

Science, Technology, Engineering, and Mathematics Career Cluster

The Science, Technology, Engineering, and Mathematics (STEM) Career Cluster focuses on planning, managing, and providing, scientific research and professional and technical services, including laboratory and testing services, and research and development services.

Engineering Statewide Program of Study



The Engineering program of study focuses on the design, development, and use of engines, machines, and structures. CTE learners will learn how to apply science, mathematical methods, and empirical evidence to the innovation, design, construction, operation, and maintenance of different manufacturing systems.

Secondary Courses for High School Credit

Level 1

- Introduction to Engineering Design (PLTW)

Level 3

- Engineering and Design and Development (PLTW)
- Computer Integrated Manufacturing (PLTW)
- Digital Electronics
- Engineering Science

Postsecondary Opportunities

Associates Degrees

- Electrical and Electronics Engineering
- Drafting and Design Technology/ Technician, General
- Engineering Technology

Bachelor's Degrees

- Electrical and Electronics Engineering
- CAD/CADD Drafting and/or Design Technology/ Technician
- Bioengineering and Biomedical Engineering
- Construction Engineering Technology/ Technician

Master's, Doctoral, and Professional Degrees

- Electrical and Electronics Engineering
- Mechanical Engineering
- Bioengineering and Biomedical Engineering

Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Aerospace Engineers	\$110,843	481	9%
Industrial Engineers	\$97,074	1,263	10%
Mechanical Engineers	\$91,107	1,535	11%
Chemical Engineers	\$112,819	474	9%
Electrical Engineers	\$98,405	1,137	105

Successful completion of the Engineering program of study will fulfill requirements of the Business and Industry or STEM endorsement if the math and science requirements are met. Revised – August 2022

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities

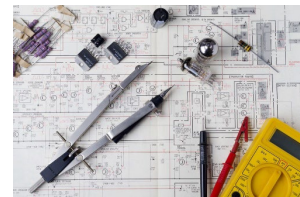
- Participate in Skills USA competitions

Work-Based Learning Activities

- Intern at an engineering firm

Industry-Based Certifications

- Engineering Technology Foundations



COURSE INFORMATION

COURSE NAME	COURSE NUMBER AND CREDITS	PREREQUISITES (PREQ) COREQUISITES (CREQ)	GRADE
Introduction to Engineering Design	8716 (1 credit)	Algebra I or 8th grade math final average 80 or higher	9-10
Engineering Science	8715 (1 credit)	Algebra I and Biology	10
Digital Electronics	8717 (1 credit)	Algebra I & Geometry; IED and Engineering Science	11
Computer Integrated Manufacturing	8718 (1 credit)	IED & Engineering Science	11
Engineering Design & Development	8719 (1 credit)	CIM or DE	12

COURSE DESCRIPTIONS

Introduction to Engineering Design:

This course provides students with opportunities to be creative and to apply decision making and problem solving skills. Students will use powerful computer hardware and software (Inventor) to develop 3D models or solid renderings of objects.

Engineering Science:

Satisfies a Science graduation requirement

This course is designed to help you understand field and career possibilities of engineering and engineering technology. You will be introduced to a wide variety of real problems that today's engineers are faced with.

Digital Electronics:

Satisfies a Math graduation requirement

This is a course in applied digital logic. Students will be introduced to the digital circuits found in video games, watches, calculators, digital cameras, and thousands of other devices. This course is similar to a first semester college course, and it's important for anyone in engineering or engineering technology.

Computer Integrated Manufacturing:

This is a course that applies principles of prototyping, robotics, and automation. It builds on the solid modeling skills developed in IED. You will also be introduced to the fundamentals of robotics and how this equipment is used in an automated manufacturing environment.

Engineering Design & Development:

In this course, students will work in a team with one to three others to design and construct a solution to an engineering problem. Each team will be responsible in making final presentations to an outside review panel. The completed project will be very useful in college applications.

Engineering Math (8740):

Satisfies a Math graduation requirement

Pre-requisite: Algebra II

Optional course (not part of Program of Study)

Engineering Mathematics is a course where students solve and model robotic design problems. Students use a variety of mathematical methods and models to represent and analyze problems involving data acquisition, spatial applications, electrical measurement, manufacturing processes, materials engineering, mechanical drives, pneumatics, process control systems, quality control, and robotics with computer programming.

Courses in yellow are advanced courses for endorsement purposes.

