



AUTO 1101

Division: Career and Technical Education

Department: Automotive Technology

Course: AUTO 1101

Title: Automotive Basic DC Electrical Theory

Catalog Description:

Students will gain an understanding of the principles and laws that govern electric circuits, including Ohm's and Kirchhoff's laws. Students will also gain an understanding of the use of meters, wiring diagrams, and wiring repair.

General Education Requirements: N/A

Semesters Offered: TBA

Credit/Time Requirement: Credit: 3; Lecture: 3; Lab: 2

Clock/Hour Requirements: 75

Offered for Non-Credit: No

Prerequisites: AUTO 1000

Corequisites: None

Justification:

This is a beginning DC electrical theory course required for Automotive Service Excellence (ASE) certification. It is approved by the program advisory committee.

Student Learning Outcomes:

Upon completion of this course, students will understand and be able to explain these topics:

- magnetism
- how DC electricity is generated
- measuring DC electricity
- the use of Ohm's and Kirchhoff's laws to analyze circuits
- principles of series circuits
- principles of parallel circuits
- principles of series parallel circuits
- DC motor types
- automotive electrical schematics and wiring diagrams.

Content:

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

- safety

- energy
- how magnetism is related to electricity
- conductors, insulators, and resistors
- voltage, amperage, and resistance
- Ohm s Law
- Kirchhoff s Law
- how electricity is generated
- electrical power
- DC measuring instruments
- series circuits
- parallel circuits
- series parallel circuits
- automotive electrical schematics and wiring diagrams
- alternator current.

General Education Outcomes:

6) Apply computational skills to a variety of contexts.

Students are required to perform mathematic computations with regard to electrical systems with the binary numbering system; and computer generated matrices is emphasized in lab, homework assignments and tests.

Key Performance Indicators:

In class:

- Students shall be required to complete chapter tests (50%) and pass a final test (50%).

Following class:

- Course evaluation will be demonstrated by the following methods:
 - student feedback per ASE requirements
 - students passing ASE tests
 - students transferring to other post secondary institutions
 - student performance in subsequent courses.

Representative Text and/or Supplies:

- Chapman, Norm, *Principles of Electricity and Electronics*, current edition, Thomson/Delmar Learning.

Optimum Class Size: 10

Maximum Class Size: 18

Signatures:

I hereby submit this course syllabus:

Brent Reese, BS, Associate Professor

I hereby find this course consistent with the goals and resources of the Automotive 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)