



# 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.

## Statewide Program of Study: Agricultural Technology and Mechanical Systems

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.

### Secondary Courses for High School Credit



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|----------------|--|
| <b>Level 1</b> | • Principles of Agriculture, Food, and Natural Resources   |
| <b>Level 2</b> | • Agricultural Mechanics and Metal Technologies<br>25-26 Non-DC  |
| <b>Level 3</b> | • Agricultural Structures Design and Fabrication<br>(WLDG1353 & WLDG1428/WLDG1407 & WLDG1457)<br>25-26 No Change<br>26-27 WLDG 1323* & WLDG 1317* Only                         |
| <b>Level 4</b> | • Practicum in Agriculture, Food, and Natural Resources<br>(WLDG1202 & WLDG1430/WLDG1206 & WLDG2443)<br>25-26 No Change<br>26-27 No Change<br>27-28 WLDG1521* & WLDG1557* Only |

### Aligned Advanced Academic Courses

#### Dual Credit

WLDG1353 Intermediate Layout & Fabrication  
WLDG1428 Introduction to Shielded Metal Arc Welding  
WLDG1407 Introduction to Welding Using Multiple Processes  
WLDG1457 Intermediate Shielded Metal Arc Welding  
WLDG1202 Fundamentals of Gas Metal Arc Welding  
WLDG1430 Introduction to Gas Metal Arc Welding  
WLDG1206 Fundamentals of Gas Tungsten Arc Welding  
WLDG2443 Advanced Shielded Metal Arc Welding  
WLDG 1323 Welding, Safety, Tools, and Equipment\* 26-27  
WLDG 1317 Introduction to Layout and Fabrication\* 26-27  
WLDG1521 Welding Fundamentals \*27-28  
WLDG1557 Intermediate Shielded Metal Arc Welding \*27-28

*Students should be advised to consider these course opportunities to enrich their preparation. AP 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

- Participate in a farm mechanic apprenticeship at an equipment production company
- Intern at an equipment manufacturing facility working with agricultural engineers

#### Expanded Learning Opportunities

- Participate in an FFA career, leadership, and speaking contest like an agriscience fair
- Participate in an agriculture robotics event

### Aligned Industry-Based Certifications

- AWS D1.1 Structural Steel
- AWS D9.1 Sheet Metal Welding

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



### 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

#### Farm Equipment Mechanics and Service Technicians

Median Wage: \$46,582  
Annual Openings: 326  
10-Year Growth: 23%

#### Mobile Heavy Equipment Mechanics

Median Wage: \$57,943  
Annual Openings: 2,637  
10-Year Growth: 31%

#### Farmers, Ranchers, and Other Agricultural Managers

Median Wage: \$65,490  
Annual Openings: 28,020  
10-Year Growth: 4%

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/programs-of-study-additional-resources>