FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	CET 2123
COURSE TITLE:	Microprocessor Fundamentals
PREREQUISITE(S):	CET 1114
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	4
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	1
Other _____:	
FACULTY WORKLOAD POINTS:	3.7
STANDARDIZED CLASS SIZE ALLOCATION:	20

CATALOG COURSE DESCRIPTION:

This course is intended for technicians whose job is to service systems containing microprocessors. It is a study of the structure and programming of the microprocessor as well as interfacing with peripherals and system troubleshooting.

SUGGESTED TEXT(S):	Practical Microprocessors, Michael Slater; Hewlett-Packard Co. Santa Clara, Calif. 1981.
IMPLEMENTATION DATE:	Fall Term, 1990 (911)
REVIEW OR MODIFICATION DATE:	Fall Term, 1996 (971) Fall Term, 2002 (20031)

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. Introduction	4
A. History and Development of the Microprocessor	
B. Uses of Microprocessors	
C. A Basic Microprocessor System	
D. Peripherals	
E. Memories	
F. Microcomputers and Minicomputers	
G. Review of Number Systems	
II. Microcomputer Structure and Operation	4
A. Microcomputer Elements	
B. Microcomputer Architecture	
C. System Clocks and Timing	
D. The Bus and Bus Activity	
E. Microprocessor Address Space Allocation	
F. Memory Modules	
G. Address Decoding	
H. Memory Mapping	
III. The Microprocessor	4
A. Microprocessor Sections	
B. Control and Timing	
C. Registers	
D. Arithmetic Logic Unit	
E. Eight Bit Microprocessors	
F. Sixteen Bit Microprocessors	
IV. Introduction to Programming	5
A. Programming Languages	
B. Flowcharts	
C. Address Modes	
D. Program Listing Format	
E. Subroutines	
F. Interrupts	
G. Indexed Addressing	
H. Indirect Addressing	
I. Instruction Classifications	

COURSE TOPICS (Continued) — CONTACT HOURS PER TOPIC

V. Instruction Groups and Descriptions — 5

A. Machine Status Control
B. Data Transfer
C. Arithmetic
D. Logic
E. Shift and Rotate
F. Decrement/Increment
G. Unconditional Jump
H. Conditional Branching
I. Comparison
J. Bit Test
K. No-op Instructions
L. Time Delay

VI. Memory — 5

A. Memory Hierarchy
B. The Microcomputer Memory Spectrum
C. Virtual Memory
D. The Memory Map
E. Primary Memory
F. RAM and ROM
G. Secondary and Backup Memory
H. Magnetic Tape
I. Floppy Disks

VII. Input/Output and Interfacing — 5

A. Examples of I/O
B. Microprocessor Initiated I/O Transfer
C. Device Initiated I/O Transfer
D. Types of Interrupt Inputs
E. Disabling the Interrupt
F. Asynchronous Serial Data Communication
G. Parallel/Serial Interface - the UART
H. Synchronous Serial Data Communication
I. Serial Communication Standards
J. Parallel I/O Interface Chips
K. Parallel Bus Standards
L. Keyboard Input Devices
M. Magnetic Tape Storage
N. Floppy Disks
O. Video Display Terminals

COURSE TOPICS (Continued)	CONTACT HOURS PER TOPIC
VIII. Troubleshooting Microprocessor Systems	5
A. Problems Specific to Microprocessor Systems B. Troubleshooting Tools and Instruments C. Troubleshooting Documentation D. Common Production-Line Problems E. Mechanical Field Failures F. General Troubleshooting Techniques G. Isolating Faults H. Digital Failure Modes	
IX. Tests and Reviews	8
X. Laboratory Exercises	15

PROGRAM TITLE: Industrial Management Technology

COURSE TITLE: Microprocessor Fundamentals

CIP NUMBER: 0606.200101

LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S): TITLES(S):

11.0 DEMONSTRATE APPROPRIATE UNDERSTANDING OF BASIC SCIENCE--The student will be able to:

11.01 Understand molecular action as a result of temperature extremes, chemical reaction, and moisture content.
11.02 Draw conclusions or make inferences from data.
11.03 Identify health related problems which may result from exposure to work related chemicals and hazardous materials, and know the proper precautions required for handling such materials.
11.04 Understand pressure measurement in terms of P.S.I., inches of mercury, and K.P.A.

18.0 DEMONSTRATE AN UNDERSTANDING OF TECHNICAL OR INDUSTRIAL COMPETENCIES--The student will be able to:

18.01 Demonstrate an understanding of technical or industrial competencies as specified in the curriculum frameworks of any postsecondary adult or postsecondary vocational program.