

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

- Principles of Applied Engineering
- Introduction to Engineering Design (PLTW)
- Engineering Essentials (PLTW)

Level 2

- Manufacturing Engineering Technology I

Level 3

- Engineering and Design and Development (PLTW)
- Engineering Design and Presentation I
- Computer Integrated Manufacturing (PLTW)
- Aerospace Engineering (PLTW)
- Digital Electronics
- Civil Engineering and Architecture (PLTW)
- Engineering Science
- Environmental Sustainability (PTLW)

Level 4

- Engineering Design and Problem Solving
- Engineering Design and Presentation II
- Practicum in STEM
- Scientific Research and Design

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities

- Participate in Skills USA competitions

Work-Based Learning Activities

- Intern at an engineering firm
- Shadow a machinist

Industry-Based Certifications

- Autodesk Associate (Certified User) AutoCAD
- Autodesk Associate (Certified User) & Professional Fusion 360
- Autodesk Associate (Certified User) & Professional Inventor for Mechanical Design
- Autodesk Associate (Certified User) & Professional Revit Architecture
- Autodesk Associate (Certified User) & Professional Revit for Electrical
- Autodesk Associate (Certified User) & Professional Revit for Structural Design
- Autodesk Certified Professional in AutoCAD for Design and Drafting
- Autodesk Certified Professional in Civil 3D for Infrastructure Design
- Autodesk Certified Professional in Revit for Architectural Design
- Autodesk Certified User & Professional in Inventor
- C-103 Certified Industry 4.0 Associate - Robot System Operations
- Engineering Technology Foundations
- Lean Six Sigma Green Belt Certification
- Pre-Engineering/Engineering Technology - Job Ready
- Certified SOLIDWORKS Associate (CSWA) - Electrical
- Certified SOLIDWORKS Associate (CSWA) - Academic
- Certified SOLIDWORKS Associate (CSWA) - Mechanical Design
- Certified SOLIDWORKS Associate (CSWA) - Simulation
- Certified SOLIDWORKS Associate (CSWA) - Sustainability
- Certified SOLIDWORKS Professional (CSWP) - Model Based Definition
- Certified SOLIDWORKS Professional (CSWP) - Academic
- Certified SOLIDWORKS Professional (CSWP) - Simulation
- Certified SOLIDWORKS Professional (CSWP) - Mechanical Design
- Certified SOLIDWORKS Professional (CSWPA) - Drawing Tools

- Certified SOLIDWORKS Associate*

*BC sunseting 8/31/24

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 – November 2022

Engineering Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Applied Engineering	13036200 (1 credit)	None	None
Introduction to Engineering Design (PLTW)	N1303742 (1 credit)	None	None
Engineering Essentials (PLTW)	N1303760 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Manufacturing Engineering Technology I	13032900 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Engineering Design and Development (PLTW)	N1303749 (1 credit)	None	None
Engineering Design and Presentation I	13036500 (1 credit)	Algebra I	None
Computer Integrated Manufacturing (PLTW)	N1303748 (1 credit)	None	None
Aerospace Engineering (PLTW)	N1303745 (1 credit)	None	None
Civil Engineering & Architecture (PLTW)	N1303747 (1 credit)	None	None
Environmental Sustainability (PLTW)	N1303746 (1 credit)	None	None
Digital Electronics	13037600 (1 credit)	Algebra I and Geometry	None
Engineering Science	13037500 (1 credit)	Algebra I, Biology, Chemistry and either Integrated Physics (IPC) or Physics, and at least one credit in a course from the STEM career cluster	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Engineering Design & Problem Solving	13037300 (1 credit)	Algebra I and Geometry	None
Engineering Design and Presentation II	13036600 (2 credits)	Algebra I and Geometry	None
Practicum in Science, Technology, Engineering, and Mathematics	13037400 (2 credits) 13037405 (3 credits) 13037410 (2 credits) 13037415 (2 credits)	Algebra I and Geometry	None
Scientific Research & Design	13037200 (1 credit)	Biology, Chemistry and either Integrated Physics (IPC) or Physics	None

FOR ADDITIONAL INFORMATION ON THE SCIENCE, TECHNOLOGY, ENGINEERING AND MATH CAREER CLUSTER, PLEASE CONTACT: CTE@tea.texas.gov
<https://tea.texas.gov/cte>

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Further nondiscrimination information can be found at [Notification of Nondiscrimination in Career and Technical Education Programs](#).