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

Planned Course for Technology Education/STEM

Course: Honors Principles of Engineering

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 PRINCIPLES OF ENGINEERING will engage and challenge students to explore a broad range of engineering topics, including: mechanisms, the strength of materials and structures, automation, and kinematics. This course will expose students to major concepts they will encounter in a post-secondary engineering course of study. Students will further develop engineering skills in problem solving, research, and design through collaborative and real-world problems. It is recommended that students have completed or are currently enrolled in a Physics course to be most successful in Honors Principles of Engineering.

Prerequisite(s):
- Successful completion of Honors Introduction to Engineering Design; AND
- Successful completion or concurrent enrollment in a Geometry course

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 Principles of Engineering.

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
- Following the engineering design process
- Use of design notebooks
- Provide hands-on learning experiences
- Inquiry and project-based learning focused on problem-solving

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
- Formative Assessments
- Summative Assessments
- Performance-Based Assessment

Resources:

Technology:
"Homepage." *Project Lead the Way*, www.pltw.org/.
VEX Robotic Systems
Computer Aided Design software
District approved supplemental technology

Other Resources:
Teacher created resources
District approved supplemental resources