



9th	Principles of Agriculture, Food, and Natural Resources
10th	Agricultural Structures & Fabrication Agriculture Leadership, Research, & Communications
11th	Practicum in Applied Agricultural Engineering 1st time
12th	Practicum in Applied Agricultural Engineering 2nd time

HIGH SCHOOL/INDUSTRY CERTIFICATION	CERTIFICATE/LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/DOCTORAL PROFESSIONAL DEGREE
OSHA 30 Hour General Industry	Certified Professional Agronomist	Heavy Equipment Maintenance Technology/Technician	Agricultural Engineering	Agricultural Engineering
Feedyard Technician in Machinery, Operation, Repair and Maintenance	Certified Reliability Engineer	Agricultural Mechanization, General	Agricultural Mechanization, General	Agricultural Mechanization, General
AWS SENSE Welding Level 1	Certified Irrigation Designer	Small Engine Mechanics and Repair Technology/Technician		
AWS D1.1 or D9.1 Certification	Fluid Power Mobile Hydraulic Mechanic	Welding Technology/Welder		

Occupations	Median Wage	Annual Openings	% Growth
Outdoor Power Equipment and Other Small Engine Mechanics	\$32,406	366	16%
Welders	\$41,350	6,171	9%
Farm Equipment Mechanics and Service Technicians	\$39,915	304	17%
Mobile Heavy Equipment Mechanics	\$47,299	1,627	16%
Agricultural Engineers	\$64,792	9	13%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES	
Exploration Activities:	Work Based Learning Activities:
Tour a farm products or machinery plant Texas FFA	Earn a welding certification Intern at a farm products or machinery plant FFA Supervised Agriculture Experience (SAE)

Additional industry-based certification information is available on the TEA CTE website. For more information on postsecondary options for this program of study, visit TXCTE.org.

The Applied Agricultural Engineering program of study explores the occupations and educational opportunities associated with applying knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing agricultural products. This program of study may also include exploration into diagnosing, repairing, or overhauling farm machinery and vehicles, such as tractors, harvesters, dairy equipment, and irrigation systems.



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. It also includes non-traditional agricultural occupations like wind energy, solar energy, and oil and gas production.

Successful completion of the Applied Agricultural Engineering program of study will fulfill requirements of a Business and Industry endorsement or STEM endorsement if the math and science requirements are met. Revised - July 2020



COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	GRADE
Principles of Agriculture, Food & Natural Resources	1300200 - 1 credit	None	9-10
Agriculture, Leadership, Research & Communications	N1300266 - 1 credit	None	9-12
Agricultural Structures, Design, & Fabrication	13002310 - 1 credit	None	10
Practicum in Applied Agricultural Engineering	13002500 - 2 credits - 1st time 13002510 - 2 credits - 2nd time	PREQ Agricultural Structures, Design, & Fabrication	11-12

Principles of Agriculture, Food, & and Natural Resources

Recommended Grade Placement: 9-10

Credit(s): 1

Prerequisite: None

Principles of Agricultural Science is designed to introduce students to global agriculture. The course includes the study of agricultural career development, leadership, communications and personal finance.

Agriculture Leadership, Research, & Communications

Recommended Grade Placement: 9-12

Credit(s): 1

Prerequisite: None

Agricultural Leadership, Research and Communications will focus on challenging Agriculture, Food, and Natural Resources (AFNR) students to use higher level thinking skills, develop leadership abilities, employ standard research principles, and communicate agricultural positions effectively with all stakeholders.

Agricultural Structures, Design & Fabrication

Recommended Grade Placement: 10-12

Credit(s): 1

Prerequisite: None

Students should attain academic skills and knowledge; acquire technical knowledge and skills related to equipment, structural, and technical agricultural systems and the workplace; and develop knowledge and skills regarding career opportunities, entry requirements, industry certifications, and industry expectations.

Practicum in Agriculture, Food, & Natural Resources

Recommended Grade Placement: 11-12

Credit(s): 2

Prerequisite: Agricultural Equipment Design

The practicum course is for students participating in a coherent sequence of career and technical education courses in the Agriculture, Food, and Natural Resources cluster. The practicum is designed to give students supervised practical application of knowledge and skills.