

COURSE OUTLINE

CMSY-141
Computer Science I
4 Semester Hours

HOWARD COMMUNITY COLLEGE

Description

This course provides an introduction to the C++ programming methodology—from algorithm development and documentation to object-oriented programming. Upon successful completion, students will be able to write programs of moderate complexity and length which include standard data types, control structures, user written and library functions, arrays, structures, recursion, stream I/O, and simple classes and objects. Pre- or co-requisite: MATH-140 and eligible to enroll in ENGL-121. (3 hours lecture, 2 hours lab)

Overall Course Objectives

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

1. Demonstrate use of editor to create, manipulate, save and retrieve files and projects.
2. Prepare data declarations of appropriate types.
3. Prepare programs which include simple input and output.
4. Demonstrate use of function prototypes, calls, definitions, and function overloading.
5. Demonstrate use of the “if” statement with simple and compound conditions and with or without nesting.
6. Demonstrate use of looping constructs.
7. Demonstrate definition of arrays and access to them using index notation.
8. Demonstrate access to arrays using pointers.
9. Demonstrate creation of structures and access to them using structure pointers.
10. Prepare a program which includes recursive function calls.
11. Prepare programs which include stream I/O.
12. Prepare programs using classes and objects.

Major Topics

- I. Editor, Compiler, Style
- II. C++ Programming Basics, Data Types
 - A. Defining Data
 - B. Displaying Data
- III. Manipulating data
 - A. Input/Output
 - B. Arithmetic

- IV. Functions and Prototyping, Function Overloading
- V. Repetition and Selection
- VI. Preprocessor Statements
- VII. Pointers and Arrays
- VIII. Stream I/O
- IX. Structures and Structure Pointers
- X. Recursion
- XI. Sorting/Dynamic Memory Allocation
- XII. Introduction to Classes, Objects and Object-Oriented Programming (OOP)

Course Requirements

Grading/exams: Grading procedures will be determined by the individual faculty member but will include at least twelve projects and two exams.

Other Course Information

This is a core course for Computer Science majors.

This course is an Arts and Science Elective.