

STATUS:   A  

COMMON COURSE NUMBER:   CET 1117C (previously CET1123C)  

COURSE TITLE:   Microprocessors I  

CREDIT HOURS:           4          

**CONTACT HOURS BREAKDOWN:**

Lecture/Discussion           32          

Lab           32          

Other                           

Contact Hours/Week           4          

**CATALOG COURSE DESCRIPTION:**

Prerequisite: CET 1114C or instructor approval

Corequisite: None

Study of the organization and operation of a stored program digital computer with emphasis on CPU operation in response to assembly and machine language instructions. Methods of selecting and operating I/O devices under program control will also be studied. Course work includes sophisticated assembly language programming using an industry standard development platform for the microprocessor. Student fee charged.

General Education Requirements - Associate of Arts Degree, meets Area(s):

General Education Requirements - Associate in Science Degree, meets Area(s):

**UNIT TITLES:**

1. Computer Arithmetic
2. Computer Architecture
3. Machine-level Programming and the Development Platform

## **I. Course Overview:**

Upon successful completion of this course, the students should be able to demonstrate an understanding of the organization and operation of a stored program microprocessor based computer with emphasis on machine-level programming and its relationship to assembly language programming.

## **II. Units:**

### **Unit 1. Computer Arithmetic**

#### General Outcome:

- 1.0 The students should be able to apply the basic rules of arithmetic for positional significance number systems to those systems normally used in the computer field.

#### Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 1.1 Define the characteristics of a positional significance number system with any radix.
- 1.2 Convert between binary, octal, decimal, and hexadecimal number systems.
- 1.3 Perform simple arithmetic operations in the binary and hexadecimal number systems.
- 1.4 Identify the characteristics of common computer information codes.

## Unit 2. Computer Architecture

### General Outcome:

- 2.0 The students should be able to discuss the functions and inter-relationships of the elements that comprise a microprocessor based computer.

### Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 2.1 Draw the block diagram and describe the basic architecture of a microcomputer.
- 2.2 Identify and give functional descriptions of data, address, and control buses.
- 2.3 Describe the internal architecture of a microprocessor.
- 2.4 Explain the function and operation of each register in a microprocessor.
- 2.5 Describe the sequence of operations in the execution of a microprocessor instruction.

### Unit 3. Machine-level Programming and the Development Platform

#### General Outcome:

3.0 The students should be able to use assembly language mnemonics to write programs, and be able to code assembly language instructions using an industry-standard development platform.

#### Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to write and interpret programs with:

- 3.1 Data-handling and arithmetic instructions.
- 3.2 Logic instructions.
- 3.3 Condition code testing and branching instructions.
- 3.4 Register and stack operations.
- 3.5 Communication between the computer and I/O devices.
- 3.6 Design, code, debug, and implement programs using an industry-standard development platform.