3. Closer: make line graph	**Activities:** 1. **Lab: Water/Alcohol to vapor** - which will change state first? - draw molecules - form hypothesis - perform experiment and complete lab report	**Activities:** 1. complete lab	**Activities:** Assessment 1. Match "particle motion" and temperature to state of matter

NC Unit 3 : Physical Science 1				
Section 4 : Review and Assessment				
Objectives 1. Continue previous weeks objectives				
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. atoms and molecules computer module review	**Activities:** 1. atoms and molecules computer module review	**Activities:** 1. **Performance Task: Soda Can Float or Sink? Diet vs. Regular** - examine sweetener molecules (draw atoms, count number of atoms, find atomic mass of each molecule) - Find amounts of each in a can - Determine densities of reg and diet, compared to water (1g/ml) - form hypothesis, complete report	**Activities:** **Performance Task: Soda Can Float or Sink? Diet vs. Regular** - Determine densities of reg and diet, compared to water (1g/ml) - form hypothesis, complete report	**Activities:** Assessment 1. Organize matter according to size 2. Draw an atomic model of an atom 3. Identify most common atoms by the number of bonds they make 4. Match “particle motion” and temperature to state of matter

NC Unit 4: Physical Science 2				
NGSS: Science and Engineering Practices **- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8)** **- Planning and Carrying Out Investigations (HS-PS1-3)**			**NGSS: Disciplinary Core Ideas** **PS1.B: Chemical Reactions** **- Chemical processes (HSPS1-4, HS-PS1-5, HS-PS1-6)** **PS2.A: Forces and Motion (HS-PS2-1, HS-PS2-2, HS-PS2-3)** **PS2.B: Types of Interactions (HS-PS2-4)HS-PS2-5)** **PS3.A: Definitions of Energy (HS-PS2-5)** **PS3.B: Conservation of Energy and Energy Transfer (HS-PS3-1)** **PS3.C: Relationship Between Energy and Forces (HS-PS3-5)**	
Section 1 Chem Reax	**Section 2 Energy**	**Section 3 Force/Motion**	**Week 4 Assessment**	**Interim Assessment**
Objectives: 1. Distinguish depictions of chemical and physical changes 2. Identify reactants and products	**Objectives:** 1. Distinguish depictions potential and kinetic energy 2. Identify different forms of energy	**Objectives:** 1. Determine the velocity of a moving object 2. Determine the acceleration of a moving object 3. Match depictions to Newton's three laws	**Objectives:** 1. Continue all previous objectives	**Benchmark:** 1. Label images depicting chemical or physical reactions 2. Label chemical equations and pictures (reactants or products) 3. Label images potential or kinetic energy 4. Label images by type of energy 5. Match depictions to Newton's three laws
Language Objectives:	**Language Objectives:**	**Language Objectives:**	**Language Objectives:**	**Performance task:** Complete entire experiment **Balloon Rocket design** 1. Choose hypothesis 2. List Materials 3. Follow procedure 4. Complete data table 5. Choose conclusion

Key Vocabulary: Chemical Change Physical Change Chemical Reaction Reactants Products	**Key Vocabulary:** Energy Potential energy Kinetic energy Motion Light Sound Chemical Energy	**Key Vocabulary:** Rate Speed Velocity Force Newtons Gravity Friction		

NC Unit 4: Physical Science 2				
Section 1 : Chemical Reactions				
Objectives 1. Distinguish depictions of chemical and physical changes 2. Identify reactants and products				
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. starter: before and after: what is it 2. Vocabulary **3. Demo: chemical reaction** 4. closer: chemical/physical wkst	**Activities:** 1. starter: chemical/physical wkst 2. **Demo: chemical reaction** 3. Closer: reactant/product wkst	**Activities:** 1. **Lab: baking soda/vinegar balloon** - How much reactants produces the most product? -different amounts of vinegar/baking soda - perform experiment, complete report	**Activities:** 1. Lab: day 2 (if necessary) 2. assessment review	**Activities:** Assessment 1. Label images depicting chemical or physical reactions 2. Label chemical equations and pictures (reactants or products)

NC Unit 4: Physical Science 2				
Section 2 : Energy				
Content Objectives: 1. Distinguish depictions potential and kinetic energy 2. Identify different forms of energy		**Language Objectives:**		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. starter: chemical reaction give or take heat 2. Vocabulary 3. **Demo: kinetic vs potential** 4. closer: kinetic vs potential wkst	**Activities:** 1. starter: kinetic vs potential wkst 2. Different forms of energy 3. **Demo: chemical energy** - different forms 4. Different forms of energy wkst	**Activities:** 1. **Lab: ball bounce (different heights/temperature)** - What will produce the higher bounce? - experiment/report	**Activities:** 1. complete lab 2. Activity: electrical circuits 3. assessment review	**Activities:** Assessment 1. Label images potential or kinetic energy 2. Label images by type of energy

