

**J. Sargeant Reynolds Community College
Course Content Summary**

Course Prefix and Number: AUT 245

Credits: 4

Course Title: Automotive Electronics

Course Description (including lecture hours, lab hours, total contacts)

Introduces the field of electronics as it applies to the modern automobile. Emphasized 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/Corequisites (*Entry-level competencies **required** for enrollment*)

AUT 241, AUT 242 - Automotive Electricity I and II

Course Objectives (Each item should complete the following sentence.)

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
- m. Explain how to use and 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 Demultiplexer
- 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, Diamler Chrysler and Imports (RMS, Frequency, Hertz)

Effective Date of Course Content Summary (Month, Date Year): April 1, 2009