Curriculum Map – Engineering Units of Study **Updated August 2021**
Grade 3

Science Unit	**Nature of Science**
Engineering Unit	**Nature of Science & Engineering (NSE)** **Boom Towns**
Timeline	**August 10th-**
Science Standards	SC.3.N.1.1 Raise questions about the natural world, investigate them individually and in teams through free exploration and systematic investigations, and generate appropriate explanations based on those explorations. SC.3.N.1.2 Compare the observations made by different groups using the same tools and seek reasons to explain the differences across groups. SC.3.N.1.3 Keep records as appropriate, such as pictorial, written, or simple charts and graphs, of investigations conducted. SC.3.N.1.4 Recognize the importance of communication among scientists. SC.3.N.1.5 Recognize that scientist question, discuss, and check others' evidence and explanations. SC.3.N.1.6 Infer based on observation. SC.3.N.1.7 Explain that empirical evidence is information, such as observations or measurements, that is used to help validate explanations of natural phenomena. SC.3.N.3.1 Recognize that words in science can have different or more specific meanings than their use in everyday language; for example, energy, cell, heat/cold, and evidence. SC.3.N.3.2 Recognize that scientists use models to help understand and explain how things work. SC.3.N.3.3 Recognize that all models are approximations of natural phenomena; as such, they do not perfectly account for all observations.
Essential Questions	• Why is it important for scientists and engineers to raise questions about the world around them? • Why is it important for scientist and engineers to communicate and record their observations? • Why is it important for scientist and engineers to use and understand and use the appropriate scientific language and terminology? • How do scientists and engineers use models and tools to understand the real world?
Science Vocabulary	Volume, observation, investigation, experiment, explanation, exploration, description, conclusion, prediction, evidence, manipulated/independent variable, responding/dependent variable, constant, infer, data, comparison/control, scalars and vectors
ELA Text	*Design It, Build It*; *Made by Hand*; *Science Tools*; *Being a Scientist*; *Let's Experiment*; *Roxaboxen, Sarah Plain and Tall* From previous adoption: *Science and Its Uses; Science in Our Lives; Could You Be a Scientist?* Fusion: *A History of Super Science*
Investigations	Using science tools to measure time, mass, volume, length Junior Achievement Lesson on Communities
Engineering Design Challenge	*Design a Boom Town Community*

Curriculum Map – Engineering Units of Study **Updated August 2021**
Grade 3

Science Unit	**Physical Science**
Engineering Unit	**Gravitational Force & Resultant Motion (GFRM)** **Electromagnetic Force & Resultant Motion (EFRM)**
Timeline	**October-November**
Science Standards	SC.3.P.8.1 Measure and compare temperatures of various samples of solids and liquids. SC.3.P.8.2 Measure and compare the mass and volume of solids and liquids. SC.3.P.8.3 Compare materials and objects according to properties such as size, shape, color, texture, and hardness. SC.3.P.9.1 Describe the changes water undergoes when it changes state through heating and cooling by using familiar scientific terms such as melting, freezing, boiling, evaporation, and condensation. SC.3.P.10.1 Identify some basic forms of energy such as light, heat, sound, electrical, and mechanical. SC.3.P.10.2 Recognize that energy has the ability to cause motion or create change. SC.3.P.10.3 Demonstrate that light travels in a straight line until it strikes an object or travels from one medium to another. SC.3.P.10.4 Demonstrate that light can be reflected, refracted, and absorbed. SC.3.P.11.1 Investigate, observe, and explain that things that give off light often also give off heat. SC.3.P.11.2 Investigate, observe, and explain that heat is produced when one object rubs against another, such as rubbing one's hands together. SC.3.E.5.4 Explore the Law of Gravity by demonstrating that gravity is a force that can be overcome.
Essential Questions	• Why is it important for scientists and engineers to know how to measure and compare various states of matter and properties such as size, shape, color, texture and hardness? • Why is it important for scientists and engineers to understand the different changes that affect water through heating and cooling? • Why is it important for scientists and engineers to identify basic forms of energy and recognize that energy has the ability to cause motion and create change? • How will students demonstrate that light travels in a straight line and that light can be reflected, refracted and absorbed? • Why is it important that scientists and engineers understand and are able to explain that light and friction produce heat? • How can we build to overcome gravity?
Science Vocabulary	Absorbed, condensation, emit, evaporation, friction, force, gas, heat energy, liquid, matter, mechanical energy, medium, motion, produce, reflection-reflection, refraction-refracted, solid, state, temperature, transparent, gravity
Nonfiction Text	Previous adoption: *How Bikes Work; Thrills and Chills; Forces and Motion; How Sound Works; Sound; Energy; So Much Energy; How Matter Works; Ways Matter Changes; Matter and Its Properties; Changes in Matter; Everyday Reactions*
Investigations	Kaleidoscope How do different materials affect light absorption?
Engineering Design Challenge	*Gravity Exploration – Parachutes* *Design a Laser Light Mirror Maze*

