

**AUSTIN COMMUNITY COLLEGE
CONTINUING EDUCATION**

Introduction to Programming Languages

(16 hours)

ITSE 1003

COURSE SYLLABUS

Course Description: Basic programming concepts and techniques. Topics include familiarization with and utilization of computer systems; developing logic; preparing top-down design of problems; and creating programs. Development of basic knowledge of programming concepts and techniques. This class is for those who have few or no skills in programming. Emphasis will be placed on problem definition, program solution, and how to enter, manipulate, and display data. Using C-Language as a teaching vehicle, this course will expose students to the basic programming concepts they need for further work with programming languages. Prerequisites: End-user familiarity with computers, the internet, Microsoft Windows.

Objectives: Every student will be able to:

- Identify the components of a computer system.
- Explain the difference between a compiler and an interpreter.
- Identify the three components of structured programming.
- Demonstrate the understanding of Software Engineering Principles
- Demonstrate the ability to use a C-Language Interpreter.
- Develop pseudocode which describes a computer program.
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- Create C-Language programs given the program requirements.
- Analyze sorting algorithms.
- Demonstrate understanding of the use of subroutines.
- Analyze searching algorithms.

Type of Course: Short Course

Evaluation: Students will be evaluated on their competency in performing a variety of hands-on exercises created to insure the student has achieved all course objectives through the course, and class participation. In order to grant CEU credit for a course the students must be able to complete assessment exercises for each part of the course given by the instructor. The instructor will validate each participant's achievement of the course objectives by signing and awarding individual certificates of completion.

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Course Outline:

| <u>Topic</u> | <u>Sub-topic</u> | <u># hours</u> |
|------------------------------|-----------------------|----------------|
| Computer Programming Defined | Computer Systems | 2 |
| | Hardware | |
| | Operating Systems | |
| | Interpreters | |
| | Compilers | |
| Program Design Fundamentals | Software Engineering | 2 |
| | Requirements Docs. | |
| | Software Life Cycle | |
| | Top-down Design | |
| | Flowcharting | |
| | Pseudocode | |
| Programming in C | Installing C | 1.5 |
| | Using the editor | |
| | Variables | |
| | Program examples | |
| Programming in C | Data Processing | 2 |
| | If Statements | |
| | Select Case Statement | |
| | Looping | |
| Programming in C | Arrays | 2 |
| | Writing to Disk Files | |
| | Records and Fields | |
| Computer Algorithms | Counters | 3.5 |
| | Value Swapping | |
| | Sorting | |
| | Sorting Flowcharts | |
| | Sorting Pseudocode | |

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Searching

Searching Pseudocode

Program Exercises

Subroutines

Nested Loops

Final Exam

1

Final Project

2