

# 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 engineering and electrical engineering and mapping technician.

## Statewide Program of Study: Electrical Engineering

The Electrical Engineering program of study focuses on occupational and educational opportunities associated with the design, testing, and supervision of electrical equipment and systems. Students will design, test, and evaluate projects related to electrical motors, radar, navigation systems, and communication systems. This program of study includes applying scientific, mathematical, and empirical evidence to solve problems in electrical systems associated with instruments, facilities, components, and equipment.

### Secondary Courses for High School Credit



Level 1	<ul style="list-style-type: none"> <li>† Principles of Applied Engineering</li> <li>† Principles of Technology</li> <li>† Introduction to Computer-Aided Design and Drafting</li> <li>† Introduction to Engineering Design (PLTW)</li> <li>† Engineering Essentials (PLTW)</li> </ul>
Level 2	<ul style="list-style-type: none"> <li>† Intermediate Computer-Aided Design and Drafting</li> <li>† Robotics I</li> <li>† Programmable Logic Controller I</li> <li>† Manufacturing Engineering Technology I</li> <li>† AC/DC Electronics</li> </ul>
Level 3	<ul style="list-style-type: none"> <li>† Engineering Design and Presentation I</li> <li>† Robotics II</li> <li>† Programmable Logic Controller II</li> <li>† Engineering Mathematics</li> <li>† Solid State Electronics</li> <li>† Engineering Science</li> <li>† Digital Electronics</li> <li>† Computer Integrated Manufacturing (PLTW)</li> <li>† Engineering Design and Development (PLTW)</li> </ul>
Level 4	<ul style="list-style-type: none"> <li>† Engineering Design and Presentation II</li> <li>† Engineering Design and Problem Solving</li> <li>† Career and Technical Education Project-Based Capstone</li> <li>† Practicum in Science, Technology, Engineering, and Mathematics</li> <li>† Practicum in Science, Technology, Engineering, and Mathematics + Extended</li> <li>† Practicum in Engineering (TBD)</li> <li>† Career Preparation for Programs of Study</li> <li>† Career Preparation for Programs of Study + Extended Career Preparation</li> <li>† Scientific Research and Design</li> </ul>

### Aligned Advanced Academic Courses

AP or IB	<ul style="list-style-type: none"> <li>AP Calculus AB</li> <li>AP Calculus BC</li> <li>AP Computer Science Principles</li> </ul>	<ul style="list-style-type: none"> <li>AP Physics 1</li> <li>AP Physics 2</li> <li>AP Statistics</li> </ul>	<ul style="list-style-type: none"> <li>IB Physics SL</li> <li>IB Physics HL</li> <li>IB Computer Science SL</li> <li>IB Computer Science HL</li> </ul>
Dual Credit			



Electromechanical/Electromechanical Engineering Technology/Technician

Z o } œ [ • P œ •

- † Electrical and Electronics Engineering
- † Systems Engineering

D • š œ [ • U } š } œ o U v W œ } ( • • ] } v

- † Electrical and Electronics Engineering
- † Bioengineering and Biomedical Engineering

Additional Stackable IBCs/License

- † Professional Electrical Engineer (EE License)
- † Electrical Apprenticeship Certificate Level 1 (520)



### Example Aligned Occupations

**Electrical and Electronic Engineering Technologists and Technicians**  
 Median Wage \$62,968  
 Annual Openings 1,156  
 10-Year Growth: 14%

**Electrical and Electronics Drafters**  
 Median Wage \$58,987  
 Annual Openings 406  
 10-Year Growth: 16%

**Electrical Engineers**  
 Median Wage \$102,534  
 Annual Openings: 1,271  
 10-Year Growth: 21%

Electrical Engineering

Data Source: TexasWages, Texas Workforce Commission. Retrieved 3/8/2024.



For more information visit:  
<https://tea.texas.gov/academics/college-career-and-military-prep/career-and-technical-education/programs-of-study/additional-resources>





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

# Engineering Career Cluster

## Statewide Program of Study **Electrical Engineering**

### 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-Aided Design and Drafting*		

### Course Information

Level 2

#### Prerequisites | Corequisites

#### Career Clusters

Programmable Logic  
Controller I  
N1303689 (1 credit)

Prerequisites:None  
Corequisites:None  
Recommended Prerequisites:Nonone

# Engineering Career Cluster

## Statewide Program of Study Electrical Engineering

### Course Information

Level 3

Course	Prerequisites   Corequisites	Career Clusters
Solid State Electronics 13036900 (1 credit)	Prerequisites: AC/DC Electronics Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	
Engineering Science* 13037500 (1 credit)	Prerequisites: Algebra I, one credit in Biology, and at least one credit in a course from the STEM career cluster Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	
Digital Electronics* 13037600 (1 credit)	Prerequisites: Algebra I and Geometry Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	
Computer Integrated Manufacturing (PLTW)* N1303748 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	
Engineering Design and Development (PLTW)* N1303749 (1 credit)	Prerequisites: None Corequisites: College preparatory mathematics and science courses Recommended Prerequisites: Engineering Design Recommended Corequisites: None	

Level 4

Course	Prerequisites   Corequisites	Career Clusters
Engineering Design and Presentation II* 13036600 (2 credits)	Prerequisites: Principles of Applied Engineering or Engineering Design and Presentation I, Algebra I, and Geometry Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	
Engineering Design and Problem Solving* 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 Prerequisites: None Recommended Corequisites: None	

Continued on next page

\* 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>



# Engineering Career Cluster

## Statewide Program of Study Electrical Engineering

### Course Information

Level 4


Course	Prerequisites   Corequisites	Career Clusters
<p>Career and Technical Education Project-Based Capstone*</p> <p>First Time Taken: 12701101 (1 credit)</p>	<p>Prerequisites:None</p> <p>Corequisites:None</p> <p>Recommended Prerequisite:None</p> <p>Recommended Corequisite:None</p>	
<p>Practicum in Science, Technology, Engineering, and Mathematics*</p> <p>First Time Taken: 13037400 (2 credits)</p> <p>Second Time Taken: 13037410 (2 credits)</p>	<p>Prerequisites:Algebra I and Geometry</p> <p>Corequisites:None</p> <p>Recommended Prerequisite:None</p> <p>Recommended Corequisite:None</p>	
<p>Practicum in Science, Technology, Engineering, and Mathematics + Extended Practicum in Science, Technology, Engineering, and Mathematics*</p> <p>First Time Taken: 13037405 (3 credits)</p> <p>Second Time Taken: 13037415 (3 credits)</p>	<p>Prerequisites:Algebra I and Geometry</p> <p>Corequisites:None</p> <p>Recommended Prerequisite:None</p> <p>Recommended Corequisite:None</p>	
<p>Practicum in Engineering*</p> <p>TBD (TBD credit)</p>	<p>Prerequisites:TBD</p> <p>Corequisites:TBD</p> <p>Recommended Prerequisite:TBD</p> <p>Recommended Corequisite:TBD</p>	
<p>Career Preparation for Programs of Study*</p>		

# Engineering Career Cluster

## Statewide Program of Study Electrical Engineering

### Course Information

Level 4

Course	Prerequisites   Corequisites	Career Clusters
Scientific Research and Design* 13037200 (1 credit)	Prerequisites Biology, Chemistry, Integrated Physics and Chemistry (IPC), or Physics Corequisites None Recommended Prerequisites None Recommended Corequisites None	

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