Danville Area School District
Course Overview and Scope and Sequence

Course Title:STEM
Content Area: STEM
Grade Level: 8th 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. 8th Grade students will focus on **simple machines, underwater robotics, and drones.**
ANCHOR STANDARDS: 1. Simple Machines 2. Underwater Robotics 3. Flight
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
Simple Machines	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.I Examine the ways that technology can have both positive and negative effects at the same time. 3.5.6-8.Q Apply a technology and engineering design thinking process. 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. 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	S8.C.3.1.3 Math: MP:2	Response Forms, Worksheets, Projects, Quizzes	Teacher created projects, construction supplies, and materials posted in Google Classroom.	25 days

	and potential impacts on people and the natural environment that may limit possible solutions. 3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.				
Flight	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.K Use devices to control technological systems. 3.5.6-8.Y Compare, contrast, and identify overlap between the contributions of science, technology, engineering, and mathematics in the development of	S4.C.3.1.1 CC 3.2.8.B	Response Forms, Worksheets, Projects, Quizzes	Teacher created projects, drone supplies, and materials posted in Google Classroom.	25 days

	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.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.				
Underwater Robotics	3.5.6-8.F Analyze examples of technologies that have changed the way people think, interact, live, and communicate.	ESS3C S4.C.3.1.1 CC 3.2.8.B	Response Forms, Worksheets, Projects,	Teacher created projects, ROV supplies, and materials posted	25 days

	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 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.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.Y Compare, contrast, and		Quizzes	in Google Classroom.	

	identify overlap between the contributions of science, technology, engineering, and mathematics in the development of technological systems. 3.56-8.CC Consider historical factors that have contributed to the development of technologies and human progress.				