



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: *AG. Tech & Mech. Systems* **Endorsement: *Business & Industry***

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.



AG. Tech & Mech Systems Course Sequence

Postsecondary Opportunities

Apprenticeships

- Farm Equipment Mechanic I

Associate Degrees

- Diesel Mechanics Technology
- Industrial Mechanics
- Maintenance Technology

Bachelor's Degrees

- Agricultural Engineering
- Agricultural Systems Management

Master's, Doctoral, and Professional Degrees

- Agricultural Engineering
- Industrial Technology

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, & Other Agricultural Managers

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

To earn the AG Systems Pathway and Business & Industry Endorsement, students must complete at least 3 classes for 4 or more credits.

Level	Course	Prerequisites Corequisites
Level 1	Principles of Agriculture, Food, and Natural Resources 1 credit, 1 class period	Prerequisites: None
Level 2	Agricultural Mechanics and Metal Technologies 1 credit, 1 class period	Prerequisites: Principles of AFNR
Level 3	Agricultural Structures Design and Fabrication 1 credit, 1 class period	Prerequisites: Agricultural Mechanics and Metal Technologies
Level 4	Agricultural Power Systems 2 credits, 2 class periods	Prerequisites: Agricultural Structures Design and Fabrication
	Industry Based Certifications	<ul style="list-style-type: none"> • AWS Certified Welder • AWS D1.1 Structural Steel • AWS D9.1 Sheet Metal Welding • AWS SENSE Level I: Entry Welder
	Practicum in AFNR 2 credits, 2 class periods	Prerequisites: 2 courses in AG Systems Pathway

Agricultural Technology and Mechanical Systems

BUSINESS & INDUSTRY ENDORSEMENT



An example of a four-year plan for a student entering 9th grade to complete the Agricultural Technology and Mechanical Systems Program of Study.

Subject	9th	10th	11th	12th
Language Arts	English 1	English 2	English 3	Advanced English
Mathematics	Algebra 1	Geometry	3 rd Math	4 th Math
Science	Biology or IPC	Biology or Chemistry	3 rd Science	4 th Science
Social Studies	World Geography	World History	US History	Govt./Econ.
Required CTE courses	Principles of AFNR	Agricultural Mechanics and Metal Technologies	Agricultural Structures Design and Fabrication	Agricultural Power Systems or Practicum in AFNR
Elective	Physical Education	Fine Arts	Elective	
Elective	Foreign Language	Foreign Language	Elective	Elective

Industry Based Certifications

- AWS Certified Welder
- AWS D1.1 Structural Steel
- AWS D9.1 Sheet Metal Welding
- AWS SENSE Level I: Entry Welder

Related CTE Elective Courses

- Business Management
- Entrepreneurship I and II
- Global Business & Human Resource Management

Program of Study Planning

- To complete any Program of Study, a student must complete 3 or more courses for a total of 4 or more credits.
- A student may change their Program of Study at the end of their 9th grade year but must remain in their newly chosen pathway for the remainder of high school if they wish to complete it.
- Students are encouraged to pursue other passions in their academics with the understanding that courses and/or commitments in other programs may conflict with completing their Program of Study.