CSCI 140 Outline
C++ Language and Object Development
Starting Out With C++ -- Early Objects
by T. Gaddis, J. Walters, and G. Muganda, 10th Edition, Pearson

Approved: 10/06/2023   Effective: Winter 2024

Topics	Sections	Time
Introduction to Programming and C++: introduction to computers and programming, introduction to C++, data types, memory concepts, preprocessor directives, C++ 11 Standard	1.1 - 1.7 2.1 - 2.18	2.5 hours
Expressions and Control Structures: arithmetic expressions, selection structure (if, if/else, and switch), repetition structure (while, for, and do/while), assignment operators, increment and decrement operators, relational operators, logical operators, introduction to files	3.1 - 3.13 4.1 - 4.16 5.1 - 5.15	6 hours
Functions: standard library functions and user-defined functions, function prototypes, function definitions, function calls, scope rules, storage classes, passing parameters by value and by reference, default arguments, function overloading, stubs and drivers	6.1 - 6.18	3 hours
Arrays, Pointers, and Recursion: one-dimensional and multidimensional arrays, array applications (sorting and searching), pointer variables, pointers vs. arrays, pointer arithmetic, arrays of pointers, passing arrays to functions, dynamic memory allocation/de-allocation (new and delete), recursive functions, recursion vs. iteration	8.1 - 8.15 9.1 - 9.8 10.1 - 10.14 14.1 - 14.10	7 hours
Classes and OOP: structures, enumerated types, introduction to classes and objects, encapsulation, controlling access to members (public, protected, and private), constructors, destructors, interface and implementation files, software reusability, constant objects and constant member functions, friends, the "this" pointer, static class members, data abstraction, information hiding, operator overloading, aggregation and composition, inheritance, overriding	7.1 - 7.17 11.1 - 11.15	8.5 hours
Polymorphism and Virtual Functions: base-class pointers and derived-class pointers, overriding, composition vs. inheritance, multiple inheritance, virtual functions and pure virtual functions, abstract base classes and concrete classes, static binding vs. dynamic binding	15.1 - 15.6	3.5 hours
Strings, Input/Output, and Advanced File Processing: character and C-string processing, string libraries, C++ strings, stream I/O classes and objects, stream output, stream input, stream manipulators, files and streams, sequential-access files, random-access files, binary files	12.1 - 12.7 13.1 - 13.9	4.5 hours
Exception, Templates, and STL: error-handling techniques, basics of C++ exception handling (try, throw, and catch), function templates, class templates, introduction to STL	16.1 – 16.4 17.1 – 17.3	2.5 hours
Data Structures: introduction to linked lists, stacks, queues, binary trees, and containers, template considerations	18.1 - 18.6 19.1 - 19.5 20.1 - 20.3	2.5 hours

Submitted by: Atanasio, Vo

Notes:
- 1 hour = 1 hour of face time
- 16-week Term: 1 week = 2.8333 hours + 2.8333 hours (face time)
- 6-week Term: 1 week = 7.5 hours + 7.5 hours (face time)
- The above outline allows 3 hours for review and exams, not counting holidays. Keep in mind that most holidays affect MW or MWF classes, so this timeline – NOT the topical outline – may need adjustment