



## 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

<b>9<sup>th</sup> Grade</b>	Principles of Agriculture, Food, and Natural Resources
<b>10<sup>th</sup> Grade</b>	Agricultural Mechanics and Metal Technologies
<b>11<sup>th</sup> Grade</b>	Agricultural Structures Design and Fabrications
<b>12<sup>th</sup> Grade</b>	Agricultural Equipment Design and Fabrication Career Preparation for Programs of Study (Optional)



#### 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%

#### Work-Based Learning/Expanded Learning Opportunities

<b>Work-Based Learning Activities</b>	<ul style="list-style-type: none"> <li>• Earn industry certification</li> <li>• Participate in an FFA supervised agriculture experience</li> <li>• Work with Sheldon Agricultural Engineering Works</li> </ul>
<b>Expanded Learning Opportunities</b>	Sheldon FFA

#### Aligned Industry-Based Certifications

- NCCER Core
- AWS D1.1 Structural Steel

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 – 2024-25



# Agricultural Technology and Mechanical Systems

## Course Information

### Level 1

#### Principles of Agriculture, Food & Natural Resources

1300200

**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: NCCER Core

### 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.

Industry Based Certification: AWS D1.1 Structural Steel