

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

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|----------------|---|
| Level 1 | <ul style="list-style-type: none"> Introduction to Aerospace and Aviation |
| Level 2 | <ul style="list-style-type: none"> Introduction to Unmanned Aerial Vehicles (UAV) Robotics I |
| Level 3 | <ul style="list-style-type: none"> Engineering Science Digital Electronics Robotics II |
| Level 4 | <ul style="list-style-type: none"> Career and Technical Education Project-Based Capstone Practicum in Manufacturing Practicum in Manufacturing + Extended Practicum in Manufacturing Career Preparation for Programs of Study Career Preparation for Programs of Study + Extended Career Preparation Scientific Research and Design |

Work-Based Learning and Expanded Learning Opportunities

Work-Based Learning Activities

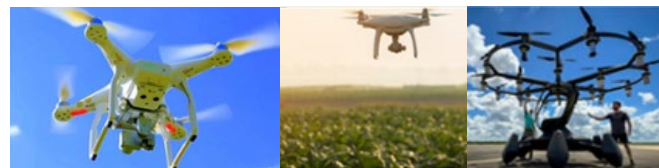
- Intern with a public service, engineering, construction, or transportation firm
- Practice drone operations with an industry professional at a work site

Expanded Learning Opportunities

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

Aligned Industry-Based Certifications

- | | |
|--|---|
| <ul style="list-style-type: none"> Applied Robotics Certified Industrial Robotics Programmer (CIRP) Certified Industry 4.0 Technician Level 1 Certified Industry 4.0 Technician Level 2 Certified Industry 4.0 Technician Level 3 Certified Mechanical Technician Level 1 Certified Mechanical Technician Level 2 | <ul style="list-style-type: none"> Certified Mechanical Technician Level 3 Certified Robotics Technician Level 1 Certified Robotics Technician Level 2 Certified Robotics Technician Level 3 FAA Part 107 Remote Drone Pilot Fundamentals of Robotics Introduction to Aerodynamics Robot Operations I |
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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: \$75,660
Annual Openings: 85
10-Year Growth: 21%

Avionics Technicians

Median Wage: \$78,639
Annual Openings: 128
10-Year Growth: 16%

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/eng-drone-unmanned-vehicle-extended.pdf>

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Regional Program of Study: Drone (Unmanned Vehicle)

Course Information

Level 1

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

Level 2

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

Level 3

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

* Indicates course is included in more than one program of study in this career cluster.

For additional information on the **Engineering** career cluster, contact cte@tea.texas.gov or visit <https://tea.texas.gov/cte>

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Regional Program of Study: Drone (Unmanned Vehicle)

Course Information

Level 4

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

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