NC Unit 4: Physical Science 2				
Section 3: Force/Motion				
Content Objectives: 1. Determine the velocity of a moving object 2. Determine the acceleration of a moving object 3. Match depictions to Newton's three laws		**Language Objectives:**		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. starter: test concepts of speed and acceleration 2. Vocabulary 3. closer: speed and acceleration problems	**Activities:** 1. **Activity: balloon racers** - measure speed - record and graph	**Activities:** 1. Newton's laws introduction 2**. Lab: Which of Newton's laws?** - beaker/penny (inertia) - balloon racer - ball/straw: get ball moving - justify answers	**Activities:** 1. complete lab 2. assessment review - Which punch is worse?	**Activities:** Assessment 1. Distinguish velocity and acceleration measurements 2. Determine which depiction has more force (F=ma) 3. predict motion based on Newton's laws

NC Unit 4: Physical Science 2				
Section 4 : Assessment				
Objectives 1. Continue all previous objectives				
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. **Performance Task: Bottle Rocket Design** - students get different variables: chemical amounts, bottle shapes - must explain chemical reactions, types of energy involved, all forces involved	**Activities:** 1. **Performance Task: Bottle Rocket Design**	**Activities:** 1. **Performance Task: Bottle Rocket Design**	**Activities:** 1. Assessment Review	**Activities:** Assessment **Practical:** 1. Label images depicting chemical or physical reactions 2. Label chemical equations and pictures (reactants or products) 3. Label images potential or kinetic energy 4. Label images by type of energy 5. Match depictions to Newton's three laws

NC Unit 5: Life Science 1				
NGSS: Science and Engineering Practices **- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8)** **- Planning and Carrying Out Investigations (HS-PS1-3)**		**NGSS: Disciplinary Core Ideas** **LS4.A: Evidence of Common Ancestry and Diversity (HS-LS4-1)** **LS2.B: Cycles of Matter and Energy Transfer in Ecosystems (HS-LS2-3, HS-LS2-4, HS-LS2-5)** **LS1.A: Structure and Function (HS-LS1-2)** **LS1.C: Organization for Matter and Energy Flow in Organisms(HS-LS1-5, HS-LS1-6)**		
Section 1 Char/Cat	**Section 2 Plants/Soil**	**Section 3 Plants/Soil**	**Section 4**	**Interim Assessment**
Objectives 1. Identify characteristics of all life 2. Classify living things as plant, animal, fungi, bacteria	**Objectives:** 1. Identify the parts of a plant 2. Identify what plants need to grow 3. Define the pH, acid and base 4. Equate soil pH to plant health/growth	**Objectives:** 1. Define photosynthesis 2. Identify the reactants and products of photosynthesis 3. Identify why plants need nitrogen and where they get it	**Objectives:** 1. Continue all previous objectives 2. Construct Greenhouse project	**Benchmark:** 1. Use checklist to determine alive or not/classification 2. Label picture of a plant (parts) 3. Label diagram of photosynthesis 4. Choose which soil (nitrogen/pH) is best for plants
Language Objectives:	**Language Objectives:**	**Language Objectives:**	**Language Objectives:**	**Performance task:** Greenhouse Project 1. Choose hypothesis 2. List Materials 3. Write procedure 4. Collect measurements and qualitative data 5. Construct graphs 6. Construct presentation 7. Speak/present report

Key Vocabulary: Grow Develop Cells Energy	Breathe Animals Plants Fungi Bacteria	**Key Vocabulary:** Leaves Roots Stem Flower Sun Light	Water Carbon dioxide Soil pH Acid Base	**Key Vocabulary:** Oxygen Glucose Nitrogen Nutrients Protein		

NC Unit 5: Life Science 1				
Section 1 : Characteristics and Classification				
Content Objectives: 1. Identify characteristics of all life 2. Classify living things as plant, animal, fungi, bacteria		**Language Objective:**		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. starter: alive or not 2. **Greenhouse day 1:** - vocabulary (greenhouse items) - assign variables - fill pots	**Activities:** 1. starter: alive or not alive/differences between groups 2. characteristics of life (group exercise) 3. closer: alive or not (with checklist)	**Activities:** 1. starter: alive or not (with checklist) **2. Walk around school** - list living things 3. closer: classify living things	**Activities:** 1. starter: Classification wkst 2. **Lab: Alive? Type?** - Hypothesis (I think…) - experiment: checklist - Conclusion	**Activities:** Assessment 1. Use checklist to determine if thing is alive or not 2. Use checklist to determine a living thing's classification

NC Unit 5 : Life Science 1				
Section 2: Plant/Soil				
Content Objectives: 1. Identify the parts of a plant 2. Identify what plants need to grow 3. Define the pH, acid and base 4. Equate soil pH to plant health/growth		**Language Objectives:**		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. starter: label parts of a plant **2. Greenhouse day 2:** - **Choose hypothesis** - water, measure - record data (Sheets)	**Activities:** 1. starter: what do plants need (no word bank) 2. **Demo:plant dissection** (live plant)/ review parts vocab 3. closer: parts/plants need wkst	**Activities:** 1. starter: good soil vs bad soil 2. discuss acid/base, pH and soil 3. **Activity: pH of common substances**	**Activities:** 1. starter: assessment review 2. **Greenhouse** - water, measure - record data (Sheets)	**Activities:** Assessment 1. Label picture of a plant (parts) 2. Label picture of what plants need 3. Match pH number to acid, base and neutral

