SYLLABUS

DATE OF LAST REVIEW: 4/23/2020

CIP CODE: 47.0613

SEMESTER: Departmental Syllabus

COURSE TITLE: Hydraulics

COURSE NUMBER: DEVT 0125

CREDIT HOURS: 5

INSTRUCTOR: Departmental Syllabus

OFFICE LOCATION: Departmental Syllabus

OFFICE HOURS: Departmental Syllabus

TELEPHONE: Departmental Syllabus

EMAIL: Departmental Syllabus
KCKCC-issued email accounts are the official means for electronically communicating with our students.

PREREQUISITES:

REQUIRED TEXT AND MATERIALS: Please check with the KCKCC bookstore, http://www.kckccbookstore.com for the required text for your particular class.

COURSE DESCRIPTION: This introductory hydraulics course teaches the theory, principles and servicing for hydraulic systems used on mobile equipment. It includes terminology, industry standards, symbols and basic circuitry design related to fluid power. Maintenance, diagnosing and repair of typical systems are covered.

METHOD OF INSTRUCTION: A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE:

I. Basics in Hydraulics
II. General hydraulic maintenance
    A. Research vehicle service information.
    B. Verify placement and equipment/components.
    C. Identify hydraulic system components.

D. Check fluid level and conditions and purge and/or bleed systems.
E. Inspect hoses and connections for leaks, proper routing, and protection.
F. Read and interpret system diagrams and schematics.
G. Perform system temperature, pressure, flow, and cycle time tests.
H. Perform system operation tests.

III. Pumps
A. Identify causes of pump failure and problems.
B. Determine pump type, rotation, and drive system.

IV. Filtration/Reservoirs (Tanks)
A. Identify types of filtration system, verify filter application and flow direction.
B. Service filters and breathers.
C. Identify causes of system contamination.
D. Inspect, repair and/or replace reservoir and related components.

V. Hoses, Fittings and Connections
A. Diagnose causes of component leakage, damage, and restriction.
B. Inspect hoses and connections for leaks, proper routing, and proper protection.
C. Assemble hoses, tubes, connectors, and fittings.

VI. Control Valves
A. Identify causes of control valve leakage problems (internal and external).
B. Inspect pilot control valve linkages, cables, and PTO controls.
C. Adjust, repair, or replace linkages, cables, and PTO controls.

VII. Actuators
A. Identify actuator types.
B. Identify the cause of seal failure.
C. Identify the cause of incorrect actuator movement and/or leakage.
D. Inspect actuator mounting and components for looseness, cracks, and damage.

EXPECTED LEARNER OUTCOMES:

A. The student will be able to describe hydraulics.
B. The student will be able to identify hydraulic problems.
C. The student will be able to identify causes of failure in pumps.
D. The student will be able to identify types of filtration systems.
E. The student will be able to diagnose issues with hoses, fittings, and connections.
F. The student will be able to repair control valve leakage problems.
G. The student will be able to describe actuator types.
H. The student will be able to diagnose actuator leaks and issues.

COURSE COMPETENCIES:

Upon successful completion of this course:

The student will be able to describe hydraulics.

1. The student will be able to demonstrate knowledge of hydraulics

The student will be able to identify hydraulic problems.

2. The student will be able to research causes of hydraulic problems.
3. The student will be able to understand schematics and diagrams.

The student will be able to identify causes of failure in pumps.

4. The student will be able to research hydraulic pump failure.
5. The student will be able to determine types of pumps.

The student will be able to identify types of filtration systems.

6. The student will be able to describe filtration systems and their components.
7. The student will be able to service filtration systems.

The student will be able to diagnose issues with hoses, fittings, and connections.

8. The student will be able to inspect hoses, fittings and connections.
9. The student will be able to assemble hoses, fittings and connections.

The student will be able to repair control valve leakage problems.

10. The student will be able to diagnose external and internal valve leakage problems.
11. The student will be able to repair control valves and their components.

The student will be able to describe actuator types.

12. The student will be able to identify actuators and their components.

The student will be able to diagnose actuator leaks and issues.

13. The student will be able to identify causes of seal failure.
14. The student will be able to inspect actuator for leaks, cracks and damages.

ASSESSMENT OF LEARNER OUTCOMES: Student progress is evaluated by means that include, but are not limited to, exams, written assignments, and class participation.

SPECIAL NOTES:

This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student's progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

Kansas City Kansas Community College is committed to an appreciation of diversity with respect for the differences among the diverse groups comprising our students, faculty, and staff that is free of bigotry and discrimination. Kansas City Kansas Community College is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.

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