MARICOPA COMMUNITY COLLEGES

Computer Programming for Technology

Course: **ELE181**	Lec + Lab **3** Credit(s) **5** Period(s) **4.4** Load
	Course Type: **Occupational**
First Term: **2004 Fall**	Load Formula: **S**
Final Term: **Current**	

Description: Elementary computer programming techniques. Hands-on computer usage

Requisites: Prerequisites: None

MCCCD Official Course Competencies

1. Describe the architecture of a microcomputer. (I)
2. Compare and contrast programming languages and software. (I)
3. Perform simple operations on a microcomputer including: a) entering data and creating outputs for programs b) editing programs c) saving and retrieving programs d) and writing programs which perform arithmetic operations. (II)
4. Plan the flow of a program and document the steps within a program. (III)
5. Debug a non-working program. (III)
6. Utilize loop, decision and subroutine structures within programs, where appropriate. (IV)
7. Perform mathematical and string operations within programs, using mathematical, string and user-defined functions. (V)
8. Describe the use of arrays and files. (VI)
9. Write programs to compute values for specified items in electrical, electronic circuits. (VII)
10. Control external devices with a microcomputer, using applications software and/or interfacing techniques. (VIII)

MCCCD Official Course Outline

I. Overview of the Functional Organization and Operation of a Microcomputer
  A. The architecture of a microcomputer
  B. Programming languages and software
II. Getting to Know a High-Level Programming Language
  A. Program entry and output
  B. Editing programs
III. Program Structure and Documentation
  A. Algorithms and pseudocode
  B. Flowcharting

C. Structured programming techniques
D. Documentation
E. Debugging

IV. Programming Techniques
A. Loops
B. Conditional branching and decision structures
C. Subroutines

V. Functions
A. Mathematical
B. String
C. User-defined

VI. Advanced Programming Techniques
A. Arrays
B. Files

VII. Solving Technical Problems With Computer Programs
A. Creating a problem statement
B. Outlining the possible steps toward solution
C. Writing a program which solves the problem

VIII. Dedicated Microcomputer Applications
A. Interfacing a microcomputer to external devices for control and measurement
B. Use of applications software

Last MCCCD Governing Board Approval Date: **4/27/2004**