AGTC 127: EQUIPMENT DIAGNOSTICS

Proposer:

Name:	Email:
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Effective Term:
Spring 2025

Credit Status:
Credit - Degree Applicable

Subject:
AGTC - Agricultural Technology

Course Number:
127

Discipline:

And/Or	(	Discipline	)
	(	Agricultural Engineering (Equipment and machinery, farm mechanics)	
Or		Agricultural Production (Animal science, plant science, beekeeping, aquaculture)	)

Catalog Title
Equipment Diagnostics, Testing and Failure Analysis

Catalog Description
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

Method of Instruction:
Laboratory
Lecture and/or Discussion

Course Units/Hours:

Course Units Minimum:
2

Lecture Hours Minimum (week)
1

Lab Hours Minimum (week)
3

Total Contact Hours Minimum (semester)
70

Total Outside Hours Minimum (semester)
35

Total Student Learning Minimum Hours (semester)
105

Repeatability:
No

Open Entry/Exit:
No

Field Trips:
Not Required

Grade Mode:
Standard Letter

TOP Code:
011600 - * Agricultural Power Equipment Technology

SAM Code:
C - Clearly Occupational

Course Content

Methods of Assessment:
Problem solving assignments or activities
Project
Skill demonstrations

Course Topics:

	Course Topics
1	Diagnostics and Troubleshooting 3 C's Concept Complaint, Cause & Correction Retest
2	Information gathering drivers, operators, owners
3	Failure analysis
4	Electrical diagnostics
5	Hydraulic diagnostics
6	Power trains diagnostics
7	Root cause analysis
8	Service reports and billing
9	Fluid sampling
10	Engine and Emission System diagnostics
11	Air Conditioning System diagnostics

Course Objectives:

	Course Objectives
1	Develop a set of interview questions to pinpoint issues in equipment.
2	Use OEM publications and tools to diagnose electrical systems.
3	Use OEM publications and tools to diagnose hydraulic systems.
4	Use OEM publications and tools to diagnose emission systems.
5	Use OEM publications and tools to diagnose power trains systems.
6	Use OEM publications and tools to diagnose air conditioning and heating systems.
7	Examine failed components and determine root cause of failures.
8	Take fluid samples for diagnostics.

Course Outcomes:

	Course Outcomes
1	Students will be able to use OEM equipment and literature to diagnose equipment systems.
2	Students will be able to interpret oil analysis samples to determine machinery condition.
3	Students will be able to complete a repair and document repair as would be expected by a service manager.

Assignments:

Assignment Type:	Details
Reading	Students will read a troubleshooting procedure and apply that to a non working piece of equipment.
Writing	Students will write a service report for both a service manager and a customer.
Homework	Students will familiarize themselves with the service manuals for a given piece of equipment.
Lab	Students will diagnose and repair a piece of equipment in the field.

Textbooks or other support materials

Resource Type:	Details
Web/Other	OEM Service Manuals and Bulletins

Equity Review:

Yes

Transferable to CSU

Yes - Proposed

Transferable to CSU Justification

2a. This course deals with a great deal of physics, hydraulics electrical and engine theory application to troubleshoot and diagnose malfunctioning equipment. This course will test students ability to think on their feet and solve problems in a timely manner. This will require them to research on OEM web portals and get down to the root cause of the problem and repair the problem. It will require students to read technical update bulletins and apply what they have read to both application in diagnosing and repairing systems but also to be able to communicate to a customer both orally and in writing.

2b. This course is a fundamental course in troubleshooting and diagnosing problems with power equipment. Students will need to understand many theories of engines, hydraulics and power transmissions and be able to apply those in troubleshooting a piece of equipment and effectively repair the equipment. This course focuses on using the appropriate concepts of troubleshooting rather than just a technical skill.

This course will also be proposed for UC transfer.

No

Other Degree Attributes

Degree Applicable
Not a Basic Skills Course

Banner Title:

Equipment Diagnostics