

AGRICULTURAL TECHNOLOGY



Ag Technology focuses on the emerging automation happening in production agriculture. In the COS Ag Technology Program, students can focus in either **Mechanized Agriculture** or **Agriculture Irrigation**.

In **Mechanized Agriculture**, students will prepare for careers as Equipment Service Technicians, developing their knowledge in hydraulics, electrical systems, engines and emissions systems, and drive trains. Students completing this certificate will be prepared as entry level technicians at equipment dealerships or farming enterprises.

In **Agriculture Irrigation**, students earn an Ag Irrigation Technician Certificate which consists of training both in the classroom and in the field with water management, irrigation system design, pumps and irrigation systems maintenance. As water use is increasingly monitored, this training teaches students how to solve critical water management problems facing growers today. The program also prepares students for industry certification through the Irrigation Association.

Studies in Ag Technology complement the coursework of multiple areas of study such as Agribusiness Management, Plant Science, or Automation.

Contact Information

Agricultural Technology Faculty Contact

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Associate Degree

- Associate of Science in Agriculture Technology (AS) (<https://catalog.cos.edu/areas-study/agricultural-technology/associate-science-agricultural-technology-not-for-transfer-as/>)

Certificates

- Certificate of Achievement in Equipment Technician Level 2 (<https://catalog.cos.edu/areas-study/agricultural-technology/certificate-achievement-agriculture-technology/>)
- Skill Certificate in Ag Irrigation Technician (<https://catalog.cos.edu/areas-study/agricultural-technology/skill-certificate-irrigation-construction-installation/>)
- Skill Certificate in Equipment Technician Level 1 (<https://catalog.cos.edu/areas-study/agricultural-technology/skill-certificate-agriculture-power-equipment-technician/>)
- Skill Certificate in Irrigation Management (<https://catalog.cos.edu/areas-study/agricultural-technology/skill-certificate-irrigation-mgmt/>)

For a complete list of courses and descriptions visit: COURSES (<https://catalog.cos.edu/course-descriptions/>)

AGTC 103 Farm Power

3unit(s)

Hours: 3 Lecture/Discussion Hours:
1 Lab

This course involves the study of functions, physical capabilities, applications, economics and tractor improvements. Students will participate in operation, testing and analysis of tractors in laboratory and field conditions to maximize operation efficiencies. (C-ID AG-MA108L)

AGTC 106 Agriculture Welding

3unit(s)

Hours: 3 Lecture/Discussion Hours:
1 Lab

A study of the fundamental principles theories and concepts of welding used in agriculture construction, fabrication and repair. All positions, joint types, hard surfacing, cutting, brazing, SMAW, GMAW, and OFW will be studied.

AGTC 120 Introduction to the Agriculture Power Equipment Service Industry

3unit(s)

Hours: 3 Lecture/Discussion Hours:
1 Lab

This course is an introduction to the agriculture power equipment service industry. Students will learn the basics of safe tool operation, dealer software, machine identification, and regulations related to the power equipment industry. This course will prepare students for the Agriculture Power Equipment Technician Program and should be completed towards the beginning of the students' program.

AGTC 123 Power Equipment Electronics and Electrical Systems

3unit(s)

Hours: 2 Lecture/Discussion Hours:
3 Lab

This course will teach students the fundamentals of electrical systems used in agricultural power equipment. Wiring schematics and diagrams will be used to teach students about the function, operation and troubleshooting of the many electrical circuits on tractors and other equipment used in agriculture.

AGTC 124 Power Equipment Air Conditioning and Heating 2unit(s)
Hours: 2 Lecture/Discussion Hours:
1 Lab

Students will learn the fundamentals of heating and air conditioning systems in agriculture power equipment. Environmental Protection Agency (EPA) regulations around these systems will be discussed. Students will learn how the different types of systems operate along with the different types of refrigerant oils. Students will learn the use of tools to troubleshoot diagnose and repair these systems as well.

AGTC 125 Power Transmission Systems 3unit(s)
Hours: 2 Lecture/Discussion Hours:
3 Lab

Equivalent Course: AGTC 218

In this course students will learn about the systems involved in moving power produced by the engine to the drive wheels. Students will learn the components, operation and troubleshooting of various transmissions, clutches, differentials, and final drives found in agriculture machinery.

