

# 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.

## Regional Program of Study: Drone (Unmanned Vehicle)

### Approved in ESC Regions 2, 4, 5, 6, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, and 20

*\*The list of approved ESC regions is updated every school year. Be sure to check the CTE regional program of study website for updates.*

The Drone (Unmanned Vehicle) regional program of study focuses on the occupational and educational opportunities associated with operating or designing an unmanned aircraft using a ground-based controller. This program of study includes understanding and designing systems of communications between the controller and the aircraft to ensure compliance with federal aviation safety regulations.



### Secondary Courses for High School Credit

- |                |   |
|----------------|---|
| <b>Level 1</b> | <ul style="list-style-type: none"> <li>• Introduction to Aerospace and Aviation</li> </ul>  |
| <b>Level 2</b> | <ul style="list-style-type: none"> <li>• Introduction to Unmanned Aerial Vehicles (UAV)</li> <li>• Robotics I</li> </ul>  |
| <b>Level 3</b> | <ul style="list-style-type: none"> <li>• Engineering Science</li> <li>• Digital Electronics</li> <li>• Robotics II</li> </ul>   |
| <b>Level 4</b> | <ul style="list-style-type: none"> <li>• Career and Technical Education Project-Based Capstone</li> <li>• Practicum in Manufacturing</li> <li>• Practicum in Manufacturing + Extended Practicum in Manufacturing</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

- |                    |  |
|--------------------|--|
| <b>Dual Credit</b> | Dual credit offerings will vary by local education agency. |
|--------------------|--|

*Students should be advised to consider these course opportunities to enrich their preparation. AP or IB courses not listed under the Secondary Courses for High School Credit section of this framework document do not count towards concentrator/completer status for this program of study.*

### Work-Based Learning and Expanded Learning Opportunities

#### Work-Based Learning Activities

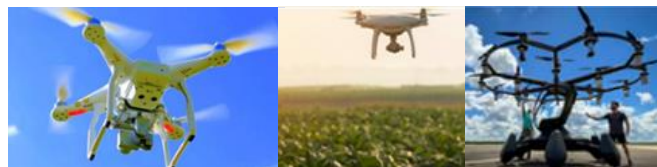
- Intern with a public service, engineering, construction, or transportation firm
- Practice drone operations with an industry professional at a work site

#### Expanded Learning Opportunities

- Participate in an aerial drone competition
- Participate in SkillsUSA or TSA

### Aligned Industry-Based Certifications

- FAA Part 107 Remote Drone Pilot



### Example Postsecondary Opportunities

#### Associate Degrees

- Airline/Commercial/Professional Pilot and Flight Crew
- Manufacturing Engineering Technology/Technician

#### Bachelor's Degrees

- Aviation Science
- Aeronautical/Aerospace Engineering Technology

#### Master's, Doctoral, and Professional Degrees

- Aerospace, Aeronautical, and Astronautical/Space Engineering, General

#### Additional Stackable IBCs/License

- Aerial Mapping and 3D Modeling Certification



### Example Aligned Occupations

#### Aerospace Engineering and Operations Technicians

Median Wage: \$48,204  
Annual Openings: 192  
10-Year Growth: 21%

#### Avionics Technicians

Median Wage: \$72,461  
Annual Openings: 255  
10-Year Growth: 16%





# Engineering Career Cluster





## Regional Program of Study: Drone (Unmanned Vehicle)

### Course Information







#### Level 1

Course	Prerequisites   Corequisites	Career Clusters
<b>Introduction to Aerospace and Aviation*</b> N1304672 (1 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisite:</b> None <b>Recommended Corequisites:</b> None	 

#### Level 2

Course	Prerequisites   Corequisites	Career Clusters
<b>Introduction to Unmanned Aerial Vehicles (UAV)</b> N1304670 (1 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisite:</b> Principles of Transportation Systems <b>Recommended Corequisites:</b> None	 
<b>Robotics I*</b> 13037000 (1 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisite:</b> Principles of Applied Engineering <b>Recommended Corequisites:</b> None	 

#### Level 3

Course	Prerequisites   Corequisites	Career Clusters
<b>Engineering Science*</b> 13037500 (1 credit)	<b>Prerequisites:</b> Algebra I, one credit in Biology, and at least one credit in a course from the STEM career cluster <b>Corequisites:</b> None <b>Recommended Prerequisite:</b> Geometry, Integrated Physics and Chemistry (IPC), one credit in chemistry, or one credit in physics <b>Recommended Corequisites:</b> None	
<b>Digital Electronics*</b> 13037600 (1 credit)	<b>Prerequisites:</b> Algebra I and Geometry <b>Corequisites:</b> None <b>Recommended Prerequisite:</b> None <b>Recommended Corequisites:</b> None	  
<b>Robotics II*</b> 13037050 (1 credit)	<b>Prerequisites:</b> Robotics I <b>Corequisites:</b> None <b>Recommended Prerequisite:</b> None <b>Recommended Corequisites:</b> None	 

\* 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

## Regional Program of Study: Drone (Unmanned Vehicle)

### Course Information

Level 4

Course	Prerequisites   Corequisites	Career Clusters
<b>Career and Technical Education Project-Based Capstone*</b> First Time Taken: 12701101 (1 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisite:</b> None <b>Recommended Corequisites:</b> None	
<b>Practicum in Manufacturing</b> First Time Taken: 13033000 (2 credits) Second Time Taken: 13033010 (2 credits)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisite:</b> None <b>Recommended Corequisites:</b> None	
<b>Practicum in Manufacturing + Extended Practicum in Manufacturing</b> First Time Taken: 13033005 (3 credits) Second Time Taken: 13033015 (3 credits)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisite:</b> None <b>Recommended Corequisites:</b> None	
<b>Career Preparation for Programs of Study*</b> First Time Taken: 12701121 (2 credits)	<b>Prerequisites:</b> At least one Level 2 or higher CTE course <b>Corequisites:</b> None <b>Recommended Prerequisite:</b> None <b>Recommended Corequisites:</b> None	
<b>Career Preparation for Programs of Study + Extended Career Preparation*</b> First Time Taken: 12701141 (3 credits)	<b>Prerequisites:</b> At least one Level 2 or higher CTE course <b>Corequisites:</b> Career Preparation for Programs of Study <b>Recommended Prerequisite:</b> None <b>Recommended Corequisites:</b> None	
<b>Scientific Research and Design*</b> 13037200 (1 credit)	<b>Prerequisites:</b> Biology, Chemistry, Integrated Physics and Chemistry (IPC), or Physics <b>Corequisites:</b> None <b>Recommended Prerequisite:</b> None <b>Recommended Corequisites:</b> None	

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