



DMT 2310

Division: Career and Technical Education

Department: Transportation Technology

Course: DMT 2310

Title: Fluid Power Theory and Lab

Catalog Description:

This course provides instruction in theory and application of fluid power (hydraulics) as used in modern mobile equipment. Instruction includes practical theory and lab experience related to the operation and repair of hydraulic/pneumatic components and systems. This course emphasizes testing, troubleshooting, design and use of hydraulic schematics, and electric over hydraulic systems.

General Education Requirements: N/A

Semesters Offered: TBA

Credit/Time Requirement: Credit: 6; Lecture: 3; Lab: 9

Clock/Hour Requirements: 180

Offered for Non-Credit: Yes

Prerequisites: DMT 1110

Corequisites: N/A

Justification:

Students must complete this foundation course to function effectively in the heavy duty mechanics field. Employers require this type of training before technicians would even be considered for employment. Hydraulic systems are ever increasing in complexity and sophistication. This curriculum was developed using the nationally recognized Automotive Service Excellence (ASE) task lists, manufacturer training materials, and advisory committee input.

Student Learning Outcomes:

Upon successful completion, students should be able to:

- safely operate hydraulic test equipment
- identify and replace hydraulic pumps, motors, and cylinders
- troubleshoot and repair hydraulic pumps, motors, and cylinders
- troubleshoot, adjust, and repair hydraulic and pneumatic valving
- conduct a flow meter test
- construct basic hydraulic circuits on test bench.

Content:

DMT 2310

Course objectives will be achieved by providing students with instructional and hands-on experiences in the following areas:

- shop and personal safety
- hydraulic hose identification
- hydraulic fittings
- hydraulic system basics
- hydraulic pumps
- cylinders and rams
- reservoir tanks and filters
- hydraulic and pneumatic valving
- hydraulic system design.

General Education Outcomes:

2) Write clearly, informatively, and persuasively.

Students will complete written service reports on each laboratory project. These reports must be written in a clear, concise, and effective manner as this is the means by which customers make repair decisions. These reports are reviewed and returned to students with suggestion for improvement.

6) Apply computational skills to a variety of contexts.

Students are required to perform mathematic computations with regard to force, pressures, flow rate, and a variety of other module specifications.

Applied Education Outcomes:

1) Students will acquire entry-level skills specific to and appropriate for employment in their chosen field of study.

Students will complete the class task list. Students will keep a file that contains service reports and book work. All work will be graded by instructor as to merit.

2) Students will become aware of industry specific certification and develop skills sufficient to acquire the same.

The instructor will post certification he/she possesses and explain same to students. (Note most certifications are not available to students without four years of experience.)

3) Students will demonstrate safe practices and awareness of potential hazards in their field of expertise.

Students will work in the diesel lab under the supervision of the instructors.

4) Students will demonstrate interpersonal skills specific to the skills and environment inherent in their field.

Students will work in a team environment on lab and customer projects.

Student Learning Outcomes will be assessed by two or more of the following Key Performance Indicators:

- written assignments
- lab exercises
- quizzes and tests
- competency in subsequent courses and customer projects

Representative Text and/or Supplies:

- Parker Hannifin Corp., *Fluid Power Basics*, current edition, Parker Hannifin Corp.

Optimum Class Size: 10

Maximum Class Size: 20

Signatures:

I hereby submit this course syllabus:

Robert Boyer, BS, Instructor

I hereby find this course consistent with the goals and resources of the Transportation Technology Department:

Brent Reese, BS, Associate Professor, Chair

I hereby find this course consistent with the goals and resources of the Career and Technical Education Division:

Michael P. Medley, MBA, Assistant Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

Michelle Olsen, MLS, Campus Librarian (Richfield Campus)