NC Unit 5: Life Science 1				
Section 3: Plants/Soil + Unit Assessment				
Content Objectives: 1. Define photosynthesis 2. Identify the reactants and products of photosynthesis 3. Identify why plants need nitrogen and where they get it		**Language Objectives:**		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. starter: plants review 2. Vocabulary (photosynthesis) **3. Greenhouse** -water, measure	**Activities:** 1. starter: label photosynthesis wkst 2. **Activity: Photosynthesis/Molecular Model kit** - start with reactants, build glucose	**Activities:** 1. starter: photosynthesis review 2. What plants do with glucose (match to food) 3. Nitrogen and soil (protein)	**Activities:** 1. starter: Unit assessment review 2. **Greenhouse:** - measure water	**Activities:** Unit Assessment 1. Use checklist to determine alive or not/classification 2. Label picture of a plant (parts) 3. Label diagram of photosynthesis 4. Choose which soil (nitrogen/pH) is best for plants

NC Unit 5: Life Science 1				
Section 4 : Assessment/Performance Task – Greenhouse project				
Objectives 1. Continue all previous objectives				
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: **Greenhouse project:** - Write procedures (from pictures)	**Activities:** **Greenhouse project:** - Construct graphs	**Activities:** **Greenhouse project:** - Construct report (from template) - title - hypothesis - materials - procedures - results (graphs) - pictures - discussion	**Activities:** **Greenhouse project:** - completer report - practice speaking	**Activities:** **Greenhouse project:** - record speaking -present

NC Unit 6: Life Science 2

NGSS: Science and Engineering Practices	NGSS: Disciplinary Core Ideas
- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8) **- Planning and Carrying Out Investigations (HS-PS1-3)**	**LS1.A: Structure and Function (HS-LS1-1, HS-LS1-2, HS-LS1-3)** **LS1.B: Growth and Development of Organisms (HS-LS1-4)**

Section 1: Body parts	Section 2: Organs	Section 3: Cells	Section 4: Assessment	Interim Assessment
Objectives: 1. Identify the name of typical animal body parts (external) 2. Identity the function of typical animal body parts	**Objectives:** 1. Identify the name of common animal organs 2. Identify the function of common animal organs	**Objectives:** 1. Organize components of living things (organism to atoms) 2. Identify the name of animal and plant cell parts 3. Identify the function of animal and plant cell parts 4. Identify the parts of the microscope 5. focus in on a slide	**Objectives:** 1. Continue all previous objectives	**Benchmark:** 1.
Language Objectives:	**Language Objectives:**	**Language Objectives:**	**Language Objectives:**	**Performance task:** Complete entire experiment 1. Choose hypothesis 2. List Materials 3. Follow procedure 4. Complete data table 5. Choose conclusion

Key Vocabulary: Head Ear Nose Mouth Teeth Hair/Fur Neck Chest	Abdomen Arms Legs Hands Limbs Feet Thorax Antenna	**Key Vocabulary:** Brain Heart Lungs Liver Stomach	Kidney Small intestine Large intestine	**Key Vocabulary:** Cell Membrane Nucleus Mitochondria Chloroplast Microscope Focus Slid		

NC Unit 6: Life Science 2				
Section 1 : Body Parts				
Content Objectives: 1. Identify the name of typical animal body parts (external) 2. Identity the function of typical animal body		**Language Objectives:**		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. starter: body parts pre-test (with translate) 2. **Lab: Milkweed bug project** - prepare bug environment - observe and draw/measure	**Activities:** 1. starter: body parts computer module 2. review body parts, speak in English	**Activities:** 1. starter: body parts computer module 2. match part to function	**Activities:** 1. starter: body parts computer module 2. practice assessment 3. **Milkweed bug observations**	**Activities:** Assessment 1. Label depictions of various animal types for body parts 2. Match body part to function 3. Speak parts in English

NC Unit 6 : Life Science 2				
Section 2 : Organs				
Content Objectives: 1. Identify the name of common animal organs 2. Identify the function of common animal organs		**Language Objectives:**		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. starter: vocabulary exercise 2. Organ discussion - together, matching image cards 3. **Milkweed bug observations**	**Activities:** 1. starter: organ names review wkst 2. Organs wkst (names, images, functions)	**Activities:** 1. **Lab: Frog Dissection** - Do human and frogs have similar organs? - examine, label parts	**Activities:** 1. starter: similar organ discussion - image cards 2. Organs review 3**. Milkweed bug observations**	**Activities:** Assessment 1. Label depictions of animal organs 2. Match organ to function 3. Frog dissection practical

