

Grade K

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	28-30 Days
NJSLS - Science: <i>Title</i>	NJSLS - Science: <i>Performance Expectations</i>	Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSL-S within Unit
Motion and Stability: Forces and Interactions	<p>K-PS2-1: Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.</p> <p>K-PS2-2: Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.</p>	
FOUNDATION Disciplinary: Core Idea	FOUNDATION Disciplinary: Statement	
<ul style="list-style-type: none"> ● PS2.A: Forces and Motion ● PS2.B: Types of Interactions ● PS3.C: Relationship Between Energy and Forces 	<ul style="list-style-type: none"> ● Pushes and pulls can have different strengths and directions. (K-PS2- 1), (K-PS2-2); Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. (KPS2-1), (K-PS2-2) ● When objects touch or collide, they push on one another and can change motion. (K-PS2-1) ● A bigger push or pull makes things speed up or slow down more quickly. 	<p><u>Essential Question/s:</u> What are the procedures and rules to ensure science safety? What does an Engineer Do? How can we use a design process?</p> <p><u>Activity Description:</u></p> <ul style="list-style-type: none"> ● Understand the five procedures and rules for science safety ● Define a simple problem that can be solved by developing a new or improved tool; ● Ask questions, make observations, and gather information helpful in thinking about a problem; ● Make a model based on evidence to represent a tool that solves a problem; ● Compare and test design solutions to a problem; ● Use sketches and models to communicate a solution to a problem

<ul style="list-style-type: none"> ETS1.A: Defining Engineering Problems 	<p>(secondary to K-PS2-1)</p> <ul style="list-style-type: none"> A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. <i>(secondary to K-PS2-2)</i> 	<p><u>Activities:</u></p> <ul style="list-style-type: none"> Review the five science safety procedures and rules (TE pg. T65-T66) Unit Project-Design a Coin Sorter (ART/MA) Vocabulary Game (ELA) Engineer It-What Does an Engineer Do? (ART/MA) Engineer It-How Can We Use a Design Process? (ART/MA) STEM: Off to the Races! Leveled Readers (ELA) <p>Interdisciplinary Connections:</p> <p>Connections to Math K.MD.A.2.: Directly compare two objects with a measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference. K.G.A.2: Correctly name shapes regardless of their orientations or overall size MP.2: Reason abstractly and quantitatively MP.4: Model with Mathematics</p> <p>Connections to ELA W.K.6: With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers. W.K.8: With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question SL.K.5: Add drawings...to descriptions as desired to provide additional details</p>
<p>FOUNDATION Science and Engineering Practices: <i>Core Idea</i></p>	<p>FOUNDATION Science and Engineering Practices: <i>Statement</i></p>	
<ul style="list-style-type: none"> Asking Questions and Defining Problems Developing and Using Models 	<ul style="list-style-type: none"> Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions. <ul style="list-style-type: none"> Ask questions based on observations to find more information about the natural and/or designed world(s). (K2-ETS1-1) Define a simple problem that can be solved through the development of a new or improved object 	

<ul style="list-style-type: none">Analyzing and Interpreting Data	<p>or tool. (K-2-ETS1-1)</p> <ul style="list-style-type: none">Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or story board) that represent concrete events or design solutions.<ul style="list-style-type: none">Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)Analyzing data in K-2 builds on prior experiences and progresses to collecting, recording, and sharing observations.<ul style="list-style-type: none">Analyze data from tests of an object or tool to determine if it works as intended. (K-2-ETS1-3)	
<p>FOUNDATION Crosscutting Concepts:</p>	<p>FOUNDATION Crosscutting Concepts:</p>	

<i>Core Idea</i>	<i>Statement</i>	
<ul style="list-style-type: none"> Structure and Function 	<ul style="list-style-type: none"> 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: <i>Competencies</i>	Social and Emotional Learning: <i>Sub-Competencies</i>	
<ul style="list-style-type: none"> Responsible Decision-Making Relationship Skills Self-Management Social Awareness Self Awareness 	<ul style="list-style-type: none"> Develop, implement, and model effective problem-solving and critical thinking skills Utilize positive communication and social skills to interact effectively with others Recognize the skills needed to establish and achieve personal and educational goals Demonstrate an understanding of the need for mutual respect when viewpoints differ. Demonstrate an awareness of the expectations for social interactions in a variety of ways. Recognize the importance of self-confidence in handling daily tasks and challenges. 	

Assessments (Formative) <i>To show evidence of meeting the standard/s, students will successfully engage within:</i>		Assessments (Summative) <i>To show evidence of meeting the standard/s, students will successfully complete:</i>	
Formative Assessments: <ul style="list-style-type: none"> Interactive Worktext, Apply What You Know (scoring rubrics attached), Lesson Check, and Self-Check 		Benchmarks: <ul style="list-style-type: none"> Unit Test Stem Challenges: Unit Project, Unit Performance Task Summative Assessments: <ul style="list-style-type: none"> Lesson Quiz, Interactive Worktext 	
Differentiated Student Access to Content: Teaching and Learning Resources/Materials			
Core Resources	Alternate Core Resources <i>IEP/504/At-Risk/ESL</i>	ELL Core Resources	Gifted & Talented Core Resources
<ul style="list-style-type: none"> Workbook Leveled Readers Hands-on Activities Interactive Worktext 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of an online bilingual dictionary, and modified assessment and/or rubric. 	<ul style="list-style-type: none"> 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.

	and/or rubrics, repeat instructions as needed.		
Supplemental Resources			
<p>Technology:</p> <ul style="list-style-type: none"> • HMH Co. Interactive Site • You Solve It! <p>Other:</p> <ul style="list-style-type: none"> • Career Education: Architect, Contractor, Structural Engineer, Toy Engineer, Robot Engineer • Spotlight Scientist: Dr. Ayanna Howard 			
Differentiated Student Access to Content: Recommended <i>Strategies & Techniques</i>			
Core Resources	Alternate Core Resources IEP/504/At-Risk/ESL	ELL Core Resources	Gifted & Talented Core
<ul style="list-style-type: none"> • Large group instruction • Small group instruction • Think Pair Share • Cooperative group work • Multimedia presentations • K-W-L • Manipulatives • Leveled Readers 	<ul style="list-style-type: none"> • 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, 	<ul style="list-style-type: none"> • Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of an online bilingual dictionary, and modified assessment and/or rubric. 	<ul style="list-style-type: none"> • 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.

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NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	Disciplinary Concept: Creativity & Innovation/Critical Thinking & Problem Solving / Technology Literacy		
	Core Ideas:	<ul style="list-style-type: none"> 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:	<ul style="list-style-type: none"> 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		
	<ul style="list-style-type: none"> Demonstrate creativity and innovation. Utilize critical thinking to make sense of problems and persevere in solving them. 		

	<ul style="list-style-type: none"> • Use technology to enhance productivity, increase collaboration and communicate effectively. • Work productively in teams while using cultural/global competence.
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New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)									
x	Amistad Law: <i>N.J.S.A. 18A 52:16A-88</i>		Holocaust Law: <i>N.J.S.A. 18A:35-28</i>		LGBT and Disabilities Law: <i>N.J.S.A. 18A:35-4.35</i>	x	Diversity & Inclusion: <i>N.J.S.A. 18A:35-4.36a</i>	x	Standards in Action: <i>Climate Change</i>