



SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Technology Education/STEM

Course: Honors Engineering Design and Development

Standards:

This course is aligned to standards within the following categories of the Pennsylvania Academic Standards for Science and Technology and Engineering Education:

- 3.4.A Scope of Technology
- 3.4.B Technology and Society
- 3.4.C Technology and Engineering Design
- 3.4.D Abilities for a Technological World
- 3.4.E The Designed World

Course Description:

The 4-12 Technology Education/STEM program within Southern Lehigh School District will provide an authentic and hands-on learning experience for all students. Courses are designed to empower students to develop, refine, and apply technological solutions focused on improving the world around them. Students will work collaboratively to make sense of and solve problems. Learning experiences will be inquiry-based, challenging students to reflect upon and revise their thinking. Teachers will provide opportunities for students to apply technology, as well as concepts from science and mathematics, to the engineering and design processes.

HONORS ENGINEERING DESIGN AND DEVELOPMENT is a capstone course where knowledge and skills gained from Introduction to Engineering Design, Computer Integrated Manufacturing, and Principles of Engineering culminate. It is an open-ended engineering course in which students work in teams to design and develop an original solution to a real-world problem. Students identify a problem and then research, design, and test a solution, ultimately presenting their solution to a panel of experts.

Prerequisite(s):

- Successful completion of Honors Computer Integrated Manufacturing; AND
- Successful completion of Honors Principles of Engineering

Measurable objectives to be attained by students:

Specific objectives for this course are aligned to the National Standards for Technology Literacy, the Pennsylvania Academic Standards for Science and Technology and Engineering Education, and the Pennsylvania Core Standards for Reading and Writing in Science and the Technical Subjects as outlined in the Scope and Sequence for Honors Engineering Design and Development.

Instructional Strategies:

A well-rounded Technology Education/STEM program requires a wide range of instructional strategies that empower students to develop, refine, and apply technological solutions. Below is a list of suggested strategies for high-quality instruction:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Provide hands-on learning experiences
- Following the engineering design process
- Inquiry and project-based learning focused on problem-solving
- Use of design notebooks

Estimated Instructional Time:

77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-Based Measures
- Summative Assessments
- Formative Assessments
- Performance-Based Assessment

Resources:**Technology:**

“Homepage.” *Project Lead the Way*, www.pltw.org/.

Computer Aided Design software

District approved supplemental technology

Other Resources:

Teacher created resources

District approved supplemental resources