

# 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 electrical engineer and mapping technician.

## Statewide Program of Study Civil Engineering

The Civil Engineering program of study focuses on occupational and educational opportunities associated with the design, construction, and maintenance of infrastructure related to roads, buildings, airports, bridges, and transportation systems. This program includes exploration of infrastructure, site inspections, feasibility assessments and scope, and cost estimates. It addresses applying mathematical, and empirical evidence to solve problems in construction, infrastructure, and the environment.

### Aligned Advanced Academic Courses

AP or IB	AP Calculus AB	AP Physics 1	IB Physics SL
	AP Calculus BC	AP Physics 2	IB Physics HL
		AP Statistics	

**Dual Credit** Dual credit offerings vary based by local education agency.

Students should be advised to consider these course opportunities to enrich their preparation. AP or IB courses are listed under the Secondary Courses for High School Credit section of this framework document. Opportunities include:

- † Tour a construction site
- † Participate in SkillsUSA or TSA
- † Join a local engineering association and attend meetings

### Work-Based Learning and Expanded Learning Opportunities




### Aligned IndustryBased Certifications

- † ArcGis Desktop Associate
- † LEED Green Associate
- † Autodesk Associate (Certified User) 3ds MAX
- † Autodesk Associate (Certified User) AutoCAD
- † Autodesk Associate (Certified User) Fusion 360
- † Autodesk Associate (Certified User) Inventor for Mechanical Design
- † Autodesk Associate (Certified User) Revit Architecture
- † Autodesk Associate (Certified User) Revit for Electrical
- † Autodesk Associate (Certified User) Revit for Structural Design
- † Autodesk Certified Professional Fusion 360
- † Autodesk Certified Professional in AutoCAD for Design and Drafting
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### Course Information

Level 1

Course	Prerequisites   Corequisites	Career Clusters
Principles of Applied Engineering* 13036200 (1 credit)	Prerequisites:None Corequisites:None Recommended Prerequisites:None Recommended Corequisites:None	
Principles of Technology* 13037100 (1 credit)	Prerequisites:One credit of high school science and Algebra I Corequisites:None Recommended Prerequisites:None Recommended Corequisites:None	
Introduction to Computer Applications	Prerequisites:None Corequisites:None Recommended Prerequisites:None Recommended Corequisites:None	


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# Engineering Career Cluster

## Statewide Program of Study Civil Engineering

### Course Information

Level 3

Course	Prerequisites   Corequisites	Career Clusters
<b>Engineering Design and Presentation I*</b> 13036500 (1 credit)	Prerequisites: Algebra I and at least one credit in a course from the STEM career cluster Corequisites: None Recommended Prerequisites: Principles of Applied Engineering Recommended Corequisites: None	
<b>Engineering Mathematics*</b> 13036700 (1 credit)	Prerequisites: Algebra II Corequisites: None Recommended Prerequisites: 3BD Recommended Corequisites: None	
<b>Topographical Drafting</b> N1300421 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: Architecture / 1A-10.8.9 [(1) 16.02.8 (h)-7(i)-36471g-5(p)-6.994(i)-3commended Prereq 942(e)-2c,0.2 Ter	
T	: None	

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## Statewide Program of Study Civil Engineering

### Course Information

Level 4

Course	Prerequisites   Corequisites	Career Clusters
<b>Engineering Design and Presentation II*</b> 13036600 (2 credits)	Prerequisites: Principles of Applied Engineering or Engineering Design and Presentation I, Algebra I, and Geometry Corequisites: None Recommended Prerequisite: Principles of Applied Engineering or Engineering Design and Presentation I Recommended Corequisite: None	
<b>Engineering Design and Problem Solving*</b> 13037300 (1 credit)	Prerequisites: Algebra I, Geometry, and at least one credit in a Level 2 or higher course in the STEM career cluster Corequisites: None Recommended Prerequisite: None Recommended Corequisite: None	
<b>Career and Technical Education Project-Based Capstone*</b> First Time Taken: 12701101 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisite: None Recommended Corequisite: None	
<b>Practicum in Engineering*</b> TBD (TBD credit)	Prerequisites: TBD Corequisites: TBD Recommended Prerequisite: TBD Recommended Corequisite: TBD	
<b>Practicum in Science, Technology, Engineering, and Mathematics*</b> First Time Taken: 13037400 (2 credits) Second Time Taken: 13037410 (2 credits)	Prerequisites: Algebra I and Geometry Corequisites: None Recommended Prerequisite: None Recommended Corequisite: None	
<b>Practicum in Science, Technology, Engineering, and Mathematics + Extended Practicum in Science, Technology, Engineering, and Mathematics*</b> First Time Taken: 13037405 (3 credits) Second Time Taken: 13037415 (3 credits)	Prerequisites: Algebra I and Geometry Corequisites: None Recommended Prerequisite: None Recommended Corequisite: None	

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\* Indicates course is included in more than one program of study.

For additional information on the Engineering career cluster, contact [cte@tea.texas.gov](mailto:cte@tea.texas.gov) or visit <https://tea.texas.gov/cte>



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