

COURSE OUTLINE
CMSY-281
Advanced C++ Programming
4 Credits

HOWARD COMMUNITY COLLEGE

Course Description

This course covers advance topics in the C++ programming language—from advance OOP concepts to data structure implementation. Upon successful completion, students will be able to write C++ programs which include sorting and searching algorithms, STL containers, advance file I/O with both text and binary files, advanced object-oriented programming concepts such as operator overloading, inheritance, and polymorphism, and advance data structures such as linked lists, stacks, queues, and binary trees. Prerequisite: CMSY-181. (3 hours lecture, 2 hours lab)

Overall Course Objectives

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

1. Demonstrate an understanding of various searching algorithms.
2. Demonstrate an understanding of various sorting algorithms.
3. Demonstrate the use of sequential access and random access with both text and binary files.
4. Demonstrate an understanding of advance OO- design concepts such as operator overloading, class aggregation, inheritance, and polymorphism.
5. Demonstrate an understanding of exception handling.
6. Demonstrate an understanding of function and class templates.
7. Use the Standard Template Library (STL).
8. Implement and manipulate linked lists.
9. Implement and manipulate stacks.
10. Implement and manipulate queues.
11. Implement and manipulate binary trees.
12. Use recursion to process advance data structures.

Major Topics

- I. Review of C++ and OOP fundamentals
- II. Searching and Sorting
- III. Text and Binary files
- IV. Advance OOP concepts
- V. Exceptions
- VI. Templates and the STL
- VII. Linked Lists
- VIII. Stacks
- IX. Queues
- X. Binary Trees

Course Requirements

Grading/exams: Grading procedures will be determined by the individual faculty member but will include at least five major programming lab projects and two tests.

Other Course Information

Meets the College definition of an Arts and Science Elective and a Business Elective.

This course is cross-listed as CMSY 171. Students majoring in ISM –Programming should sign up for CMSY 281. Students majoring in Computer Science should sign up for CMSY 171.