

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

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

Aligned Advanced Academic Courses

	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
Dual Credit	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

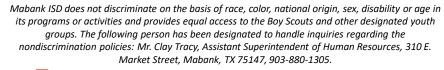
Students should be advised to consider these course opportunities to enrich their preparation. AP courses not listed under the Secondary Courses for High School Credit section of this framework document do not count towards concentrator/completer status for this program of study.

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





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%



For more information visit: https://tea.texas.gov/academics/college-career-and-militaryprep/career-and-technical-education/programs-of-study-