Grade 1

Unit 1: Engineering and Technology

New Jersey Student Learning Standards

Established 2016-2017
Revised 2018-2019
Revised 2019-2020
Revised 2020-2021
Revised 2022-2023

Marking Period	Unit Title	Recommended Instructional Days
Trimester 1	Engineering and Technology	24 Days

NJSLS - Science: *TItle*	NJSLS - Science: *Performance Expectations*	**Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit**
Engineering Design	**K-2-ETS1-1:** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K-2-ETS1-2:** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. **K-2-ETS1-3:** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	
FOUNDATION Disciplinary: *Core Idea*	**FOUNDATION Disciplinary: *Statement***	
• **ETS1A:** Defining and Delimiting Engineering Problems	• A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1) • Ask questions, make observations, and gather	**Essential Question/s:** • Why do you need to understand safe procedures in the science classroom and laboratory? • How do you proactive safe procedures in the science classroom and laboratory? • How do engineers use technology? • How can we solve a problem? **Activity Description**:

	information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1) ● Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1) ● Designs can be conveyed through sketches, Drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (K-2-ETS1-2 ● Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)	● Understand, evaluate and practice safe procedures for conducting science investigations. ● Define and identify problems ● Define and identify examples of technology ● Describe how people understand problems and use technology to solve problems. ● Explore and apply a design process. **Activities:** ● Hands on Activity-Engineer It/Solve the Problem (ART/MA) ● Can You Solve It?-the Pulling Dog Problem ● Do the Math!-Represent Data (Math) ● Hands on Activity-Engineer It/Protect the Legs! (ART/ELA) ● Take it Further/Read, Write, Share!-ELA ● Unit 1 Performance Task-Engineer It/Build a House (ART/ELA/MATH) ● Leveled Readers- (ELA) **Interdisciplinary Connections:** **Connections to Math-NJSLS:** • **MP.5** Use appropriate tools strategically. (1-PS4-4) • **MP.2** - Reason abstractly and quantitatively. (K-2-ETS1-1), (K-2-ETS1-3) • **MP.4** Model with mathematics. (K-2-ETS1-1), (K-2-ETS1-3) • **MP.5** Use appropriate tools strategically. (K-2-ETS1-1), (K-2-ETS1-3) • **2.MD.D.10** Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1), (K-2-ETS1-3) **Connections to ELA-NJSLS:** • **RI.2.1** Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1) • **W.2.6** With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1), (K-2-ETS1-3) **W.2.8** Recall information from experiences or gather information from
FOUNDATION **Science and Engineering Practices:** ***Core Idea***	**FOUNDATION** **Science and Engineering Practices:** ***Statement***	
● Growth and Development of Organisms ● Inheritance of Traits	● Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage	

	in behaviors that help the offspring to survive. (1-LS1-2) ● Young animals are very much, but not exactly like, their parents. Plants also are very much, but not exactly, like their parents. (1- LS3-1)	provided sources to answer a question. (K-2-ETS1-1), (K-2-ETS1-3) • **SL.2.5** Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2)
FOUNDATION Crosscutting Concepts: ***Core Idea***	**FOUNDATION Crosscutting Concepts:** ***Statement***	
● Structure and Function	● The shape and stability of structures of natural and designed objects are related to their function(s). (K-2- ETS1-2)	
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***	
● Self-Awareness ● Self-Management ● Social Awareness ● Responsible Decision Making ● Relationship Skills	● Recognize one's feelings and thoughts. ● Recognize the skills needed to establish and achieve personal and educational goals. ● Recognize and identify the thoughts, feelings, and perspectives of others. ● Develop, implement, and model effective problem-solving and critical thinking skills ● Utilize positive communication and social	

	skills to interact effectively with others	

Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
Formative Assessments: ● Unit 1 Pretest ● Interactive Worktext ● Apply What You Know ● Lesson Check and Self Check	**Benchmarks:** ● District Assessments **Summative Assessments:** ● Unit 1 Lesson Quizzes ● Unit 1 Test

Differentiated Student Access to Content:
Teaching and Learning *Resources/Materials*

Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
● Workbook ● Leveled Readers ● Hands-on Activities ● Interactive Worktext	● Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to retake ● Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics, repeat	● Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of online bilingual dictionaries, and modified assessment and/or rubric.	● Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect students to related talent development opportunities.

	instructions as needed.		

Supplemental Resources

Technology:

- HMH Co. Interactive Site
- You Solve It Simulations

Other:

- **Career Education:** Packaging Engineer
- **Spotlight on Scientist:** Mary A. Delaney

Differentiated Student Access to Content:
Recommended *Strategies & Techniques*

Core Resources	Alternate Core Resources *IEP/504/At-Risk/ESL*	ELL Core Resources	Gifted & Talented Core
• Large group instruction • Small group instruction • Think Pair Share • Cooperative group work • Multimedia presentations • K-W-L • Manipulatives • Leveled Readers	• Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to retake.. • Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics, repeat instructions as needed.	• Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of online bilingual dictionaries, and modified assessment and/or rubric.	• Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect students to related talent development opportunities**.**

	• Students at Risk of School Failure: Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics, repeat instructions as needed.		

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept: Career Awareness & Planning, Creativity & Innovation, Critical Thinking & Problem Solving, Technology Literacy**	
	Core Ideas:	• Different types of jobs require different knowledge and skills. • Brainstorming can create new, innovative ideas. • Critical thinkers must first identify a problem then develop a plan to address it to effectively solve the problem. • Collaboration can simplify the work an individual has to do and sometimes produce a better product.
	Performance Expectation/s:	• 9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job • 9.4.2.CI.1: Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2). • 9.4.2.CI.2: Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a). • 9.4.2.CT.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2). • 9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3). • 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive). • 9.4.2.TL.7: Describe the benefits of collaborating with others to complete digital tasks or develop digital artifacts (e.g., W.2.6.,

		8.2.2.ED.2).
	Career Readiness, Life Literacies & Key Skill Practices	
	● Demonstrate creativity and innovation. ● Utilize critical thinking to make sense of problems and persevere in solving them. ● Use technology to enhance productivity, increase collaboration and communicate effectively. ● Work productively in teams while using cultural/global competence.	

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)									
	Amistad Law: *N.J.S.A. 18A 52:16A-88*		Holocaust Law: *N.J.S.A. 18A:35-28*		LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*	x	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*		Standards in Action: *Climate Change*