

# Principles of Engineering & Technology

Level 1: Assumes student has no prior knowledge

Pathway(s): Engineering & Technology

## Description

Principles of Engineering and Technology is designed to introduce students to the STEM cluster for students interested in learning more about careers in engineering and technology. This course covers basic skills required for engineering and technology fields of study. Upon completion of this course, students are able to identify and explain the steps in the engineering design process. They can evaluate an existing engineering design, use fundamental sketching and engineering drawing techniques, complete simple design projects using the engineering design process, and effectively communicate design solutions to others.

## Student Learning Outcomes

- 1) Perform safe practices within the classroom
  - a. Accurately read and interpret safety rules adopted by the school/district as they relate to the spaces and equipment used in this
  - b. Identify and explain the intended use of safety equipment available in the classroom.
  - c. Demonstrate how to properly inspect and use safe operating procedures with tools and equipment
  - d. Incorporate safety procedure
- 2) Identify the differences of the disciplines of Science, Technology, Engineering, and Mathematics and how they are integrated to solve problems
- 3) Identify various fields within engineering and technology and their respective career opportunities
  - a. Recognize the work typically performed, tools and technology used, and nature of work environment
  - b. Identify potential certifications within the careers
  - c. Find membership organizations associated with the careers
  - d. Understand the necessary education associated within the careers
  - e. Explain how obtainability of security clearances impacts career opportunities
- 4) Compare and contrast the engineering design process to the scientific method
  - a. Identify the Engineering Design Process used within your school, which typically includes steps similar to:
    - i. Identify the problem
    - ii. Plan/Ideate
    - iii. Prototype and Test
    - iv. Final Product
    - v. Communicate results
- 5) Evaluate how the engineering design process was used to create/update a current product
- 6) Apply the engineering design process to solve an identified problem
- 7) Produce industry relevant documents & presentations, which may include

- a. Plans
  - b. Design Briefs
  - c. Engineering notebook
  - d. Portfolio
  - e. Create and deliver a presentation to an appropriate audience (e.g. instructor, class, CTSO event, etc.)
- 8) Create Technical Sketches/Drawings/Designs