NC Unit 6: Life Science 2				
Section 3 : Cells				
Content Objectives: 1. Organize components of living things (organism to atoms) 2. Identify the name of animal and plant cell parts 3. Identify the function of animal and plant cell parts 4. Identify the parts of the microscope 5. focus in on a slide		**Language Objectives:**		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. starter: organization wkst 2. group review 3. Microscope parts and practice 4**. Milkweed bug observations**	**Activities:** 1. starter: microscope review 2. vocabulary exercise (cell parts) 3. group review	**Activities:** 1**. Lab: Animal and plant cells** - Are animals made of cells? Cheek -Are plants made of cells? Onion	**Activities:** 1. starter: assessment review 2. practical practice (microscope) 3**. Milkweed bug observations**	**Activities:** Assessment 1. Label size relationship diagram 2. Label picture of animal and plant cell 3. Match cell part to function 4. focus microscope, id image

NC Unit 6: Life Science 2				
Section 4 : Assessment and Performance Task				
Content Objectives: 1. Continue all previous objectives				
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1.	**Activities:** 1.	**Activities:** 1.	**Activities:** 1.	**Activities:**

NC Unit 7: Earth Science

NGSS: Science and Engineering Practices	NGSS: Disciplinary Core Ideas
- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8) **- Planning and Carrying Out Investigations (HS-PS1-3)**	**ESS1.A: The Universe and Its Stars (HS-ESS1-1, HS-ESS1-2, HS-ESS1-3)** **ESS2.A: Earth Materials and Systems (HS-ESS2-1,HS-ESS2-2,HS-ESS2-3)** **ESS2.B: Plate Tectonics and Large-Scale System Interactions (HS-ESS2-3)** **ESS2.D: Weather and Climate (HS ESS3-6)** **ESS3.D: Global Climate Change (HS-ESS3-5, HS-ESS3-6)**

Section 1: Space	Section 2: Geo	Section 3: Climate	Section 4: Assessment	Interim Assessment
Objectives 1. Organize Earth's place in the Universe/Solar system 2. Identify common heavenly bodies **Lab: relative/size distance (parking lot) ?** **Moon Phases**	**Objectives:** 1. Identify the continents and other major Earth features 2. Identify the layers of the earth and their composition 3. Use plate tectonics to explain volcanoes and earthquakes **Lab: Maps vs actual size, Volcano, Earthquake table**	**Objectives:** 1. Identify the chemical composition of the air 2. Label diagram explaining the greenhouse effect 3. Identify common sources and sinks of CO_2 **Lab: greenhouse gas lab**	**Objectives:** 1. Continue all previous objectives	**Benchmark:** 1.
Language Objectives:	**Language Objectives:**	**Language Objectives:**	**Language Objectives:**	**Performance task:** Complete entire experiment (in language) 1. Choose hypothesis 2. List Materials 3. Follow procedure 4. Complete data table 5. Choose conclusion

Key Vocabulary: Universe Galaxy Solar system Star Planet Moon Orbit	**Key Vocabulary:** Continent Ice Cap Mountain range Desert Crust Mantle	Outer core Inner core Tectonic plate Convergent Divergent Volcano Earthquake	**Vocabulary:** Atmosphere Nitrogen Oxygen Carbon Dioxide Greenhouse effect Heat Exhaust		

Environmental Unit 1: Science Skills 1

NGSS: Science and Engineering Practices
- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8)
- Planning and Carrying Out Investigations (HS-PS1-3)

Section 1: Sci Method	Section 2: Measurement	Section 3: Measurement	Section 4: Assessment	Interim Assessment
Content Objectives 1. Distinguish **and complete** question, hypothesis, procedure and conclusion sentences. 2. **Complete/write** sentences for procedure pictures 3. Given data, complete the correct conclusion	**Content Objectives:** 1. Match equipment to name 2. Measure length and mass 3. Match measurement to correct unit	**Content Objectives:** 1. Measure volume and temperature 2. Match measurement to correct unit **3. Match metric prefixes to correct unit** **4. Select most appropriate unit for a measurement**	**Content Objectives:** 1. Continue all previous objective	**Benchmark:** 1.
Language Objectives: 1. Read/speak Question, Hypothesis, Procedure and Conclusion sentences 2. Use keywords (How, What, Why, Think, Determined, Support) to **Complete** question, hypothesis, procedure and conclusion sentences	**Language Objectives:** 1. Read/write/speak measurement vocabulary including type of measurement, metric units, equipment names	**Language Objectives:** 1. Read/write/speak measurement vocabulary including type of measurement, metric units, equipment names	**Language Objectives:**	**Performance task:** Complete entire experiment

Key Vocabulary: Question Hypothesis Experiment Procedure Materials Conclusion Average	**Key Vocabulary:**	**Key Vocabulary:**		

