AGTC 213: HYDRAULICS

Proposer:

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Effective Term:
Fall 2024

Credit Status:
Credit - Degree Applicable

Subject:
AGTC - Agricultural Technology

Course Number:
213

Catalog Title
Hydraulics

Catalog Description
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.

Method of Instruction:
Laboratory
Lecture and/or Discussion

Course Units/Hours:

Course Units Minimum:
3

Lecture Hours Minimum (week)
3

Lab Hours Minimum (week)
1

Activity Hours Minimum (week)
0

Total Contact Hours Minimum (semester)
70

Total Outside Hours Minimum (semester)
105

Total Student Learning Minimum Hours (semester)
175

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
Problem solving quizzes or exams
Project
Skill demonstrations

Course Topics:

	Course Topics
1	Safety
2	Hydraulic Symbols
3	Basic Hydraulic Laws and Principles
4	Pressure Control Valves
5	Hydraulic Pumps and Positive and Variable Displacement
6	Check Valves, Accumulators and Connectors
7	Reservoirs, Coolers, Hoses and Connectors
8	Directional Control Valves
9	Flow Control Valves
10	Flow Dividers
11	Proactive Maintenance
12	Filtration

Course Objectives:

	Course Objectives
1	Safely work around a high pressure hydraulic system.
2	Interpret hydraulic schematics for the purpose of troubleshooting and repair.
3	Understand basic hydraulic laws and principles.
4	Understand the function and application of pressure control valves
5	Understand the function and application of pumps used in open center and closed center hydraulic systems.
6	Utilize check valves appropriately
7	Use accumulators in a hydraulic system safely and correctly.
8	Use hydraulic motors.
9	Use hydraulic cylinders
10	Correctly size a hydraulic reservoir.
11	Use the various types of directional control valves in the appropriate applications on a hydraulic system.
12	Use the various types of flow control valves in the appropriate application on a hydraulic system.
13	Describe proactive maintenance for a hydraulic system

Course Outcomes:

	Course Outcomes
1	Students will be able to use hydraulic schematics to troubleshoot and repair a hydraulic system.
2	Students will be able to correctly plumb hydraulic components correctly to build the desired circuit.
3	Students will be able to troubleshoot a hydraulic circuit and correctly repair the system.

Assignments:

Assignment Type:	Details
Reading	Students will read technical manuals for understanding of hydraulic components.
Writing	Students will write a service report when finished with their repair.
Lab	Students will plumb an open center hydraulic system.
Homework	Students will read manufacturer literature to learn more about the various hydraulic components available.

Textbooks or other support materials

Resource Type:	Details
Manuals	Introduction to Closed-Loop Oil Systems ISBN# 978-0-9639619-3-8
Manuals	How to Work Safely with Hydraulics ISBN #: 978-0-9639619-6-9
Manuals	Troubleshooting Hydraulic Components (ISBN #: 978-0-9639619-1-4)
Manuals	How To Interpret Fluid Power Symbols (ISBN #: 978-0-9639619-2-1)
Manuals	A Practical Guide to Filtration in Hydraulic Systems
Manuals	How To Layout & Draw Fluid Power Schematics (ISBN #: 978-0-9639619-4-5)
Books	Hydraulics Deere Publishing 0-86691-371-8 978-0-86691-371-3

Equity Review:

Yes

Other Degree Attributes

Degree Applicable
Not a Basic Skills Course

Banner Title:

Hydraulics

Curriculum Committee Approval Date:

10/04/2023

Academic Senate Approval Date:

10/11/2023

District Governing Board Approval Date:

11/13/2023

Course Control Number:

CCC000065508