

# CSC 120 COMPUTING FUNDAMENTALS I

## **COURSE DESCRIPTION:**

Prerequisites: MAT 080 or MAT 090 or satisfactory score on placement test and CIS 110

Corequisites: None

This course provides the essential foundation for the discipline of computing and a program of study in computer science, including the role of the professional. Topics include algorithm design, data abstraction, searching and sorting algorithms, and procedural programming techniques. Upon completion, students should be able to solve problems, develop algorithms, specify data types, perform sorts and searches, and use an operating system. Course Hours Per Week: Class, 3. Lab, 2. Semester Hours Credit, 4.

## **COURSE OBJECTIVES:**

Upon successful completion of this course, the student will be able to:

- a. Use top-down concepts in algorithm design.
- b. Develop effective algorithms for searching and sorting.
- c. Explain the concept of data abstraction.
- d. Identify the data types used in C++.
- e. Identify the operators available in C++.
- f. Describe the data control constructs available in C++.
- g. Declare and initialize arrays.
- h. Explain the concept of class and how it relates to object-oriented programming.
- i. Code, test and debug programs in C++.
- j. Perform sort and search routines using C++.

## **OUTLINE OF INSTRUCTION**

- I. Problem solving on the computer
  - A. Top-down design
  - B. Algorithms
  - C. Control structures
  - D. Testing results
  
- II. Introduction to C and C++.
  - A. High-level languages
  - B. Operating systems
  - C. Compilers
  - D. Memory organization
  - E. Developing programs from specifications
  - F. Program documentation
  - G. Programming style
  - H. Debugging programs

- III. Basic structure of a C++ program
  - A. Generic form
  - B. Header files
  - C. Constants
  - D. Local variables
  - E. Input/output statements
  - F. Simple program
  
- IV. Variables, data types, and expressions
  - A. Variables
  - B. Data types
  - C. Reference variables
  - D. Operators
  
- V. Program control
  - A. Loops
  - B. Break
  - C. Continue
  - D. If and if-else statements
  - E. Conditional operator
  - F. Switch statement
  - G. Flags and conditional testing
  
- VI. Arrays
  - A. One-dimensional arrays
  - B. Multi-dimensional arrays
  - C. String manipulation functions
  - D. Arrays as lists
  - E. Sorting
  - F. Searching

**REQUIRED TEXTBOOK AND MATERIALS:**

To be selected by instructor.

**STATEMENT FOR STUDENTS WITH DISABILITIES:**

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 686-3652 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.