

Pre-engineering Technology

Levels:	Grades 10-12
Units of Credit:	0.50
CIP Code:	21.0114
Core Code:	38-01-00-00-075
Prerequisite:	None
Skill Test:	None

COURSE DESCRIPTION

Engineering scope, content, and professional practices are presented through practical applications. Students in engineering teams apply technology, science, and mathematics concepts and skills to solve engineering design problems and innovate designs. Students research, develop, test and analyze engineering designs using criteria such as design effectiveness, public safety, human factors, and ethics.

CORE STANDARDS, OBJECTIVES, AND INDICATORS

STANDARD 1

Students will develop an understanding of the nature and scope of engineering.

Objective 1: Explain the purpose of engineering.

Objective 2: Identify the various career paths available in engineering.

- a. Identify available engineering paths.
- b. Identify other related engineering paths.

Objective 3: Understand how ethics are a part of the engineering design process.

STANDARD 2

Students will understand problem solving and the design process used in engineering.

Objective 1: Identify problem-solving steps and procedures.

Objective 2: Explain prototyping and production.

Objective 3: Safely and effectively use tools and equipment.

STANDARD 3

Students will demonstrate communication skills needed in engineering.

Objective 1: Participate in teaming and individual problem solving.

Objective 2: Drawing delineation (language).

Objective 3: Create and present a portfolio.

STANDARD 4

Student will understand the application of technology, science and math.

Objective 1: Complete a design brief activity. Suggested activities are:

- a. Design a "flying stick" airplane.
- b. Plan TSA activities.
- c. Design sumo-bots and junkyard wars.
- d. CIM/automated workcell

- e. Design a bridge.
- f. Aquaculture.
- g. Design an electric car.
- h. Design a catapult.
- i. Artificial intelligence