DMT 1120

Division: Career and Technical Education
Department: Transportation Technology
Course: DMT 1120
Title: Electrical Systems and Lab
Catalog Description:

This course will instruct heavy duty technology students on basic electricity and provide theory and lab experiences on components and systems. Students will receive detailed instruction on alternators, starters, lights, wiring schematics, symbols, and circuits. Students are required to wire various circuits and use electrical test equipment to troubleshoot components and systems.

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 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. Electrical systems are ever increasing in complexity and sophistication today. This curriculum was developed using the nationally recognized Automotice Service Excellence (ASE) task lists, manufacturer training materials, and advisory committee input.

Student Learning Outcomes:

Upon successful completion, students should be able to:

- understand basic electricity, including the use of Ohm's Law
- service and repair batteries, starters, alternators, gauges, and circuits
- wire components into systems that operate properly
- service and repair horn, windshield wiper, and other auxiliary circuits
- use electronic devices to test electrical systems on equipment.

Content:

Course objectives will be accomplished by providing students with learning experiences in the following subject areas:

- electricity, what it is and how it works
- electrical circuits, testing, and batteries
- cranking systems
- charging systems
- lighting and accessory system
- electronic ignition 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.

5) Apply a cultural and historical awareness to a variety of phenomena.
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 are required to perform mathematic computations with regard to the electrical system.

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:

- John Deere Company, *Electronic and Electrical Systems*, current edition, John Deere.

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)