Wayne County Community College District

COURSE SYLLABUS

CT 205   Introduction To Microprocessor

CREDIT HOURS: 4.00   **CONTACT HOURS:** 75.00

COURSE DESCRIPTION:
An introduction to microprocessor systems, instruction sets, algorithm development and detail description of microprocessor system hardware. The instruction set of Motorola and Intel family microprocessors are used to write various program applications. Laboratory experience involves program generation and interfacing. *Lab fee*

PREREQUISITES: NONE

EXPECTED COMPETENCIES:
Upon completion of this course, the student will:
1. Define the terms "microcomputer: and "microprocessor"
2. Describe the function components of a typical microprocessor
3. Define the data and instruction registers usually found within a microprocessor
4. Convert numbers in the binary, octal, or hexadecimal systems to their decimal equivalents and vice versa
5. Add, subtract, multiply, and divide binary, octal, or hexadecimal numbers
6. Perform arithmetic operations using complement systems
7. Distinguish between the various flags used in the status register, their function, and applications
8. Describe how a micro program controls the sequence of events to be executed
9. Define the requirements for double-precision arithmetic
10. List the steps necessary to write a program
11. Discuss the functions of the ALU
12. Explain the control and timing of the microprocessor by use of timing diagrams
13. Describe the interface between the microprocessor and either ROM or RAM and the methods of address mapping
14. Describe the operation of all jump instructions and their applications
15. Explain shift and rotate instructions and their applications
16. Describe architecture, configuring, addressing, and programming PIA
17. Explain different types of loops and their applications
18. Show how loops can be combined by nesting
19. Describe subroutine construction and referencing
20. Describe conditional subroutine calls and returns
21. Discuss the use of the stack in initiating and terminating subroutines
22. Show how subroutines can be nested
23. Describe the process of parameter passing by means of registers or memory
24. Explain the function of the I/O instructions for 68HC 11
25. Explain interrupts schemes and discuss the use of interrupts in information exchanges
26. Analyze the operation of a priority interrupt control unit
27. Describe the function of ports A, B, C, D, and E of 68HC 11
28. Distinguish between fully decoded and linear selection address decoding of device addresses
29. Write programs in machine language, assembly language, and convert assembly program to machine program and vice versa

30. Use a simulator to debug a program
31. Perform A/D conversion using 68HC 11

ASSESSMENT METHODS:
Student performance may be assessed by examination, quizzes, case studies, oral conversation, group discussion, oral presentations. The instructor reserves the option to employ one or more of these assessment methods during the course.

GRADING SCALE:
90%-100% = A
80%-89.9%= B
70%-79.9%= C
60%-69.9%= D
<60% = E