PETERS TOWNSHIP HIGH SCHOOL
COURSE SYLLABUS: INTROUCTION TO S.T.E.M.

Course Overview and Essential Skills

The Intro to STEM course is designed to introduce students to the world of Science, Technology, Engineering and Math. Units are developed as an introduction to larger concepts addressed in other technology education courses offered at Peters Township High School. Units will allow students to study a variety of concepts including design, technical drawing, structures, and sustainable living. Each unit is designed to foster creative problem solving skills by utilizing the hands-on approach in creating and testing projects relevant to the unit of study. This course builds the framework for understanding how science, technology, engineering and math are connected in practical problem solving experienced in our daily lives. The course will also provide an opportunity for students to practice their reading/writing skills, research techniques and analyzing feedback.

Course Textbook and Required Materials

- Wright, R. Thomas. *Technology Systems*. South Holland, IL: Goodheart-Willcox, 1996. Print.
- Hayine, W. J., III, and Richard E. Peterson. *The Technology of Communication*. Cincinnati: Thomas Learning Tools, 1995. Print.
- PTSD Web Apps Account

Course Outline of Material Covered:

Unit or Topic	Concepts/Skills/Resources	Timeframe
Introduction to stem and evolution of design	• Investigate occupations available to engineers and discuss the importance of S.T.E.M in preparing for those occupations • Analyze the design process and factors that contribute to creating design solutions • Compare and contrast human needs and wants with relation to solving practical problems • Examine design criteria and how it affects design solutions	• 4-Weeks
Measurement	• Compare and contrast Standard and Metric measurement scales • Investigate where measurements originated and how they developed into the standards of today • Calculate variances of data sets using various measurement scales • Record and communicate measurements and correctly across various scales	• 3-Weeks
Technical Drawing	• Compare and contrast the various types of technical sketches and drawings • Investigate isometric, oblique, perspective and multi-view sketching and drawing techniques and uses • Explore how technical sketches are made with a pencil, paper, and an idea, while technical drawing advances a sketch to follow specific technical drawing guidelines	• 4-Weeks

	• Employ sketching tools, such as graphing paper, T-squares, stencils and various lead types	
Structural design	• Investigate design elements needed for transforming architectural ideas into practical models • Analyze how materials react to the forces of tension, torsion, compression and shear • Calculate the effect of a force being placed on an object using mathematical formulas • Create working models based on criteria to withstand the forces of tension, torsion, compression and shear • Explore how different materials and orientation affect a materials ability to resist force	• 4-Weeks
Sustainability for the future	• Investigate to concept of sustainable development for future generations • Analyze current practices in energy and material usage • Consider how changes to lifestyle patterns such as food consumption can dramatically affect the usage of natural resources domestically and abroad • Develop strategies for improving the initial usage of natural resources and reusing products past their initial manufacturing purpose	• 3-Weeks

**Depending on the needs of the class or changes in the school year, the course outline is subject to change.*