



## DMT 1220

**Division:** Career and Technical Education

**Department:** Transportation Technology

**Course:** DMT 1220

**Title:** Mechanical - Electronic Controls

**Catalog Description:**

This course provides theory and lab experience for advanced diesel technology students in diesel fuel systems. Instruction covers tune up procedures, electronic fuel control, and governor systems for Detroit Diesel, Cummins, and Caterpillar engines. This course emphasizes testing, adjusting, maintenance procedures, emission controls, 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:** N/A

**Corequisites:** DMT 1210

**Justification:**

This is the second of three courses designed to teach students fuel injection systems and their controls. The information contained in this course enables students to repair, service, and troubleshoot 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:

- perform tune up, set governor, and use diagnostic codes on Detroit electronic engines
- perform tune up, set governor, and use diagnostic codes on Caterpillar electronic engines
- perform tune up, set governor, and use diagnostic codes on Cummins electronic engines.

**Content:**

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

- mechanical and electrical Detroit diesel fuel system
- Caterpillar mechanical fuel systems
- in-line pumps (A and B models)
- Cummins fuel systems
- Cummins electronic fuel controls
- electronic engine control 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.

### **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:

- written assignments

- lab exercises
- quizzes and tests
- 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:

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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)