



- Level 1**
Principles of Agriculture, Food, and Natural Resources

- Level 2**
Agricultural Mechanics and Metal Technologies (Principles of Welding)

- Level 3**
Agricultural Structures Design and Fabrications (Welding I)
Agricultural Power Systems

- Level 4**
Agricultural Equipment Design and Fabrication (Advanced Welding)
Practicum in Agriculture, Food, and Natural Resources

| HIGH SCHOOL/INDUSTRY CERTIFICATION | CERTIFICATE/LICENSE* | ASSOCIATE'S DEGREE | BACHELOR'S DEGREE | MASTER'S/DOCTORAL PROFESSIONAL DEGREE |
|---|---------------------------------------|---|-------------------------------------|---------------------------------------|
| OSHA 30 Hour General Industry | Certified Professional Agronomist | Heavy Equipment Maintenance Technology/Technician | Agricultural Engineering | Agricultural Engineering |
| Feedyard Technician in Machinery, Operation, Repair and Maintenance | Certified Reliability Engineer | Agricultural Mechanization, General | Agricultural Mechanization, General | Agricultural Mechanization, General |
| AWS SENSE Welding Level 1 | Certified Irrigation Designer | Small Engine Mechanics and Repair Technician/Technician | | |
| AWS D1.1 or D9.1 Certification | Fluid Power Mobile Hydraulic Mechanic | Welding Technology/Welder | | |

| Occupations | Median Wage | Annual Openings | % Growth |
|--|-------------|-----------------|----------|
| Outdoor Power Equipment and Other Small Engine Mechanics | \$32,406 | 366 | 16% |
| Welders | \$41,350 | 6,171 | 9% |
| Farm Equipment Mechanics and Service Technicians | \$39,915 | 304 | 17% |
| Mobile Heavy Equipment Mechanics | \$47,299 | 1,627 | 16% |
| Agricultural Engineers | \$64,792 | 9 | 13% |

Additional industry-based certification information is available on the TEA CTE website. For more information on postsecondary options for this program of study, visit TXCTE.org.

| WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES | |
|---|---|
| Exploration Activities: | Work Based Learning Activities: |
| Tour a farm products or machinery plant Texas FFA | Earn a welding certification Intern at a farm products or machinery plant FFA Supervised Agriculture Experience (SAE) |

The Applied Agricultural Engineering program of study explores the occupations and educational opportunities associated with applying knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing agricultural products. This program of study may also include exploration into diagnosing, repairing, or overhauling farm machinery and vehicles, such as tractors, harvesters, dairy equipment, and irrigation systems.



The Agriculture, Food, and Natural Resources (AFNR) Career Cluster focuses on the essential elements of life—food, water, land, and air. This career cluster includes a diverse spectrum of occupations, ranging from farmer, rancher, and veterinarian to geologist, land conservationist, and florist. It also includes non-traditional agricultural occupations like wind energy, solar energy, and oil and gas production.

Successful completion of the Applied Agricultural Engineering program of study will fulfill requirements of a Business and Industry endorsement or STEM endorsement if the math and science requirements are met. Revised - July 2020



COURSE INFORMATION

| COURSE NAME | SERVICE ID | PREREQUISITES (PREQ) COREQUISITES (CREQ) | Grade |
|---|--|---|--------------|
| Principles of Agriculture, Food, and Natural Resources | 13000200 (1 credit) | None | 9-12 |
| Agricultural Mechanics and Metal Technologies (Principles of Welding) | 13002200 (1 credit) | None | 10-12 |
| Agricultural Structures Design and Fabrications (Welding I) | 13002300 (1 credit) | None | 11-12 |
| Agricultural Power Systems | 13002400 (2 credits) | None | 11-12 |
| Agricultural Equipment Design and Fabrication (Advanced Welding) | 13002350 (1 credit) | None | 11-12 |
| Practicum in Agriculture, Food, and Natural Resources | 13002500 (2 credits) 13002505 (3 credits) 13002510 (2 credits) 13002515 (3 credits) | None | 11-12 |

FOR ADDITIONAL INFORMATION ON THE AGRICULTURE, FOOD, AND NATURAL RESOURCE CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
<https://tea.texas.gov/cte>

(District) offers career and technical education programs in (types of programs offered). Admission to these programs is based on (admission standards). It is the policy of (District) not to discriminate on the basis of race, color, national origin, sex or handicap in its vocational programs, services or activities as required by Title VI of the Civil Rights Act of 1964, as amended; Title IX of the Education Amendments of 1972; and Section 504 of the Rehabilitation Act of 1973, as amended. It is the policy of (District) not to discriminate on the basis of race, color, national origin, sex, handicap, or age in its employment practices as required by Title VI of the Civil Rights Act of 1964, as amended; Title IX of the Education Amendments of 1972; the Age Discrimination Act of 1975, as amended; and Section 504 of the Rehabilitation Act of 1973, as amended. (District) will take steps to assure that lack of English language skills will not be a barrier to admission and participation in all educational and vocational programs. For information about your rights or grievance procedures, contact the Title IX Coordinator at (physical address of Coordinator) (email address of Title IX Coordinator), (phone number of Title IX Coordinator), and the Section 504 Coordinator at (physical address of Coordinator), (email address of Section 504 Coordinator), (phone number of Section 504 Coordinator)