ES Unit 1: Science Skills 1				
Section 1: Scientific Method				
Content Objectives: 1. Distinguish **and complete** question, hypothesis, procedure and conclusion sentences. 2. **Complete/write** sentences for procedure pictures 3. Given data, complete the correct conclusion		**Language Objectives:** 1. Read/speak Question, Hypothesis, Procedure and Conclusion sentences 2. Use keywords (How, What, Why, Think, First, Next, Determined, Support) to **Complete** question, hypothesis, procedure and conclusion sentences		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. Starter: Vocab wkst 2. **Ball Bounce 2** (different balls) - **Complete** hypothesis (fill in blank) - Perform experiment - Record Data 3. Grading form	**Activities:** 1. Starter: Practice average 2. Continue **Ball Bounce 2** - Find Average - **Complete** conclusion from data - Put on board 3. Discuss results	**Activities:** 1. Starter: Procedure wkst 2. **Ball Bounce 3** (temp) - Complete hypothesis - **Complete** procedure from pictures	**Activities:** 1. Continue Ball Bounce 3 - Complete experiment - Complete conclusion from data 2. Assessment review wkst	**Activities:** Assessment 1. Distinguish **and complete** question, hypothesis, procedure and conclusion sentences. 2. **Complete/write** sentences for procedure pictures 3. Given data, complete the correct conclusion

ES Unit 1: Science Skills 1				
Section 2: Length and Mass				
Content Objectives: 1. Match equipment to name 2. Measure length and mass 3. Match measurement to correct unit		**Language Objectives:** 1. Read/write/speak measurement vocabulary including type of measurement, metric units, equipment names		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. Notes and Vocab wkst - measurements, units and equipment 2. Length 5 things 3. HW: measurement practice packet	**Activities:** 1. How to use and read the balance (visual notes) 2. Mass 5 things	**Activities:** 1. Practical Practice: length and mass 2. **Airplane/Mass Lab** - standard lab format - measure distance and mass	**Activities:** 1. Practice practical - timed stations	**Activities:** Assessment 1. Match measure to unit 2. Match measure to equipment 3. Match name to equipment 4. Measure length and mass

ES Unit 1: Science Skills 1				
Section 3: Volume and Temperature				
Content Objectives: 1. Measure volume and temperature 2. Match measurement to correct unit **3. Match metric prefixes to correct unit** **4. Select most appropriate unit for a measurement**		**Language Objectives:** 1. 1. Read/write/speak measurement vocabulary including type of measurement, metric units, equipment names		
Day 1	**Day 2**	**Day 3**	**Day 4**	
Activities: 1. Demo: reading the graduated cylinder and thermometer 2. Find volume and temp (on desk) 3. Graduated cylinder and thermometer wkst	**Activities:** 1. **Temp/Time Lab** - alcohol/ water - do together (I keep time) 2. Science/Measurement/ Equipment review wkst (hw)	**Activities:** 1. Practice practical - timed stations	**Activities:** **Assessment** **Practical** 1. Match measure to unit 2. Match measure to equipment 3. Match name to equipment 4. Measure length, mass, **volume and temperature**	

ES Unit 1: Science Skills 1				
Section 4: Review and Assessment				
Objectives: 1. Continue all previous objectives				
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. Bottle Flip Project	**Activities:** 1.	**Activities:** 1.	**Activities:**	

Environmental Science Unit 2: Science Skills 2

NGSS: Science and Engineering Practices
- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8)
- Planning and Carrying Out Investigations (HS-PS1-3)

Section 1	Section 2	Section 3	Section 4	MP 1 Assessment
Content Objectives 1. Construct hand drawn line, bar, and pie charts from data which include title, axis labels and units 2. Choose the graph type that best displays the data	**Content Objectives:** 1. Project (group, pooled data)	**Content Objectives:** 1. Independent project	**Content Objectives:** 1. Assessment	**Benchmark:**
Language Objectives:	**Language Objectives:**	**Language Objectives:**	**Language Objectives:**	**Performance task: Complete entire experiment**
Key Vocabulary: Graph, Chart, Title, Label, Units, Axis, Increments, Legend	**Key Vocabulary:**	**Key Vocabulary:**		

ES Unit 2: Science Skills 2				
Section 1: Graphing				
Content Objectives: 1. Construct hand drawn line, bar, and pie charts from data which include title, axis labels and units 2. Choose the graph type that best displays the data		**Language Objectives:** 1.		
Day 1	**Day 2**	**Day 3**	**Day 4**	
Activities: 1. Construct hand drawn line and bar graph from data - instruct on the set up of axises	**Activities:** 1. Complete bar graph and pie chart	**Activities:** 1. **Lab: Survey Question** - students ask question to the class, calculate percentages, construct pie chart	**Activities:** **Assessment** 1. Given data, students will choose and construct the appropriate graph * need better test presentation (more data sets, more scaffold (axis set up))	

