

J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: ETR 274

Credits: 4

Course Title: Computer Electronics II

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

Teaches principles of digital electronics and microprocessors to familiarize the student with typical circuits and methods used to interface computer and/or controllers with various I/O devices. Includes exposure to high level programming as well as assembly language routines. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

General Course Purpose

This was a required course in the Electronics Technology AAS degree program. That program has been discontinued and will be undergoing its teach out phase in 2009 and following.

Course Prerequisites/Corequisites (*Entry-level competencies **required** for enrollment*)

Prerequisite: ETR 203 or equivalent.

Course Objectives

Upon successful completion of the course, the student will be able to:

- a. describe a representative number of input and output devices used with digital systems.
- a. identify the many types of memory devices associated with digital systems, their composition, operation, characteristics, and uses.
- c. identify the hardware of a microcomputer:
 - (1) overview
 - (2) architecture of a microprocessor
 - (3) memory
 - (4) I/O
- d. program the 8085:
 - (1) instructions
 - (2) programming techniques
 - (3) program development
- e. identify interfacing and applications.

Major Topics to be Included

LECTURE:

- a. interfacing digital systems with the analog world
- b. memory devices
- c. microcomputers, microprocessors, and assembly language
- d. microprocessor architecture and microcomputer systems
- e. 8085-based microcomputer systems
- f. instructions and timing
- g. introduction to 8085 instructions
- h. programming techniques

- i. counters and time delays
- j. stacks and subroutines
- k. code conversion, BCD arithmetic, and 16-bit data operation
- l. parallel I/O and interfacing
- m. interrupt
- n. data converters

LABORATORY:

- a. decoders and displays
- b. multiplexers and demultiplexers
- c. memory
- d. D/A and A/D
- e. digital integrated circuits
- f. the microcomputer principles and applications

Effective Date of Course Content Summary: May 2009