

Engineering Career Cluster

The Engineering career cluster focuses on planning, designing, testing, building, and maintaining of machines, structures, materials, systems, and processes using empirical evidence and science, technology, and math principles. This career cluster includes occupations ranging from mechanical engineer and drafter to electrical engineer and to mapping technician.

Statewide Program of Study: *Engineering Foundations* Endorsement: *STEM*

The Engineering Foundations program of study focuses on occupational and educational opportunities associated with a wide range of skills applied in the Engineering industry. Students will design, test, and evaluate projects related to engines, machines, and structures. This program of study includes applying scientific, mathematical, and empirical evidence to solve problems through innovation, design, construction, operation, and maintenance of different engineering systems



Engineering Foundations Course Sequence

Level 1	Course	Prerequisites
	Introduction to Engineering Design 1 credit, 1 class period	Prerequisites: None

Level 2	Course	Prerequisites Corequisites
	Engineering Science 1 credit, 1 class period	Prerequisites: Introduction to Engineering Science

Level 3	Course	Prerequisites Corequisites
	Aerospace Engineering OR Civil Engineering 1 credit, 1 class period	Prerequisites: Engineering Science

Level 4	Course	Prerequisites Corequisites
	Practicum in Science, Technology, Engineering, and Mathematics 2 credits, 2 class periods	Prerequisites: 2 or more courses in the Engineering Foundation Pathway.
Industry Based Certifications	<ul style="list-style-type: none"> Engineering Technology Foundations 	

Postsecondary Opportunities

Apprenticeships

- Surveyor Assistant Instrument Apprentice

Associate Degrees

- Civil Engineering, General
- Surveying Technology/Surveying

Bachelor's Degrees

- Civil Engineering, General
- Construction Engineering

Master's, Doctoral, and Professional Degrees

- Civil Engineering, General
- Surveying Engineering

Aligned Occupations

Surveying & Mapping Technicians

Median Wage: \$45,804
Annual Openings: 1,487
10-Year Growth: 18%

Architectural & Civil Drafters

Median Wage: \$57,424
Annual Openings: 1,366
10-Year Growth: 15%

Civil Engineers

Median Wage: \$80,980
Annual Openings: 2,823
10-Year Growth: 22%

To earn the Engineering Foundations Pathway and STEM Endorsement, students must complete at least 3 classes for 4 or more credits.

Engineering Foundations

Science, Technology, Engineering, Math

STEM ENDORSEMENT



An example of a four-year plan for a student entering 9th grade to complete the Engineering Foundations Program of Study.

Subject	9th	10th	11th	12th
Language Arts	English 1	English 2	English 3	Advanced English
Mathematics	Algebra 1	Geometry	3 rd Math	4 th Math
Science	Biology or IPC	Biology or Chemistry	3 rd Science	4 th Science
Social Studies	World Geography	World History	US History	Govt./Econ.
Required CTE courses	Introduction to Engineering Design	Engineering Science	Aerospace Engineering OR Civil Engineering	Practicum in Science, Technology, Engineering, and Mathematics
Elective	Physical Education	Fine Arts	Elective	
Elective	Foreign Language	Foreign Language	Elective	Elective

Industry Based Certifications

- Engineering Technology Foundations

Related CTE Elective Courses

- Aerospace Engineering
- Civil Engineering
- Entrepreneurship I and II

Program of Study Planning

- To complete any Program of Study, a student must complete 3 or more courses for a total of 4 or more credits.
- A student may change their Program of Study at the end of their 9th grade year but must remain in their newly chosen pathway for the remainder of high school if they wish to complete it.
- Students are encouraged to pursue other passions in their academics with the understanding that courses and/or commitments in other programs may conflict with completing their Program of Study.