MIDDLESEX
COUNTY COLLEGE

COURSE SYLLABUS

Department: Engineering Technology

Program: Electrical Engineering Technology

Course Number: ELT 226

Title of Course: Introduction to Microprocessors

Curriculum Coordinator: James Finne

Designation: Required course

Course Description:
A study of the hardware, software, interfacing and programming of a contemporary microcomputer. Students demonstrate the application of the microcomputer through laboratory projects.

Prerequisite:
ELT 111 Digital Electronics

Co-requisite:
None

Textbooks and /or other required material:
Laboratory Manual for an Introduction to Micro Processors for Electrical Engineering and Computer Technology students using a RISC microcontroller by James Finne
On-line resources and tutorials

Course Learning Outcomes and their relationships to Student Outcomes:
1. Demonstrate knowledge of microprocessor device architecture, including the register set and instruction set.
2. Write and execute assembly language programs. **(SO a)**
3. Interface peripheral devices to the microprocessor and use the processor as a control device. **(SO a)**
4. Demonstrate an understanding of the binary number systems, ASCII code, Analog/Digital conversions. **(SO b)**

Topics Covered:

- Number systems: binary, hexadecimal, integer and floating point formats, ASCII code
- Architecture: RISC and CISC, buses, registers, ALU, memory
- Machine or binary code
- Assembly language code
- Input / output interface circuits and devices
- Programming algorithms, subroutines, interrupt service routines
- Serial communication: asynchronous, synchronous, TX/RX, I2C, SPI
- Analog / digital conversion

Laboratory Topics Covered:

- Assembly of single board computer
- Using Develop Environment software
- Writing simple program algorithm
- Input devices
- Timers
- Interrupts
- Interfacing output devices such as motors
- Analog / digital conversion
- Seven segment display
- Matrix keypad devices
- Asynchronous communication

Class/Laboratory schedule. Number of sessions each week and duration of each session:
Lecture: 2 hours per week for 14 weeks
Laboratory: 3 hours per week for 14 weeks

Criterion 5 Contribution: Technical Content

Prepared By:	James Finne	**Date:**	8/25/2008
Rev 1:	JSF	**Date:**	2/3/2011
Rev 2:	T. Sabol Update mapping of course outcomes to ABET 2014-2015 student outcomes	**Date:**	3/24/2014
Rev 3:	General Update	**Date:**	3/15/21