



## DMT 2320

**Division:** Career and Technical Education

**Department:** Transportation Technology

**Course:** DMT 2320

**Title:** Advanced Fluid Power Transmission Theory and Lab

**Catalog Description:**

This course provides instruction on theory and operation of torque converters, powershift, automatic transmissions, service of hydraulic brake systems, and transmission electronic control. This course emphasizes troubleshooting, repair procedures, use of service manuals, and schematic diagrams.

**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 2310

**Corequisites:** N/A

**Justification:**

This is an advanced class on hydraulic systems. This course instructs students about hydraulic transmissions used on various machines. The electronic controls of these transmissions will also be studied. 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:

- identify and explain operation of torque converters
- identify and explain operation of powershift transmissions
- identify and explain operation of Allison automatic transmissions
- identify and explain operation of electronic shift transmissions
- identify and explain operation of hydrostatic drives
- identify and explain operation of hydraulic drives.

**Content:**

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

- review of hydrostatic transmissions troubleshooting and application to heavy equipment
- torque convertors
- planetary gearing
- planetary transmission clutch systems
- theory of operation and power flow through planetary transmissions
- troubleshooting, service, and repair procedures for planetary transmissions
- electronic transmission controls
- hydraulic brake service.

### **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 suggestions for improvement.

4) Retrieve, evaluate, interpret, and deliver information through a variety of traditional and electronic media.

Students will utilize electronic and written reference manuals and computer diagnostics to identify, troubleshoot, and repair transmissions, brakes, and other diesel components.

### **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.

**Key Performance Indicators:**

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

- completing assignments/projects
- tests and quizzes
- performance in subsequent courses.

**Representative Text and/or Supplies:**

- Norman, Bennett, *Heavy Duty Truck Systems*, current edition, Thomson/Delmar Learning.

**Optimum Class Size:** 10

**Maximum Class Size:** 20

**Signatures:**

I hereby submit this course syllabus:

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Robert Boyer, BS, Instructor

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

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Brent Reese, BS, Associate Professor, Chair

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

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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:

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

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Michelle Olsen, MLS, Campus Librarian (Richfield Campus)