Environmental Science Unit 3: Introduction to Environmental Science				
NGSS: Science and Engineering Practices **- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8)** **- Planning and Carrying Out Investigations (HS-PS1-3)**		**NGSS: Disciplinary Core Ideas** **-ESS3.C: Human Impacts on Earth Systems(HS-ESS3-3, HS-ESS3-4)** **NGSS:** **-Influence of Engineering, Technology, and Science on Society and the Natural World (HS-ESS3-1-4)**		
Section 1	**Section 2**	**Section 3**	**Section 4**	**Interim Assessment**
Content Objectives 1. Intro, Natural Resources	**Content Objectives:** 1. World population, reading graphs	**Content Objectives:** 1. Agricultural, Industrial, Green Revolutions	**Content Objectives:** 1. Assessment	**Benchmark:**
Language Objectives: 1.	**Language Objectives:** 1.	**Language Objectives:** 1.	**Language Objectives:** 1.	**Performance task:** Complete entire experiment
Key Vocabulary:	**Key Vocabulary:**	**Key Vocabulary:**		

Environmental Science Unit 4: Chemical Cycles, Spheres				
NGSS: Science and Engineering Practices **- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8)** **- Planning and Carrying Out Investigations (HS-PS1-3)**		**NGSS: Disciplinary Core Ideas** **PS1.A: Structure and Properties of Matter (HS-PS1-1-4** **PS1.B: Chemical Reactions (HSPS1-4, HS-PS1-5)** **ESS2.A: Earth Materials and Systems (HS-ESS2-1,HS-ESS2-2,HS-ESS2-3)** **ESS2.B: Plate Tectonics and Large-Scale System Interactions (HS-ESS2-3)** **LS2.B: Cycles of Matter and Energy Transfer in Ecosystems (HS-LS2-3-5)**		
Section 1	**Section 2**	**Section 3**	**Section 4**	**Interim Assessment**
Content Objectives 1. Basic Chemistry	**Content Objectives:** 1. Earth's Spheres	**Content Objectives:** 1. Biogeochemical Cycles	**Content Objectives:** 1. Assessment	**Benchmark:**
Language Objectives:	**Language Objectives:**	**Language Objectives:**	**Language Objectives:**	**Performance task:** Complete entire experiment
Key Vocabulary:	**Key Vocabulary:**	**Key Vocabulary:**		

Environmental Unit 5: Ecology				
NGSS: Science and Engineering Practices **- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8)** **- Planning and Carrying Out Investigations (HS-PS1-3)**		**NGSS: Disciplinary Core Ideas** **LS2.A: Interdependent Relationships in Ecosystems (HS-LS2-1, HSLS2-2)** **LS2.B: Cycles of Matter and Energy Transfer in Ecosystems (HS-LS2-3-6)** **LS4.B: Natural Selection (HS-LS4-2,HS-LS4-3, HS-LS4-3)** **LS4.C: Adaptation (HS-LS4-2,HS-LS4-3,HS-LS4-4)**		
Section 1	**Section 2**	**Section 3**	**Section 4**	**Interim Assessment**
Content Objectives: 1. Organization, factors, webs	**Content Objectives:** 1. Energy flow, interactions	**Content Objectives:** 1. Evolution	**Content Objectives:** 1. Assessment	**Benchmark:**
Language Objectives:	**Language Objectives:**	**Language Objectives:**	**Language Objectives:**	**Performance task:** Complete entire experiment
Key Vocabulary:	**Key Vocabulary:**	**Key Vocabulary:**		

Environmental Science Unit 6: Plants, Water, Biomes				
NGSS: Science and Engineering Practices **- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8)** **- Planning and Carrying Out Investigations (HS-PS1-3)**		**NGSS: Disciplinary Core Ideas** **LS2.B: Cycles of Matter and Energy Transfer in Ecosystems (HS-LS2-2-4)** **PS3.D: Energy in Chemical Processes (HS-LS2-5)** **ESS2.C: The Roles of Water in Earth's Surface Processes (HS-ESS2-5)** **ESS2.D: Weather and Climate (HS-ESS2-2, HS-ESS2-4)** **ESS3.A: Natural Resources (HS-ESS3-1)**		
Section 1	**Section 2**	**Section 3**	**Section 4**	**Interim Assessment**
Objectives: 1. Plants, Soil, Agriculture	**Objectives:** 1. Water	**Objectives:** 1. Biomes	**Objectives:** 1. Assessment	**Benchmark:**
Language Objectives:	**Language Objectives:**	**Language Objectives:**	**Language Objectives:**	**Performance task:** Complete entire experiment
Vocabulary:	**Vocabulary:**	**Vocabulary:**		

Environmental Science Unit 7: Air, Climate Change, Natural Disasters				
NGSS: Science and Engineering Practices **- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8)** **- Planning and Carrying Out Investigations (HS-PS1-3)**		**NGSS: Disciplinary Core Ideas** **ESS2.D: Weather and Climate (HS-ESS2-2, HS-ESS2-4)** **ESS3.D: Global Climate Change (HS-ESS3-5-7)** **ESS2.B: Plate Tectonics and Large-Scale System Interactions (HS-ESS2-3)**		
Section 1	**Section 2**	**Section 3**	**Section 4**	**Interim Assessment**
Objectives: 1. Air	**Objectives:** 1. Climate Change	**Objectives:** 1. Natural Disasters	**Objectives:** 1. Assessment	**Benchmark:**
Language Objectives:	**Language Objectives:**	**Language Objectives:**	**Language Objectives:**	**Performance task:** Complete entire experiment
Key Vocabulary:	**Key Vocabulary:**	**Key Vocabulary:**		

