

J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: AUT 245

Credits: 4

Course Title: Automotive Electronics

Course Description: Introduces the field of electronics as it applies to the modern automobile. Emphasizes basic circuit operation diagnosis and repair of digital indicator and wiring systems. Prerequisites: AUT 241 and 242. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

General Course Purpose: To examine the basic theory, operation, diagnosis, and repair of automotive electronic systems. Safety will be emphasized.

Course Prerequisites and Co-requisites:

Prerequisites: AUT 241 and AUT 242

Course Objectives:

Upon completing the course, the student will be able to

- a. Describe how semiconductors, diodes, and transistors work;
- b. Explain the principles of operation for common electronic circuits;
- c. Explain the principle of multiplexing;
- d. Describe the basic function of the central processing unit (CPU);
- e. List and describe the functions of the various sensors used by computers;
- f. Describe the principle of analog and digital signals;
- g. Explain the principle of computer communications;
- h. Summarize the function of a binary code;
- i. Name the various memory systems used in automotive microprocessors;
- j. List and describe the operation of output actuators;
- k. Identify the proper procedure to safeguard electronic systems;
- l. Describe the basic electronic logic circuits; and
- m. Explain how to use an oscilloscope for diagnosing electronic systems.

Major Topics to Be Included:

- a. Semiconductors
- b. Diodes and transistors
- c. Semiconductor circuits
- d. Sensors (feedback, Vref, NTC, PTC, etc.)
- e. Communication signals
- f. Logic gates (FET, NOT, NAND and NOR gates)
- g. Multiplexer and DE multiplexer
- h. Memories (ROM, PROM, EPROM, EEPROM, RAM, KAM, NVRAM)
- i. Actuators (output drivers, LCD, VFD)
- j. Power supplies
- k. Testing electronic circuits and systems (Ford, GM, Daimler Chrysler, and imports) (RMS, Frequency, Hertz)

Effective Date of Course Content Summary: April 1, 2009