



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

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- Level 2**  
Agricultural Mechanics and Metal Technologies

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- Level 3**  
Agricultural Structures Design and Fabrications

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- Level 4**  
Practicum in Agriculture, Food, and Natural Resources

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| 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%      |

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

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.

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 & COURSE ID         | PREREQUISITS (PREQ)<br>COREQUISITES (CREQ)   | Grade |
|--|-----------------------------|--|-------|
| Principles of Agriculture, Food, and Natural Resources | 13000200 / 8010 (1 credit)  | None   | 9-12  |
| Agricultural Mechanics and Metal Technologies          | 13002200 / 8050 (1 credit)  | Principles of Agriculture, Food, and Natural Resources or Principles of Manufacturing          | 10-12 |
| Agricultural Structures Design and Fabrications        | 13002300 / 8051 (1 credit)  | Agricultural Mechanics and Metal Technologies  | 11-12 |
| Practicum in Agriculture, Food, and Natural Resources  | 13002500 / 8058 (2 credits) | Advanced Floral Design, Veterinary Medical Applications, Livestock Production, or Ag Mechanics | 11-12 |

## BISD Recommended Course Sequence

| Grade   | 9 <sup>th</sup> Year      | 10 <sup>th</sup> Year                       | 11 <sup>th</sup> Year                         | 12 <sup>th</sup> Year    |
|---------|---------------------------|---|---|--------------------------|
| Courses | Principles of Agriculture | Agricultural Mechanics & Metal Technologies | Agricultural Structures Design & Fabrications | Practicum in Agriculture |