DMT 2420

Division: Career and Technical Education
Department: Transportation Technology
Course: DMT 2420
Title: Power Trains Theory and Lab
Catalog Description:

This course provides theory and lab experience for advanced students on maintenance and repair of heavy duty power train systems. Instruction covers clutches, single and multiple counter shaft transmission, computer controlled transmissions, drive line geometry, differentials, and Department of Transportation (DOT) safety requirements. This course emphasizes troubleshooting, highway safety, and preventive maintenance.

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:

This course instructs students on service, repair, and troubleshooting of basic gearing systems, such as manual transmissions, differentials, and final drives. 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 explain and perform competent troubleshooting and maintenance of:

- clutches
- single and multiple counter shaft transmission
- drive lines
- differentials
- maintenance performed in accordance with DOT safety regulations.

Content:

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

following areas:

- clutches
- single and twin counter shaft transmissions
- transmission maintenance and failure analysis
- drive lines
- differentials and power dividers
- different maintenance and failure analysis
- preventive maintenance (PM) and highway safety practices.

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.

3) Speak effectively in a variety of contexts.

Students are required to give an oral description of service required for each laboratory project. These reports must be clear and concise so that customers can make appropriate repair decisions. Instructor will test students on content of project to measure understanding.

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

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, and other diesel components.

6) Apply computational skills to a variety of contexts.

Students are required to perform mathematic computations with regard to electrical systems, gear ratios, force pressures, and a variety of other vehicle systems.

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:

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)