

Course Description: Science of Technology; During this course, students will learn how science impacts the technology of yesterday, today, and the future. Students apply the concepts of physics, chemistry, and nanotechnology to STEM activities and projects, including making ice cream, cleaning up an oil spill, and discovering the properties of nano-materials.

Adopted Course Primary Resource	Supplementary Resources
<ul style="list-style-type: none"> mypltw.org 	<ul style="list-style-type: none">

Units of Study (Sequenced)	Standards Associated	Key Learning Targets & Essential Vocabulary	Essential Question(s)	Common Assessment	Pacing
Applied Chemistry		Key Learning Targets: <ul style="list-style-type: none"> Describe the difference between a chemist and a chemical engineer. Describe how salt affects the melting point of ice. Describe how an adhesive bond holds two items together. Outline the steps required to clean up an oil spill. Apply science and engineering skills to make ice cream. Utilize the steps of the design process to create a product. Work as a part of a team to solve an oil spill engineering simulation problem. 	<ul style="list-style-type: none"> What does a chemical engineer do? What is the difference between a chemical engineer and a chemist? Where would a chemical engineer work? 	<ul style="list-style-type: none"> Let's Make Ice Cream/Let's Make Yogurt Gluings It All Together Oil Spill Cleanup 	6 Days
Nanotechnology		<ul style="list-style-type: none"> Identify facts regarding nanotechnology including properties of materials at nanoscale. Describe the relative size of a nanometer. Describe how nanoproducts are used in society today. Identify tools and processes used to see and manipulate matter at the nanoscale. Discuss the impact that nanotechnology has on their lives today and will have in the future. Identify examples of 	<ul style="list-style-type: none"> What is nanotechnology? How many meters are in a nanometer? Why do we want to make or study such small things? How will nanotechnology affect my life? 	<ul style="list-style-type: none"> Nanotechnology: Fact or Myth How Small is a Billionth? Build a Buckyball Exploring Nanoproducts Testing Nanofabric Amazing 	10 Days

		nanotechnology-enhanced products. <ul style="list-style-type: none"> Describe engineering and engineering technology careers related to the advancement of nanotechnology. 	<ul style="list-style-type: none"> What tools are necessary to “see” and manipulate at the nanoscale? 	Nanotechnology	
Applied Physics		<ul style="list-style-type: none"> Identify the six simple machines: the lever, pulley, wheel and axle, inclined plane, wedge, and screw. Identify a machine as something that helps use energy more efficiently. Describe work as the force applied over a distance. Explain the applications of the six simple machines. Distinguish between the three classes of levers. Determine mechanical advantage from assembled simple machines. Compare and contrast kinetic and potential energy. Predict the relative kinetic energy based on the mass and speed of the object. Recognize and demonstrate safety rules for using lab tools and machines. Build, test, and evaluate a model of a design problem. Analyze a product through testing methods and make modifications to the product. 	<ul style="list-style-type: none"> What is the purpose of using a simple or compound machine? What is the difference between a simple and compound machine? If energy cannot be created or destroyed, why do we need to be concerned about our energy sources? What is the relationship between potential energy and kinetic energy? How do subsystems interact to create a system? Why is the design process used when creating new products? 	<ul style="list-style-type: none"> Simple Machines Video/Scavenger Hunt Simple Machines Exploration Energy: Rollback Toy Roller Coaster Mania Systems and Subsystems Product Creation 	26 Days