



DMT 1230

Division: Career and Technical Education

Department: Transportation Technology

Course: DMT 1230

Title: Computerized Engine Diagnostics

Catalog Description:

This course provides theory and lab experience on heavy duty systems, including computerized engine diagnostics. Instruction covers tune up procedures on electronic, hydraulic electric unit injection (HUEI), Bosch in-line fuel systems, testing, adjusting, maintenance procedures, and safety.

General Education Requirements: N/A

Semesters Offered: TBA

Credit/Time Requirement: Credit: 4; Lecture: 2; Lab: 5

Clock/Hour Requirements: 113

Offered for Non-Credit: Yes

Prerequisites: DMT 1220

Corequisites: N/A

Justification:

This is the third of three courses designed to teach students fuel injection systems and their controls. The information contained in this course enables the student to repair, service, and troubleshoot current fuel injection systems. Students will troubleshoot and test injection systems to meet government regulations. 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 the operation of HUEI fuel systems
- explain the operation of Bosch in-line and distributor pumps
- test and adjust HUEI and Bosch systems using diagnostic tools.

Content:

Course objectives will be accomplished by providing students with experience in the following areas:

- Cummins electronic fuel systems
- Caterpillar electronic fuel systems
- Detroit electronic fuel systems.

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.

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 air conditioning systems.

7) Apply scientific reasoning to a variety of contexts.

Students will perform diagnostic services based on the evaluation of a variety of data. Examples would include oil-analysis and Dynamometer applications for vehicle performance testing, similar to doctors placing a patient on a treadmill for diagnosing cardiological disorders.

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:

- Bennett, Sean, *Medium/Heavy Duty Truck Engines, Fuel and Computerized Management 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)