Bio Unit 1: Science Skills

NGSS: Science and Engineering Practices
- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8)
- Planning and Carrying Out Investigations (HS-PS1-3):

Section 1 Sci Method	Section 2 Measurement	Section 3 Graphing	Section 4	Interim Assessment
Content Objectives: 1. Define and organize (order) all components of the scientific method 2. identify safety rules for a particular lab 3. Independently conduct full investigation: provide hypothesis, list materials, safety rules, follow procedure, record data, find average, draw graph, 2 part conclusion	**Content Objectives:** 1. Measure for length, mass, volume and temperature 2. Identify correct metric unit of measure 3. Convert cm to mm 4. Explain why the metric system is used in science 5. Identify common lab equipment	**Content Objectives:** 1. Construct a computer generated bar graph, line graph and pie chart. 2. given data, choose best graph type 3. add titles and axis labels to graphs	**Content Objectives:** 1. Continue all previous objectives	**Practical:** 1. Write hypothesis 2. Id materials 3. Id safety rule from picture 4. Match sci method vocabulary 5. Find average 6. Match data to graphs 7. Measure length, mass, volume and temperature
Language Objectives: 1. Write/read/speak hypothesis and conclusion sentences 2. Use keywords to identify scientific method definition. 3. Discuss question with peers (in English) in order to formulate a hypothesis	**Language Objectives:** 1. Read/write/speak measurement vocabulary including type of measurement, metric units, equipment names	**Language Objectives:**	**Language Objectives:**	**Performance task:** **:** Complete entire experiment 1. Complete hypothesis 2. List materials 3. List correct safety rules

Vocabulary: Hypothesis Materials Average	Procedure Safety Data Conclusion	**Vocabulary:** Length Mass Volume Temperature	Meter Gram Liter Celsius	**Vocabulary:** Graph Chart Axis			4. Follow procedure 5. Record Data 6. Construct graph (computer) 7. Draw conclusion

Bio Unit 1: Science Skills				
Section 1: Scientific Method				
Content Objectives: 1. Define and organize (order) all components of the scientific method 2. identify safety rules for a particular lab 3. Independently conduct full investigation: provide hypothesis, list materials, safety rules, follow procedure, record data, find average, draw graph, 2 part conclusion		**Language Objectives:** 1. Write/read/speak hypothesis and conclusion sentences 2. Use keywords to identify scientific method definition. 3. Discuss question with peers (in English) in order to formulate a hypothesis		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**

Activities: 1. **Penny Lab 2 (w/average)** - groups - Choose hypothesis - Speak hypothesis - list materials - find average - choose conclusion -Speak conclusion 2. Closer/HW: vocab wkst	**Activities:** 1. Starter: check vocab wkst 2. Notes: Sci Method and Lab Safety (give on classroom) 3. Closer: Lab Safety wkst	**Activities:** **1. Penny Lab 4** - different liquids - write hypothesis from prompt (I think…) - Speak hypothesis -List materials - Lab Safety rules - conduct experiment - draw simple bar graph (scaffold provided) - write conclusion from prompt (Our results…, We have determined …) - speak conclusion	**Activities:** 1. Practice assessment	**Activities:** **Assessment** 1. Match vocab 2. Put Sci Method in right order 3. Choose conclusion given data 4. Select the correct safety rule 5. Find average 6. draw simple bar graph
Bio Unit 1: Science Skills 1				
Section 2: Measurement				
Content Objectives: 1. Measure for length, mass, volume and temperature 2. Identify correct metric unit of measure 3. Convert cm to mm 4. Explain why the metric system is used in science 5. Identify common lab equipment		**Language Objectives:** 1. Read/write/speak measurement vocabulary including type of measurement, metric units, equipment names		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**

Activities: 1.	**Activities:** 1. s	**Activities:** 1.	**Activities:** 1.	**Activities:** **Assessment** 1.

Bio Unit 1: Science Skills				
Section 3: Graphing				
Content Objectives: 1. Construct a computer generated bar graph, line graph and pie chart. 2. given data, choose best graph type 3. add titles and axis labels to graphs		**Language Objectives:** 1. Read/write/speak graphing vocabulary		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**

Activities: 1. Demo: how to build a graph from given data (bar, line, pie) 2. Enter data 3. Construct graphs 4. add titles and labels	**Activities:** 1. students continue previous graphs 2. Use data from temp change lab to make line graph	**Activities:** 1. **Penny lab 4** - construct bar graph - print out, add to lab	**Activities:** 1. **Survey Question Lab** - construct pie chart	**Activities:** **Assessment** 1. Given data choose best graph type and construct graph (include axis labels and units) 2. print and fix graph For test grade

Biology Unit 1: Science Skills 2

NGSS: Science and Engineering Practices
- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8)
- Planning and Carrying Out Investigations (HS-PS1-3):