Curriculum Map – Engineering Units of Study **Updated August 2021**
Grade 3

Science Unit	**Earth Science**
Engineering Unit	**Natural Resources (NR)** **Space Exploration (SE)**
Timeline	**December-February**
Science Standards	SC.3.E.5.1 Explain that stars can be different; some are smaller, some are larger, and some appear brighter than others; all except the Sun are so far away that they look like points of light. SC.3.E.5.2 Identify the Sun as a star that emits energy; some of it in the form of light. SC.3.E.5.3 Recognize that the Sun appears large and bright because it is the closest star to Earth. SC.3.E.5.5 Investigate that the number of stars that can be seen through telescopes is dramatically greater than those seen by the unaided eye. SC.3.E.6.1 Demonstrate that radiant energy from the Sun can heat objects and when the Sun is not present, heat may be lost.
Essential Questions	• How can scientists and engineers identify that the sun is a star that emits energy? • How can scientists and engineers explain the reasons why stars, including the sun, are different? • How will students demonstrate that heat may be lost but radiant energy remains present? • How will students be able to demonstrate the use of scientific tools such as a telescope?
Science Vocabulary	Earth, energy (Sun's), gravity, heat loss, light, orbit, shade, solar system, space, star, telescope, universe
Nonfiction Text	From previous adoption: Space Station Life; The Solar System; The Sun and the Seasons; The Sky's Patterns; Patterns in the Sky
Investigations	Investigate radiant energy- reflection, refraction and absorption. How do color/shape/reflectivity affect temperature (solar cookers)?
Engineering Design Challenge	*Design a Solar Cooker*

Curriculum Map – Engineering Units of Study **Updated August 2021**
Grade 3

Science Unit	**Life Science**
Engineering Unit	**Life Processes (LP)** **Ecosystems (ECO)**
Timeline	**March-May**
Science Standards	SC.3.L.14.1 Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction. SC.3.L.14.2 Investigate and describe how plants respond to stimuli (heat, light, gravity), such as the way plant stems grow toward light and their roots grow downward in response to gravity. SC.3.L.15.1 Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors. SC.3.L.15.2 Classify flowering and non-flowering plants into major groups such as those that produce seeds, or those like ferns and mosses that produce spores, according to their physical characteristics. SC.3.L.17.1 Describe how animals and plants respond to changing seasons. SC.3.L.17.2 Recognize that plants use energy from the Sun, air, and water to make their own food.
Essential Questions	• How will scientists and engineers describe the different parts of the plant and their functions? • How will scientist and engineers describe how plants respond to stimuli (heat, light, and gravity)? • How will scientist and engineers know how to classify animals into major groups according to their characteristics and behaviors? • How will scientist and engineer classify flowering and non-flowering plants into their physical characteristics? • How will scientist and engineers describe how animals and plants respond to changing seasons? • How will scientists and engineers explain plants using energy from the sun and water to make their own food?
Science Vocabulary	Amphibians, bird, carnivore, classification, cold-blooded, evaporation, fish, habitat, herbivore, hibernation, insect, interdependence, invertebrate, mammal, migration, nutrient, omnivore, plant, plant structure, reptile, seasonal changes, structure, sun's energy, vertebrate, warm-blooded
Nonfiction Text	From previous adoption: *Tree Life; Plants and How they Grow; Plants and Trees Growing; Ways Plants and Animals Interact; Plants and Animals Living Together; How Animals Live; Animal Ways of Life; Exoskeleton; Owl Life; Polar Life* Treasures: *Amazing Bird Builders; Saving the Rainforest; Purple Loosestrife: The Beautiful Invader*
Investigations	Hydroponic v. Flatbed Gardening Investigating Plant Growth- Light vs. Dark, Soils, etc.
Engineering Design Challenge	*Create a maze for a plant to travel*