

**J. Sargeant Reynolds Community College
Course Content Summary**

Course Prefix and Number: CSC 210

Credits: 3

Course Title: Programming with C++

Course Description: Covers advanced topics using the syntax of the C++ language. Includes language syntax, problem-solving techniques, top-down refinement, procedure definition, loop invariance, theory of numerical errors, program design, objects, classes, inheritance, files, strings, linked lists, stacks, queues, binary trees, recursion, and basic searching and sorting techniques, and debugging. Prerequisite: CSC 130. Lecture 3 hours per week.

General Course Purpose: CSC 210 serves as an elective for the Computer Science Specialization in the Science AS and the Engineering AS degree. The course is a second semester problem-solving course using data structures in the C++ language. It builds on a first semester course using the C language (CSC 130).

Course Prerequisites and Co-requisites:

Prerequisite: CSC 130

Student Learning Outcomes:

Upon completing the course, the student will be able to

- a. Develop structured and object-oriented programs using software engineering principles;
- b. Write programs using C data structures;
- c. Demonstrate knowledge of the C++ programming language and C++ data structures; and
- d. Apply the C++ language to solve a wide variety of problems.

Major Topics to Be Included:

- a. Algorithm development and software engineering principles
- b. Procedural program development using C and object-oriented program development using C++
- c. Data structures, inheritance, and C++ objects
- d. Sorting, searching, and file processing

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