AUTO 1102

Division: Career and Technical Education
Department: Automotive Technology
Course: AUTO 1102
Title: Automotive Electronics
Catalog Description:
Students will understand the principles of semiconductors, PN junctions, diodes, junction transistors, field effect transistors, the binary numbering system, and logic gates.
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: None

Corequisites: None

Justification:
This is a beginning electronics course that is prerequisite to other courses required for Automotive Service Excellence (A.S.E.) Master Certification. This course is approved by the program advisory committee for an AAS degree in Automotive Technology.

Student Learning Outcomes:

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

- semiconductor doping process
- conduction of current flow through a diode
- a diode s function in different automotive circuit applications
- different types of automotive display devices and light detectors
- operation of bipolar transistors, field-effect transistors, phototransistors, unijunction transistors, and silicon-controlled rectifiers
- testing transistors
- converting between decimal and binary notation
- logic symbols and truth tables
- combinational and sequential logic circuits
- principles of comparators, adders, flip-flops, multiplexers, incoders, and decoders
- operation of digital and analog IC circuits
- operation of op-amp amplifier
- pulse generator and voltage regulator IC circuit
- use of a digital probe to measure DC voltage levels and digital signal pulses.

Content:

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

- semiconductor diodes
- transistors
- digital fundamentals.

General Education Outcomes:

6) Apply computational skills to a variety of contexts.
Students are required to perform mathematic computations with regard to electrical systems and a variety of other electronic vehicle systems. Familiarity 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 as per A.S.E. requirements
  - students passing A.S.E. 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.
- *35-in-1 Deluxe Digital Lab Exploration Kit and Instruction Manual,* current edition, Chaney Electronics, Inc.

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)