

**AGRICULTURE, FOOD, AND NATURAL RESOURCES**

**BUSINESS AND INDUSTRY**

# APPLIED AGRICULTURE ENGINEERING

**PROGRAM OF STUDY**

The Applied Agricultural Engineering program of study explores the occupations and educational opportunities associated with welding and fabrication, electrical, plumbing and concrete construction skills. Students can apply knowledge of safe working practices (OSHA) and engineering technology to agricultural problems concerned with power and machinery. This program of study will also cover AWS SENSE (welding) certifications.

Texas Data: Collected by TEA October 2019

**INDUSTRY-BASED CERTIFICATION OPPORTUNITIES**

Occupational Health and Safety Admin (OSHA) General Industry 10-Hour; American Welding Society (AWS) SENSE Welding Level I; American Welding Society (AWS) D1.1 Structural Steel.

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%
Welders Cutters, Solderers, and Brazers	\$41,350	6,171	9%
Welding Soldering and Brazing Machine Setters, Operators and Tenders	\$40,040	280	9%



**RECOMMENDED COURSE SEQUENCE**

- 1 LEVEL** Principles of Agriculture, Food, and Natural Resources
- 2 LEVEL** Agriculture Mechanics and Metal Technologies
- 3 LEVEL** Agricultural Structures Design and Fabrications
- 4 LEVEL** Practicum of Agriculture, Food and Natural Resources: Applied Agricultural Engineering

**NOTE:** See reverse for additional course sequence options and endorsement requirements. Course descriptions and details can be found in the course catalog.

**WORK-BASED LEARNING EXPERIENCES**

Agri-Science Fair; Ag Mechanics Shows; Industry Guest Speakers/ Demonstrations; Field Trips; Community Project Opportunities; Internships.

**CAREER AND TECHNICAL STUDENT ORGANIZATIONS**

FFA; National Technical Honor Society (NTHS)



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.

**Non-Discrimination Statement**

It is the policy of Leander ISD not to discriminate on the basis of race, color, national origin, sex or handicap in its Career and Technology Education Programs, services, or activities. Leander ISD will take steps to assure that lack of English language skills will not be a barrier to admission and participation in all educational and vocational programs. Es norma de Leander ISD de no discriminar por motivos de raza, color, origen nacional, sexo o impedimento, en sus programas, servicios o actividades vocacionales. Leander ISD tomará las medidas necesarias para asegurar que la falta de habilidad en el uso de la lengua inglés no sea un obstáculo para la admisión o participación en todos los programas educativos y vocacionales.

# APPLIED AGRICULTURE ENGINEERING

BUSINESS AND INDUSTRY

A student may earn a Business and Industry endorsement by completing foundation and general endorsement requirements. Endorsement course options for the Applied Agricultural Engineering program of study are listed below.



## 4 CREDITS REQUIRED

### Required Courses:

- Agriculture Mechanics and Metal Technologies
- Agricultural Structures Design and Fabrications

### Choose additional credits from the following:

- Principles of Agriculture, Food and Natural Resources
- Practicum in Agriculture, Food and Natural Resources: Agricultural Engineering
- Principles of Construction (CPHS & GHS)
- Electrical Technology I (LHS)
- Architecture Design I (LHS)
- Introduction to Engineering Design
- Professional Communications or Entrepreneurship
- Career Preparation
- Project-Based Research

**NOTE:** Students who complete the Plant Science Program of Study requirements are eligible to earn a STEM endorsement by also completing Algebra II, Chemistry and Physics.

## INDUSTRY-BASED CERTIFICATION OPPORTUNITIES

OSHA 10 General industry covers standards and regulations that OSHA has set in place to make sure all employees function in a safe work environment. Topics include: introduction to OSHA; Walking and Working Surfaces; Exit Routes, Emergency Action Plans, and Fire Prevention; Electrical; Personal Protective Equipment; Hazard Communication; Materials Handling; Machine Guarding; Bloodborne Pathogens.

The SENSE program requires students to successfully complete a series of written exams to gain the certificate. These written exams cover a wide range of welding theory from welding safety, welding process fundamentals, and welding inspection. In addition, students will complete practical welding assessments relating to the 4 welding processes for SMAW, GMAW, GTAW, and FCAW.

A student can also earn a welder performance qualification by demonstrating the ability to produce welds meeting the prescribed standards in accordance to AWS D1.1 Structural Steel welding code.

## NOTES:

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