



Agriculture, Food, and Natural Resources Career Cluster

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 occupations ranging from farmer, rancher, and veterinarian to geologist, land conservationist, and florist.

CFISD Program of Study: Agricultural Technology and Mechanical Systems (Ag Mech)

Successful completion of the Agricultural Technology and Mechanical Systems program of study will fulfill requirements of the Business and Industry endorsement.

The Agricultural Technology and Mechanical Systems program of study focuses on occupational and educational opportunities associated with applying engineering technology and biological science to agricultural problems related to power and machinery, electrification, structures, soil and water use, and processing agricultural products. This program of study includes diagnosing, repairing, or overhauling farm machinery and vehicles, such as tractors, harvesters, dairy equipment, and irrigation systems.



Recommended Course Sequence (credits)(A=advanced)

Students wanting an endorsement in this area must select three (3) or more courses totaling four (4) or more credits with at least one being advanced.

Grade 9	<ul style="list-style-type: none"> Principles of Agriculture, Food, and Natural Resources (1)
Grade 10	<ul style="list-style-type: none"> Agricultural Mechanics and Metal Technologies (1)
Grade 11	<ul style="list-style-type: none"> Agricultural Equipment Design and Fabrication (1) (A)
Grade 12	<ul style="list-style-type: none"> Capstone – Ag Mech (1) (A) OR Practicum in Agriculture, Food, and Natural Resources (2) (A)

Aligned Industry-Based Certifications Offered in CFISD

(course) (CCMR=impacts “career ready” status as outlined by the TEA Accountability System for College, Career or Military Readiness)

- AWS D1.1 Structural Steel (Agricultural Equipment Design and Fabrication) (CCMR)
- AWS D9.1 Sheet Metal Welding (Agricultural Mechanics and Metal Technologies) (CCMR)
- Quality Counts Verification (Principles of AFNR)
- NOTE:** Additional AWS certifications available in Capstone-Ag Mech and Practicum in AFNR

Work-Based Learning and Expanded Learning Opportunities

Work-Based Learning Activities	<ul style="list-style-type: none"> Intern at an equipment manufacturing facility working with agricultural engineers
Expanded Learning Opportunities	<ul style="list-style-type: none"> Participate in an FFA career, leadership, and speaking contest like an agriscience fair



Example Postsecondary Opportunities

Apprenticeships

- Farm Equipment Mechanic I

Associate Degrees

- Diesel Mechanics Technology
- Industrial Mechanics and Maintenance Technology

Bachelor’s Degrees

- Agricultural Engineering
- Agricultural Systems Management

Master’s, Doctoral, and Professional Degrees

- Agricultural Engineering
- Industrial Technology

Additional Stackable IBCs/License

- Diesel Equipment Technology-Off Highway Specialization CER1
- Accredited Farm Manager



Example Aligned Occupations

Data Source: Texas Wages, Texas Workforce Commission. rev 3/8/2024

Farm Equipment Mechanics and Service Technicians

Median Wage: \$41,258
Annual Openings: 315
10-Year Growth: 23%

Mobile Heavy Equipment Mechanics

Median Wage: \$60,005
Annual Openings: 2,315
10-Year Growth: 31%

Farmers, Ranchers, and Other Agricultural Managers

Median Wage: \$79,064
Annual Openings: 30,363
10-Year Growth: 4%



AVAILABLE TO STUDENTS AT ALL 12 HIGH SCHOOLS!

- Receive training on industry-standard material, software & equipment.
- Enhance your resume by earning recognized industry-based certifications.
- Get a jump-start by taking advantage of core curriculum dual credit, transferable to 2-yr and 4-yr degrees.

ALL AT A FRACTION OF THE COST!

Agricultural Technology and Mechanical Systems

For more information on this and other CTE programs of study offered in CFISD, visit <https://www.cfisd.net/academics/career-technical-education/programs-of-study>

What’s next? For more information on related programs available to continue your studies at Lone Star College, visit <https://www.lonestar.edu/programs-of-study>

