Danville Area School District
Course Overview and Scope and Sequence

Course Title:STEM
Content Area: STEM
Grade Level: 7th Grade
Date Developed: 9/28/2023

COURSE OVERVIEW: This quarter-long class, is designed for students who enjoy Science, Technology, Engineering and Math topics. It offers unique opportunities to apply numerous academic concepts through practical, hands-on applications. STEM students will be given opportunities to learn through discovery, exploration, and practical applications. 7th Grade students will focus on Prosthetics, Hydroponics, and Theme Park Design.
ANCHOR STANDARDS: 1. Prosthetics 2. Hydroponics 3. Theme Park Design
KEY COURSE TEXT AND MATERIALS: Teacher Created Materials, Labs and Supplies
KEY ASSESSMENTS: Diagnostic: None Formative: Labs and activities, models, bell ringers, and class discussions. Summative: Quiz, projects, packets

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Prosthetic Design	3.5.6-8.C Hypothesize what alternative outcomes (individual, cultural, and/or environmental) might have resulted had a different technological solution been selected. 3.5.6-8.F Analyze examples of technologies that have changed the way people think, interact, live, and communicate. 3.5.6-8.G Analyze how an invention or innovation was influenced by the context and circumstances in which it is developed. 3.5.6-8.H Evaluate trade-offs based on various perspectives as part of a decision process that recognizes the need for careful compromises among competing factors. 3.5.6-8.I Examine the ways that technology can have both positive and negative effects at the same time. 3.5.6-8.R Develop innovative products and systems that solve	Math: MP 1: MP.2 MP.5 MP.7 ELA: CC.1.2.8.J	Response Forms, Worksheets, Projects, Quizzes	Teacher created projects, supplies, and materials posted in Google Classroom.	20 days

	problems and extend capabilities based on individual or collective needs and wants. 3.5.6-8.S Illustrate the benefits and opportunities associated with different approaches to design. 3.5.6-8.T Create solutions to problems by identifying and applying human factors in design. 3.5.6-8.U Evaluate and assess the strengths and weaknesses of various design solutions given established principles and elements of design. 3.5.6-8.V Refine design solutions to address criteria and constraints. 3.5.6-8.W (ETS) Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. 3.5.6-8.BB Demonstrate how knowledge gained from other content areas affects the development of technological products and systems.				

	3.56-8.CC Consider historical factors that have contributed to the development of technologies and human progress. 3.5.6-8.FF Demonstrate how systems thinking involves considering relationships between every part, as well as how the systems interact with the environment in which it is used.				
Hydroponics	3.5.6-8.D Analyze how the creation and use of technologies consumes renewable, nonrenewable, and inexhaustible resources; creates waste; and may contribute to environmental challenges. 3.5.6-8.E Consider the impacts of a proposed or existing technology and devise strategies for reducing, reusing, and recycling waste caused by its creation. 3.5.6-8.F Analyze examples of technologies that have changed the way people think, interact, live, and communicate. 3.5.6-8.L Design methods to gather data about technological systems. 3.5.6-8.O Interpret the accuracy of	3-5 Esse-3 Math: MP 1: MP.2 MP.5 MP.7 ELA: CC.1.2.8.J	Response Forms, Worksheets, Projects, Quizzes	Teacher created projects, supplies, and materials posted in Google Classroom.	5 days (grow time separate)

	information collected. 3.5.6-8.Y Compare, contrast, and identify overlap between the contributions of science, technology, engineering, and mathematics in the development of technological systems. 3.5.6-8.Z Analyze how different technological systems often interact with economic, environmental, and social systems. 3.5.6-8.AA Adapt and apply an existing product, system, or process to solve a problem in a different setting. 3.5.6-8.GG Create an open-loop system that has no feedback path and requires human intervention. 3.56-8.CC Consider historical factors that have contributed to the development of technologies and human progress.				
Theme Park Design	3.5.6-8.F Analyze examples of technologies that have changed the way people think, interact, live, and communicate. 3.5.6-8.G Analyze how an invention	Math: MP 1: MP.2 MP.5 MP.7 ELA:	Response Forms, Worksheets, Projects	Teacher created projects, supplies, and materials posted in Google Classroom.	8 Days

	or innovation was influenced by the context and circumstances in which it is developed.	CC.1.2.8.J			
Alternate Wind Turbine Design	3.5.6-8.B Use instruments to gather data on the performance of everyday products. 3.5.6-8.D Analyze how the creation and use of technologies consumes renewable, nonrenewable, and inexhaustible resources; creates waste; and may contribute to environmental challenges. 3.5.6-8.E Consider the impacts of a proposed or existing technology and devise strategies for reducing, reusing, and recycling waste caused by its creation. 3.5.6-8.F Analyze examples of technologies that have changed the way people think, interact, live, and communicate. 3.5.6-8.G Analyze how an invention or innovation was influenced by the context and circumstances in which it is developed. 3.5.6-8.H Evaluate trade-offs based on various perspectives as part of a decision process that recognizes	Math: MP 1: MP.2 MP.5 MP.7 ELA: CC.1.2.8.J CC.3.2.6.B: CC.3.4.8.B	Response Forms, Worksheets, Projects	Teacher created projects, supplies, and materials posted in Google Classroom.	15 days

	the need for careful compromises among competing factors. 3.5.6-8.I Examine the ways that technology can have both positive and negative effects at the same time. 3.5.6-8.M (ETS) Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. 3.5.6-8.N (ETS) Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. 3.5.6-8.O Interpret the accuracy of information collected. 3.5.6-8.Q Apply a technology and engineering design thinking process. 3.56-8.CC Consider historical factors that have contributed to the development of technologies and human progress.				