AGTC 126 Diesel Engine Emission Systems 2unit(s)
Hours: 2 Lecture/Discussion Hours:
1 Lab

This course will teach student the fundamentals of fuel systems and emission systems used in diesel engines. Students will go in depth into the fuel delivery system found on tractors and other agriculture machinery. They will also learn about Tier 4 emission regulations and the emission system components found on both Tier 4 Interim and Tier 4 Final engines and how to service those systems.

AGTC 127 Equipment Diagnostics, Testing and Failure Analysis 2unit(s)
Hours: 1 Lecture/Discussion Hours:
3 Lab

In this course students will learn the fundamentals of troubleshooting power equipment as they would find it in the field. Emphasis will be placed on the 3 C's of troubleshooting Complaint, Cause and Correction. This course is designed to tie concepts of hydraulics, engine systems, power trains and electrical systems all together so strong knowledge in those areas is highly recommended before enrolling in this course.

Advisory on Recommended Preparation: Successful completion of AGTC 225, AGTC 213, AGTC 125, AGTC 120 and AGTC 126 is recommended prior to enrollment.

AGTC 201 Small Engines 3unit(s)
Hours: 3 Lecture/Discussion Hours:
1 Lab

This beginning course is designed to introduce students to the theory and concepts of today's modern power equipment. Applications, basic operation, diagnosis and troubleshooting will be addressed in this course.

AGTC 202 Farm Equipment Construction 3unit(s)
Hours: 3 Lecture/Discussion Hours:
1 Lab

This is a study of the basic principles for the construction of farm implements such as feeding equipment, tractor implements, farm trailers or other useful tools on the farm. The course content includes: safety, developing a working drawing, a bill of materials, constructing the project and finishing the project.

AGTC 210 Agriculture Project Construction 3unit(s)
Hours: 3 Lecture/Discussion Hours:
1 Lab

This course is designed to give students an understanding of the mechanics and technology of fabrication. This class will study the characteristics, types and costs of construction materials for their use in agriculture and industrial equipment fabrication.

AGTC 213 Hydraulics 3unit(s)
Hours: 3 Lecture/Discussion Hours:
1 Lab

This course will provide students with a thorough understanding of oil hydraulic systems used in agriculture. Students will learn open-center and closed-center hydraulic systems including the types of pumps used, pressure control, flow control and directional control valves, accumulators, reservoirs, and various actuators. Students will learn operation maintenance and troubleshooting.

AGTC 219 Irrigation System Design 3unit(s)
Hours: 3 Lecture/Discussion Hours:
1 Lab

Irrigation system design fundamentals covering micro, sprinkler, surface, and sub-surface applications. Topics include on-farm systems, piping, and discharge as well as system efficiency and cost. AutoCAD and other common design software will be introduced and utilized.

AGTC 220 Irrigation Pumps 3unit(s)
Hours: 3 Lecture/Discussion Hours:
1 Lab

This course focuses on irrigation pumps. Students will learn about the different types of irrigation pumps used in the agriculture industry. Pump curves and pump selection will be covered utilizing crop water requirements and irrigation design specifications. Students will learn about pump efficiency by conduction efficiency tests both in a lab setting and out in the field. Electrical energy efficiency as it relates to pumping will be discussed.

AGTC 222 Ag Irrigation Systems 3unit(s)
Hours: 3 Lecture/Discussion Hours:
1 Lab

Fundamentals of irrigation systems and maintenance to include sprinkler, micro, surface and sub-surface applications. As irrigation systems have grown more complex so have their components. Topics include pumping and delivery systems, piping, flow control, filtration, automation, pressure regulation, equipment setup and testing. Emphasis will be placed on cost effective installation and maintenance requirements for efficient operation.

AGTC 225 Compact Diesel Engines 3unit(s)
Hours: 3 Lecture/Discussion Hours:
1 Lab

This course provides students with technical knowledge and hands-on experience in the operation and repair of compact diesel engines. **Advisory on Recommended Preparation:** AGTC 201 or equivalent college course with a minimum grade of C (may be taken concurrently).

Agricultural Technology

Abee, Charles

Certified Agriculture Irrigation Specialist
A.S., College of Sequoias
B.S., California State University, Fresno