Section 1 Variables	Section 2 Research	Section 3 Project	Section 4 Project	Interim Assessment
Content Objectives 1. identify the independent and dependent variables in an experiment 2. Identify the control and constants in an experiment	**Content Objectives:** 1. use text, articles and the internet to provide background information for an investigation 2. use research to create an informed hypothesis 3. annotate background information to refer to literature cited section of lab report	**Content Objectives:** 1. perform a full scientific investigation to answer a question, including: background research, propose hypothesis, list safety concerns, list materials, define variables, write procedure, collect data, make graph, multi-part conclusion	**Content Objectives:** 1. continue previous weeks objectives 2. present findings of experiment (prepare script and presentation) 3. use experimental data to support their "best design" choices	**Practical:** 1. Match scientific method vocabulary 2. Provide a testable hypothesis 3. Id common equipment 4. Id safety rules 5. Perform measurements 6. Construct graph from data 7. Id variables, constants, controls 8. Propose conclusion given data

Language Objectives:	**Language Objectives:**	**Language Objectives:**	**Language Objectives:**	**Performance task:** perform a full scientific including: 1.background research, 2. propose hypothesis, 3. list safety concerns, 4. list materials, 5. define variables, 6. write procedure, 7. collect data, 8. make graph, 9. multi-part conclusion 10. present findings 11. use data to support design decisions
Key Vocabulary: Independent Variable Dependent Variable Constant Control	**Key Vocabulary:** Research Source Superscript Citation	**Key Vocabulary:**	**Key Vocabulary:**	

Bio Unit 2: Science Skills 2				
Section 1: Variables				
Content Objectives: 1. identify the independent and dependent variables in an experiment 2. Identify the control and constants in an experiment		**Language Objectives:** 1. Read/write/speak		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1. ID Variables Practice 1 - Do together in class	**Activities:** 1. **Ice Melt Lab** - ID variables, constants, controls - emphasis on the many variables we are holding constant (ice size, disk, amount of water, salt, sugar)	**Activities:** 1. ID Variables Practice 2 - timed, checked and reviewed	**Activities:** 1. Practice assessment - ID variables on all previous labs - practice test	**Activities:** **Assessment** 1.Variables test (computer)
Bio Unit 2: Science Skills 2				
Section 2: Background Research				

Content Objectives: 1. use text, articles and the internet to provide background information for an investigation 2. use research to create an informed hypothesis 3. annotate background information to refer to literature cited section of lab report		**Language Objectives:** 1. Read/write/speak		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Activities: 1.	**Activities:** 1.	**Activities:** 1.	**Activities:** 1.	**Activities:** **Assessment** 1.

Bio Unit 2: Science Skills 2				
Section 3: Project				
Content Objectives: 1. perform a full scientific investigation to answer a question, including: background research, propose hypothesis, list safety concerns, list materials, define variables, write procedure, collect data, make graph, multi-part conclusion		**Language Objectives:** 1. Read/write/speak		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**

Activities: 1.	**Activities:** 1. s	**Activities:** 1.	**Activities:** 1.	**Activities:** **Assessment** 1.

Bio Unit 2: Science Skills 2				
Section 4: Project Presentation and Benchmark Assessment				
Content Objectives: 1. continue previous weeks objectives 2. present findings of experiment (prepare script and presentation)		**Language Objectives:** 1. Read/write/speak		
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**

Activities: 1.	**Activities:** 1. s	**Activities:** 1.	**Activities:** 1.	**Activities:** **Assessment** 1.

Bio Unit 3: Characteristics and Organization				
NGSS: Science and Engineering Practices **- Developing and Using Models (HS-PS1-1, HS-PS1-4, HS-PS1-8)** **- Planning and Carrying Out Investigations (HS-PS1-3)**		**NGSS: Disciplinary Core Ideas**		
Section 1 Characteristics	**Section 2 Organization**	**Section 3 Organs to Cells**	**Section 4 Assessment**	**Interim Assessment**
Content Objectives 1. identify the most common characteristics of life (shared by ALL living things) 2. use characteristics of life to distinguish life from non-life **Life/non-life checklist**	**Content Objectives:** 1. organize components according to size (atom to organism) 2. Classify organisms into hierarchical groupings (kingdoms, types of animals) **Around the school, soil samples, fish trap**	**Content Objectives:** 1. Visually identify common internal organs and other animal and plant body parts 2. Match internal organ to function 3. Define organ, tissue, cell **Dissections**	**Content Objectives:** 1.	**Benchmark:** 1.

Language Objectives:	**Language Objectives:**	**Language Objectives:** 1. Use English names for internal and external body parts	**Language Objectives:**	**Performance task:** perform a full scientific including: 1.background research, 2. propose hypothesis, 3. list safety concerns, 4. list materials, 5. define variables, 6. write procedure, 7. collect data, 8. make graph, 9. multi-part conclusion 10. present findings 11. use data to support design decisions
Vocabulary:	**Vocabulary:**	**Vocabulary:**	**Vocabulary:**	