Agriculture, Food, and Natural Resources

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.

Program of Study: Agricultural Technology and Mechanical Systems

Limited Seating

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.

Courses

9th Grade	Principles of Agriculture, Food, and Natural Resources
10th Grade	Agricultural Mechanics and Metal Technologies
11th Grade	Agricultural Structures Design and Fabrications
12th Grade	Agricultural Equipment Design and Fabrication

Work-Based Learning/Expanded Learning Opportunities

Work-Based Learning Activities	• Earn industry certification • Participate in an FFA supervised agriculture experience • Work with Sheldon Agricultural Engineering Works
Expanded Learning Opportunities	Sheldon FFA

Aligned Industry-Based Certifications

- AWS D1.1 Structural Steel

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: $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%

Successful completion of this program of study will fulfill requirements of the Business and Industry Endorsement.
Approved Statewide Program of Study. C. E. King High School – 2026-27

Agricultural Technology and Mechanical Systems

Course Information

Level 1

Principles of Agriculture, Food & Natural Resources **13000200**

Grade: 9-10 **Credit: 1**

Principles of Agriculture, Food, and Natural Resources will allow students to develop knowledge and skills regarding career and educational opportunities, personal development, globalization, industry standards, details, practices, and expectations. To prepare for careers in agriculture, food, and natural resources, students must attain academic skills and knowledge in agriculture. To prepare for success, students need opportunities to learn, reinforce, experience, apply, and transfer their knowledge and skills in a variety of settings.

Level 2

Agricultural Mechanics and Metal Technologies **13002200**

Grade: 10-12 **Credit: 1**

Agricultural Mechanics and Metal Technologies is designed to develop an understanding of agricultural mechanics as it relates to safety and skills in tool operation, electrical wiring, plumbing, carpentry, fencing, concrete, and metal working techniques. To prepare for careers in agricultural power, structural, and technical systems, students must attain academic skills and knowledge; acquire technical knowledge and skills related to power, structural, and technical agricultural systems and the industry; and develop knowledge and skills regarding career opportunities, entry requirements, industry certifications, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer knowledge and skills and technologies in a variety of settings.

Level 3

Agricultural Structures Design and Fabrication **13002300**

Grade: 11-12 **Credit: 1**

Prerequisite: Agricultural Mechanics and Metal Technologies

In Agricultural Structures Design and Fabrication, students will explore career opportunities, entry requirements, and industry expectations. To prepare for careers in mechanized agriculture and technical systems, students must attain knowledge and skills related to agricultural structures design and fabrication. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer their academic knowledge and technical skills in a variety of settings.

Industry Based Certification: AWS D1.1 Structural Steel

Level 4

Agricultural Equipment Design and Fabrication **13002350**

Grade: 11-12 **Credit: 1**

Prerequisite: Agricultural Structures Design and Fabrication

In Agricultural Equipment Design and Fabrication, students will acquire knowledge and skills related to the design and fabrication of agricultural equipment. To prepare for careers in mechanized agriculture and technical systems, students must attain knowledge and skills related to agricultural equipment design and fabrication. To prepare for success, students reinforce, apply, and transfer their academic knowledge and technical skills in a variety of settings.